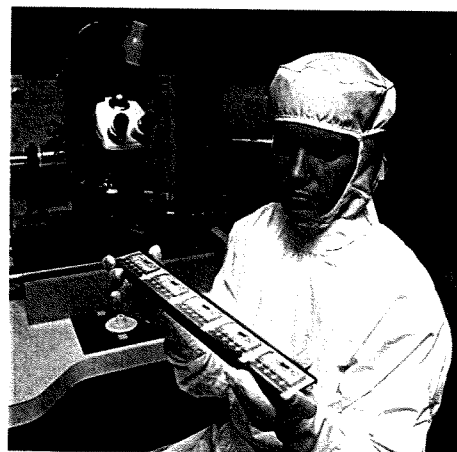
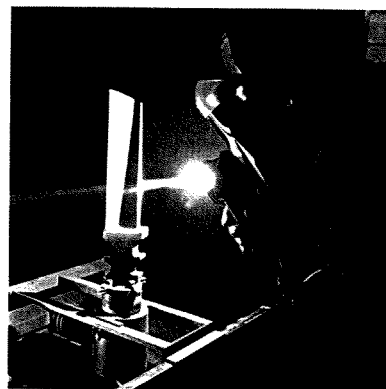
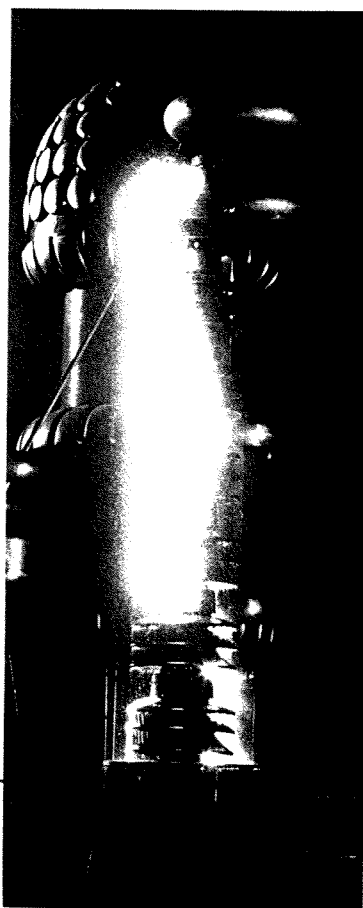




ASEA BROWN BOVERI

***ANNUAL REPORT 1990***



The Asea Brown Boveri Group is a global, \$ 27 billion company serving electric power generation, transmission, and distribution customers as well as industrial, environmental control, and mass transit markets. Approximately half of ABB's sales are in Europe, one quarter in North America, and the remainder in Asia, Australia, and developing countries. ABB's 215,000 employees work within a decentralized company structure which encourages individual responsibility in serving local customer needs.

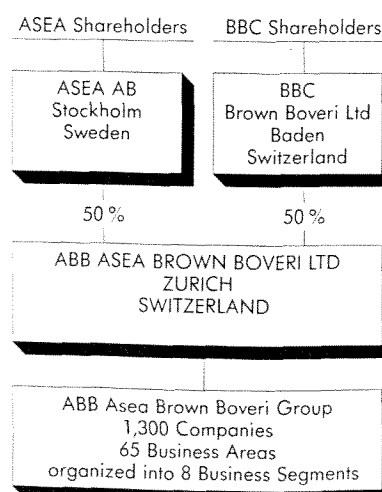
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ABB Asea Brown Boveri Ltd is owned in equal parts by ASEA AB, Stockholm (Sweden), and BBC Brown Boveri Ltd, Baden (Switzerland). ABB Asea Brown Boveri Ltd, Zurich (Switzerland), is the holding company of the ABB Asea Brown Boveri Group with approximately 1,300 companies around the world. While the shares of ABB are not publicly traded, the shares of the two parent companies are listed on various stock exchanges in Europe and the United States.

This annual report accounts for the consolidated operations of the ABB Asea Brown Boveri Group in 1990. It conforms to OECD guidelines and recommendations concerning the publication of information.

The ABB Group's annual report is published in English, German, and Swedish. The English-language version is binding. All figures shown are in U.S. dollars. In accordance with Swiss law, the holding company ABB Asea Brown Boveri Ltd, Zurich, publishes its own annual report. It is available on request together with a list of major Group companies. In addition, separate annual reports are published by ABB companies in Finland, Germany, Italy, Norway, Sweden, and Switzerland as well as by the Kent group in the UK, the Fläkt group in Sweden, and by ABB Financial Services.



## KEY FIGURES

(US\$ in millions, unless otherwise stated)

	1990	1989	1988
Orders received	29,281	21,640	17,822
Revenues	26,688	20,560	17,832
Operating earnings after depreciation	1,790	1,257	854
Earnings after financial items	1,130	922	560
Net income	590	589	386
Stockholders' equity	4,247	3,907	3,122
Total assets	30,247	24,156	18,965
Capital expenditure for tangible fixed assets	961	783	736
Capital expenditure for acquisitions	677	3,090	544
Expenditure for Research and Development	1,931	1,361	1,255
Operating earnings/revenues	6.7%	6.1%	4.8%
Return on capital employed	19.7%	17.0%	13.6%
Return on equity	14.5%	16.8%	12.5%
Number of employees	215,154	189,493	169,459

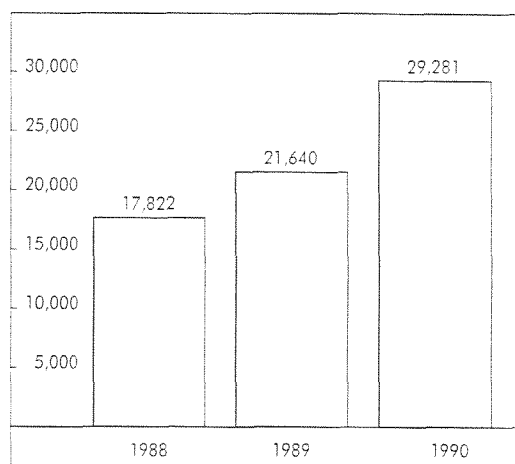
## HIGHLIGHTS IN 1990

- Strong market demand in 1990 stimulated worldwide investment in energy, rail transportation, and environment protection.
- Power Transmission, Power Distribution, Environmental Control, and the Financial Services segments showed considerable earnings improvement. Restructuring programs continued to contribute significantly to the growth in earnings after financial items.
- Orders received increased by 50 percent in Asia.
- Major acquisitions completed during the year significantly improved ABB's market position in North America and Europe:
  - The acquisition of the U.S.-based Combustion Engineering was formally completed in early 1990. The restructuring and integration of this business is proceeding according to plan;
  - In Spain, ABB signed an agreement to take over the assets of the Spanish CCC electrical engineering group;
  - In Portugal, ABB acquired a minority stake in SET, a newly formed company in the power and transportation industries with 5,000 employees;
  - In Germany, a joint venture in railway equipment with Thyssen was formed;
  - In Poland, ABB acquired a majority holding in the joint venture ABB Zamech, and became a partner in the joint ventures ABB Dolmel and Dolmel Drives.
- Joint ventures or cooperation agreements were concluded with existing electrical engineering companies in Czechoslovakia, Hungary, and the USSR.
- Divestitures amounting to approximately \$ 1.1 billion were undertaken in 1990. In the U.S., ABB divested Georgia Kaolin, C-E Minerals, and Sprout-Bauer.

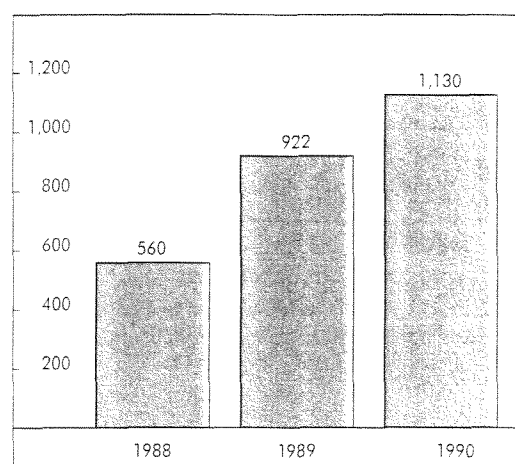
## GROUP DATA

(US\$ in millions)

### Orders Received



### Earnings after Financial Items



## SEGMENT DATA

(US\$ in millions)

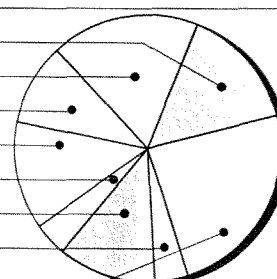
### Orders Received, Revenues, and Earnings

Business Segment	Orders Received		Revenues		Operating Earnings	
	1990	1989	1990	1989	1990	1989
Power Plants	5,999	3,046	4,653	2,733	242	219
Power Transmission	5,397	4,828	5,287	4,775	421	288
Power Distribution	3,104	2,644	3,073	2,516	199	140
Industry	4,208	2,637	4,022	2,363	123	153
Transportation	1,798	1,119	1,309	957	22	57
Environmental Control	4,067	3,115	3,684	2,843	168	130
Financial Services	1,092	1,422	1,092	1,446	175	95
Various Activities	7,290	5,206	7,126	5,250	514	319
<b>Total</b>	<b>32,955</b>	<b>24,017</b>	<b>30,246</b>	<b>22,883</b>	<b>1,864</b>	<b>1,401</b>
Intra-Group transactions	- 3,674	- 2,377	- 3,558	- 2,323	- 74*	- 144*
<b>Net Total</b>	<b>29,281</b>	<b>21,640</b>	<b>26,688</b>	<b>20,560</b>	<b>1,790</b>	<b>1,257</b>

\* Includes corporate items

### Revenues per Segment (as % of Total Revenues)

Power Plants	15%
Power Transmission	18%
Power Distribution	10%
Industry	13%
Transportation	4%
Environmental Control	12%
Financial Services	4%
Various Activities	24%





# REGIONAL DATA

(US\$ in millions, unless otherwise stated)

## Revenues\* and Employees

### Western Europe

	Revenues		Employees end of year	
	1990	1989	1990	1989
Austria	311	235	2,343	2,483
Belgium	258	213	1,630	1,529
Denmark	622	455	4,740	3,714
Finland	1,150	1,052	10,210	9,222
France	602	416	3,543	3,575
Germany	3,196	2,517	34,045	33,350
Italy	1,425	1,143	10,851	11,024
Netherlands	375	371	2,140	2,145
Norway	1,194	1,148	9,860	10,849
Portugal	82	52	618	627
Spain	567	293	6,593	2,790
Sweden	3,152	3,218	32,310	32,685
Switzerland	1,073	684	14,977	15,115
UK	1,060	984	6,189	5,252
Others	164	161	842	743
<b>Total</b>	<b>15,231</b>	<b>12,942</b>	<b>140,891</b>	<b>135,103</b>

### North America

	Revenues		Employees end of year	
	1990	1989	1990	1989
USA	4,409	2,764	29,256	14,024
Canada	1,074	509	4,339	3,097
<b>Total</b>	<b>5,483</b>	<b>3,273</b>	<b>33,595</b>	<b>17,121</b>

### Asia and Australasia

	Revenues		Employees end of year	
	1990	1989	1990	1989
West and South Asia	999	785	8,782	8,866
Southeast Asia	403	233	2,298	2,031
Northeast Asia	689	392	662	559
Japan	677	420	1,279	1,028
Arabian Peninsula	395	451	968	1,209
Australasia	821	504	6,190	5,300
<b>Total</b>	<b>3,984</b>	<b>2,785</b>	<b>20,179</b>	<b>18,993</b>

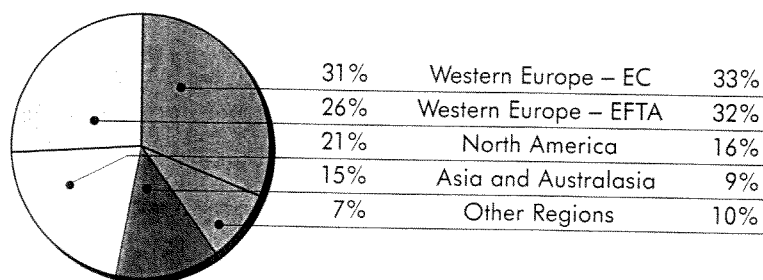
### Other Regions

	Revenues		Employees end of year	
	1990	1989	1990	1989
Latin America	994	780	11,425	12,237
Africa	692	639	3,878	6,000
Eastern Europe	304	141	5,186	39
<b>Total</b>	<b>1,990</b>	<b>1,560</b>	<b>20,489</b>	<b>18,276</b>

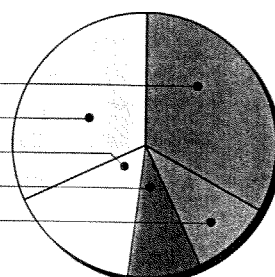
**Group Total** 26,688 20,560 215,154 189,493

\* Total Revenues for all ABB companies from third party customers in each region.

## Revenues



## Employees



## LETTER FROM THE CHAIRMEN

In the three years since its formation ABB has grown from a company with a primarily European orientation to a global leader in its markets. Today, North America represents almost one quarter of the Group's worldwide sales, the Asian activities are growing fast, and ABB has the largest world market share for electrotechnical industry products. However, we regard excellence to be more important than size, and feel that the Group is well positioned to provide its customers with high quality products and services, now and in the future.

Favorable economic conditions accompanied ABB's development until early 1990, when an increasing number of countries started to stagnate. Events in the Middle East added to the climate of uncertainty. But ABB's businesses have so far only marginally been affected. Infrastructure projects and industrial investment products have proven less vulnerable to short-term drops in demand, while standard products now are clearly affected. In 1991, the downturn will have a larger influence on ABB.

In 1990, ABB sales and profits developed well. The positive impact from restructuring programs has more than offset the short-term burden on results from recent acquisitions in the United States. In Western Europe and North America the emphasis is now on consolidation of recent gains as well as further quality and productivity improvements. Selected expansion is being pursued in Eastern and Central Europe and investments are being made in Asia, where ABB sees a large potential in the coming years.

We believe these efforts will significantly contribute to further long-term growth and higher profitability, and therefore are confident about the Group's long-term future.

Both parent companies of the ABB Group aim to provide investors with a maximum degree of transparency concerning their investment. ASEA AB will therefore propose to its shareholders a split of its shares into two separate securities, one representing its 50 percent holding in ABB, the other its remaining industrial and financial investments. For BBC Brown Boveri Ltd, its non-ABB operations are minor, and no corresponding split is contemplated.

Merging ASEA and BBC into one strong company while simultaneously integrating acquired operations has placed a tremendous but challenging responsibility on all of our employees. To further bond the Group together and allow employees to personally and directly share in the Group's future success, ABB in 1990 introduced a worldwide employee share ownership program to which more than 40,000 subscribed.

We would like to express to our management and all ABB employees our appreciation and gratitude for their successful accomplishments in the past year.



Dr. Curt Nicolin  
Co-Chairman  
ABB Asea Brown Boveri Ltd  
Chairman ASEA AB

Dr. Fritz Leutwiler  
Co-Chairman  
ABB Asea Brown Boveri Ltd  
Chairman BBC Brown Boveri Ltd

## PRESIDENT'S COMMENTS

In 1990, the third year of ABB's brief history, business activities and earnings generally developed satisfactorily and in line with our strategies and plans.

Orders received rose by 35 percent to \$ 29.3 billion, an addition of about \$ 7.6 billion. This increase reflects acquisitions, good internal growth in local currencies in several markets, but also a weak dollar. There were clear recessionary signals during the second half of the year, with stagnating order intake experienced for standard products which are early in the business cycle. These developments were, however, compensated for by growth in infrastructure projects in the areas of Power Plants, Transportation, and Environmental Control. Furthermore, order intake in Asia expanded by some 50 percent last year.

Earnings after financial items in 1990 grew by 23 percent to \$ 1,130 million, thus doubling between 1988 and 1990. As expected, the acquisition of Combustion Engineering and the subsequent restructuring of this company and other recent acquisitions had a negative impact on results last year. However, the other ABB operations, primarily in Europe, showed good profit increases as the restructuring and rationalization programs started in 1988 and 1989 continued to have a positive impact. Very satisfactory increases in earnings were recorded by the ABB companies in Germany and Italy, and a strong increase also occurred in Switzerland. Finland in particular and also Sweden continued their solid performance. Among medium-sized ABB companies, those in Austria, Denmark, France, Malaysia, and Saudi Arabia showed particularly good increases in results. It is vital that in the next few years the recent acquisitions in North America achieve a turnaround similar to what we have already accomplished in Europe. Taxes, primarily deferred taxes, were higher in 1990 and caused net income to stay roughly the same, going from \$ 589 million to \$ 590 million.

The Power Transmission Business Segment continued its substantial growth in operating earnings in 1990 with an increase of \$ 133 million. This success is an example of major synergies resulting from the original merger, utilization of economies of scale, and effective rationalization in acquired units. The Power Distribution, Environmental Control,



**Percy Barnevik**  
President and Chief Executive Officer

and Financial Services segments also showed good profit development. That was also the case for a number of business areas within the Various Activities Segment. The Transportation Segment was negatively affected by restructuring of newly acquired units and some unprofitable contracts. The Industry Segment developed well in its established operations but assumed control of several new companies in process engineering, and process automation and instrumentation, which required major changes and resulted in additional costs. These latter two segments are now well positioned for a return to better profitability and improved market positions. Finally, the Power Plant Business Segment experienced very strong growth and reached about \$ 6 billion in orders received through the inclusion of C-E's combustion and nuclear activities and through market success with gas turbines and combined-cycle plants. Restructuring of acquired units and a major increase in R&D expenditures, however, limited the Segment's profit development.

Other than the notable exceptions of Germany and a number of countries in Asia, most of our major markets are in different stages of heading towards a recession. The first to be affected are standard products for industry and construction, followed by investment goods, and finally some of the infrastructure businesses. Since the duration and depth of the recession cannot be predicted, we are preparing ourselves for different possible recession scenarios. Measures have already been taken to adjust employment, output, and inventory levels. In ABB's decentralized organization, which includes a fair number of newly appointed, young general managers who have not yet lived through a real recession, it was important to start cost reduction measures well before we are significantly affected by the recession.

Cancellation of projects in Iraq and Kuwait and delays of projects in the Gulf area have had some negative impact on earnings in 1990 and will affect production levels in some plants in 1991. However, we also expect to participate in the rebuilding process which has already started.

## **Consolidation and Selected Growth**

ABB, and to a certain extent the entire electrotechnical industry, has experienced unprecedented change in recent years. Since the ABB merger was announced in 1987, approximately 100,000 additional employees have been added to the Group through acquisitions and joint ventures. Orders received increased by 64 percent between 1988 and 1990. It is now time to consolidate what we have achieved, particularly in Western Europe and North America. The value of divestments made in 1990 together with the dissolution of the joint venture in Italy in January 1991, amounted to some \$ 1.4 billion, while acquisitions amounted to \$ 700 million. This pattern will continue over the next several years, as will our efforts to reduce working capital and to free up and dispose of real estate. The objectives are to concentrate on our core businesses, to achieve the full benefits from our internal improvement programs, and to increase our financial freedom for later expansion.

Although some acquisitions were made in Western Europe in 1990, it was at a slower rate than in 1988 and 1989. In Spain the CCC group of companies was acquired, in Portugal several important joint ventures were formed, and in Germany a large joint venture in transportation was concluded with Thyssen. In Italy the joint venture with Ansaldo in the power plant field was dissolved and replaced by a technical cooperation agreement in steam turbines and nuclear power. The Group is now well represented in most West European countries and we are preparing for "Europe 1992" with increasing product exchanges between countries.

In North America, where ABB now has its second leg in the industrialized world, we have also begun a phase of consolidation. Restructuring of operations is progressing well. This will produce a more decentralized, flat organization, reduce overhead costs and lower working capital as well as streamline manufacturing. From a more competitive base in North America we expect profitable, longer-term growth both domestically and in exports, where we can take full advantage of ABB's global distribution network. R&D activities in North America are also being strengthened. ABB in the U.S. has an unparalleled breadth of competitive products and systems in the power and environmental control fields. In addition, our product range in process and factory automation as well as instrumentation has been considerably expanded by the recent acquisitions. We are optimistic about ABB's future in North America, even if it will take some time before profitability is acceptable.

ABB has vigorously pursued the new opportunities created by the unification of Germany and the opening up of Central and East European markets. These countries have a tremendous need to upgrade their infrastructures in the energy supply, transportation, and environment fields. Many industries must be modernized. Most of this work needs to be done within each respective country. ABB's participation will therefore focus on acquisitions, joint ventures, or technical cooperation agreements. By the end of 1991, ABB expects to have some 10,000 employees in the former East Germany, while in Poland, Czechoslovakia, Hungary, Yugoslavia, and

the Soviet Union the number of employees in acquired companies or joint ventures is expected to exceed that number. Beyond the infusion of capital and the transfer of technology, a major joint effort is required to transform these companies into competitive and world-class members of the ABB family – fully adjusted to the requirements of a demanding market economy. Several hundred of these new employees are undergoing training in ABB companies in Western Europe. Our goal is to have local managers head these East European companies. About 1,000 technical people from all over Eastern Europe will have attended ABB courses by late 1991. The wisdom of this far-reaching commitment to industrial development in Central and Eastern Europe has been questioned in view of the uncertainty and possible turbulence these countries may face. While we are convinced this is the correct long-term strategy, we have further limited our financial exposure. Our experience so far in regard to improvements in productivity and quality from our companies in Poland, for example, is very encouraging.

The Asia and Australasia region is increasingly becoming an area of strategic focus for ABB. In this fast-growing region of the world with the majority of the world's population and a tremendous need to expand its infrastructure, we see a third leg of ABB emerging. Between 1988 and 1990 order intake from this region more than doubled, from \$ 2 to \$ 4.7 billion, and investments are being made to build strong local manufacturing and engineering capabilities. In Australasia, where we already have a major local presence with some 6,000 employees, we are now in a phase of consolidation. In about a dozen newly industrialized and developing countries in Asia we are focusing on expanding existing manufacturing facilities and starting green field operations. The training of local people and the transfer of technology will play an important role, just as in Eastern Europe.

## **ABB – A Clean Technology Company**

Concern for the protection of the environment is growing throughout the world. The

environmental debate is increasingly focusing on so-called "sustainable growth", combining the two objectives of environmental protection and economic development. In many countries legislation requiring higher standards for clean air and water is being adopted. The recent U.S. Clean Air Act was an important step in this direction. To reduce automobile emission levels as well as highway and air traffic congestion, rail-based transportation is being promoted for both long-distance and urban travel.

As stated earlier, ABB is well placed to respond to these and similar environmental protection needs as well as to contribute to the conservation and efficient use of energy and other resources. ABB is a leader in clean-coal burning and flue-gas cleaning technologies. Its high-efficiency power plants and electric transmission systems as well as new technologies in drives, automation, and indoor climate, all contribute to the conservation of energy. Recycling and waste-to-energy technologies address the municipal and industrial solid waste problem and ABB's high-speed train and mass transit systems offer better solutions to transportation problems.

As its activities have become increasingly environment driven, ABB has evolved into a "clean technology" company. All the above mentioned activities respond to urgent human needs; they also represent substantial business opportunities for ABB in the coming years.

## **Customer Focus**

We have described ABB's international organization as "multi-domestic". This means that we strive to be a local company everywhere and that we have many "home countries". Our decentralized structure with 1,300 legal entities and some 5,000 profit centers reduces bureaucracy and brings the entire organization closer to the customer. In addition to this decentralized organization, we have initiated major programs to improve our customer focus:

- **Internally** we are training several thousand managers to substantially improve the quality of our products and services. We

are aggressively pursuing programs to compress cycle times in all our processes, from product development to delivery times, from small standard products to large plants. This "quality" thinking and this time-based management approach will spread from managers to the shop floor, and will also make ABB more internally efficient.

- **Externally**, our "customer interface" is also improving significantly. Our decentralized organization definitely gives us a head start. In addition, we are putting in place the mechanisms to integrate our businesses to address the customer's total needs and to be more responsive to those needs. Our performance measurements define success from the customer's point of view, and we are focusing more closely on these "report cards" from our customers.

Clearly, our emphasis on customer satisfaction is not just another improvement program, but an effort to permanently change our value system and to orient the entire ABB family in the direction of the customer. We at ABB know that we have assembled the greatest electrical engineering company in the world, but we will not be satisfied until our customers feel the same.

## Employees – Training and Development

We have intensified our efforts to train ABB employees in an environment characterized by rapid change and new challenges. Beyond the traditional management abilities, many Group management positions require unique "crossborder" skills – managers must be able to operate and communicate effectively in a variety of national and cultural environments.

To further internal cohesion and understanding, some 400 upper-level managers from all business segments and countries attended three-day seminars in small groups, discussing critical issues and strategy implementation with Group Executive Management. A similar series of seminars involving an additional 1,000 managers is under way for

1991/92. The goal of the program is to communicate and build acceptance for a common set of values throughout ABB.

In addition to these Group-level efforts, training and development programs in each national company have been reinforced and involve employees at all levels, from the workshop floor to company management. Some programs target unpromoted employees in workshops and offices and aim at broadening work tasks and increasing responsibility in order to increase motivation, competence, and individual growth. Management development programs have helped to implement ABB's policy of recruiting managers from within the Group. For instance, almost all our business area managers have been developed internally or come from companies acquired since the merger.

To achieve its ambitious goals, ABB needs outstanding and dedicated people. I believe we have them and, together with my colleagues, I want to thank all our employees for their unrelenting efforts and substantial contributions in 1990.

## Outlook for 1991 and Beyond

The changing economic climate together with recession signals make a short-term forecast difficult.

ABB is already affected by the general economic downturn in its standard products, in particular in Northern Europe and in North America. Increasingly, the Group's investment goods sectors will also feel the impact, while infrastructure businesses so far show continued strength. In contrast to the negative impact on results of the economic downturn, our restructuring projects in North America, and to a lesser extent in Europe and in some overseas markets, will continue to generate profit improvements.

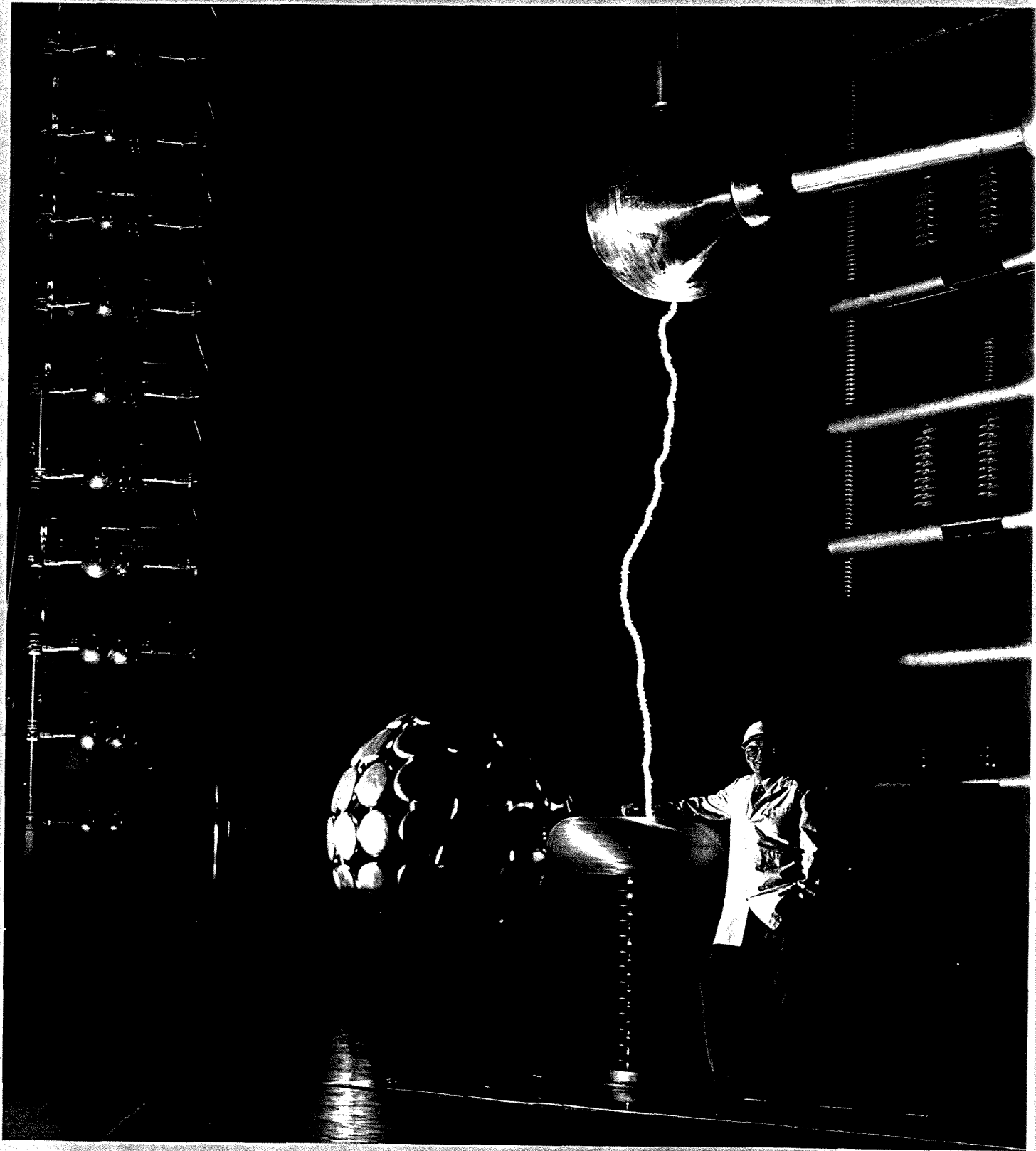
On balance, based on our current economic assessment, I expect earnings after financial items in 1991 to reach at least last year's level.

Long-term I can repeat last year's forecast of good earnings growth based on both margin improvements and volume increases.



Percy Barnevik  
President and Chief Executive Officer

## ***BUSINESS REVIEW***



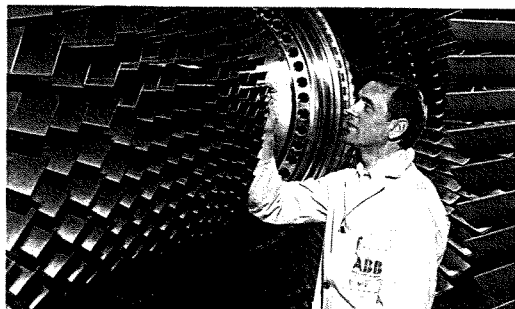


# ABB IN BRIEF

## Business Segments

## Major Business Areas

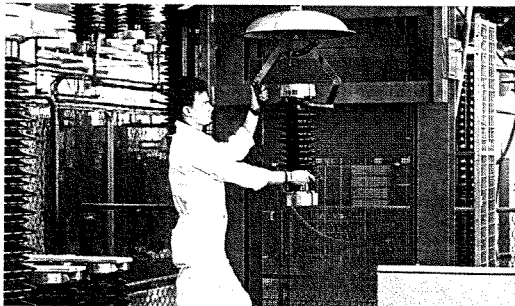
### Power Plants



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Gas-Turbine Power Plants  
Utility Steam Power Plants  
Industrial Steam Power Plants  
Pressurized Fluidized Bed Combustion  
Systems (PFBC)  
Hydro Power Plants  
Nuclear Power Plants  
Power Plant Control  
Fossil Combustion Systems  
Fossil Combustion Services

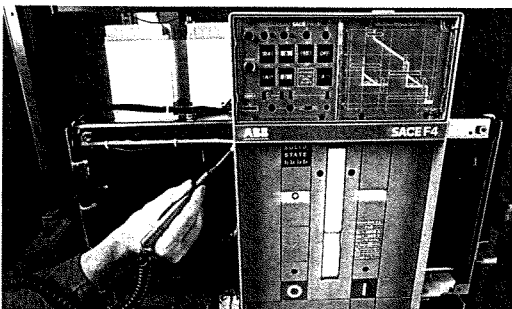
### Power Transmission



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Cables and Capacitors  
Distribution Transformers  
Electric Metering  
High-Voltage Switchgear  
Network Control  
Power Systems  
Power Transformers  
Relays

### Power Distribution



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Low-Voltage Apparatus  
Low-Voltage Systems  
Installation  
Medium-Voltage Equipment  
Distribution Plants

### Industry



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Drives  
Process Automation  
Marine, Oil and Gas  
Process Engineering  
Instrumentation  
Metallurgy  
Semiconductors



## Scope of Activity

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Clean and efficient power generation systems for utility and industrial customers. Turnkey fossil-fueled power plants as well as components including boilers for all types of fuel, turbines, generators, transformers, switchyards, power plant engineering, instrument-and-control equipment. Gas-turbine or combined-cycle power plants for peak-, intermediate- or base-load demand. Advanced light-water and high-temperature, gas-cooled nuclear

reactors. Nuclear fuel. Hydro-electric systems to power entire regions or local communities. PFBC clean coal systems that meet stringent emissions standards and efficiency requirements. Power plant control systems as well as retrofit and maintenance expertise to improve the efficiency and extend the lifetime of power systems worldwide.

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Complete range of systems and products for power transmission networks. Low-, medium-, and high-voltage cables, wires, and capacitors. Oil-immersed and dry-type distribution transformers. Electromechanical and electronic meters. Circuit breakers and other high-voltage apparatus as well as conventional and gas-insulated substations. Supervision, control and energy management systems for power networks. High-voltage

direct-current transmission and reactive power compensation systems. Power and industrial transformers as well as transformer components. Protection and substation control products and systems.

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Low- and medium-voltage equipment and systems for the local distribution and control of electrical energy to utility, industrial, and residential power customers. Low-voltage products include circuit breakers, switches, contactors, fuses, push buttons, and programmable controllers. Low-voltage systems such as switchgear, motor control centers, distribution boards, and control equipment. Medium-voltage equipment includes products and

systems for networks in the range of 1 to 44 kV utilizing both vacuum and SF<sub>6</sub> technologies. Medium-voltage distribution plants and turnkey delivery of substations and electrification projects. Installation of these products and systems as well as of light-current infrastructures for every type of application.

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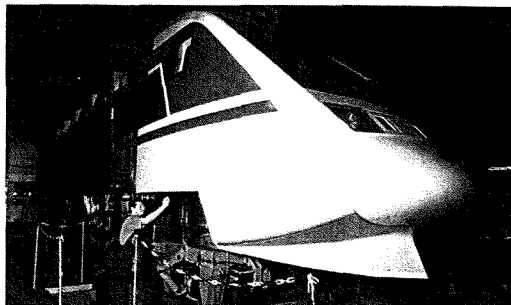
Products, systems and engineering/erection services for the optimization of industrial processes. Drives includes AC and DC drives, large motors, and drives systems. Process Automation provides automation systems and related engineering services. Marine, Oil and Gas includes products and systems for off-shore, on-shore and marine customers. Process Engineering provides heat transfer

systems, automation and simulation systems, and engineering services. Instrumentation supplies indicating, controlling and recording equipment. Metallurgy includes furnaces, presses, and test systems. Semiconductors provides high-power discrete devices, including thyristors and diodes.

## Business Segments

## Major Business Areas

### Transportation



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Main Line Rolling Stock  
Mass Transit Vehicles  
Fixed Railway Installations  
Signalling  
Complete Rail Systems  
Railway Maintenance

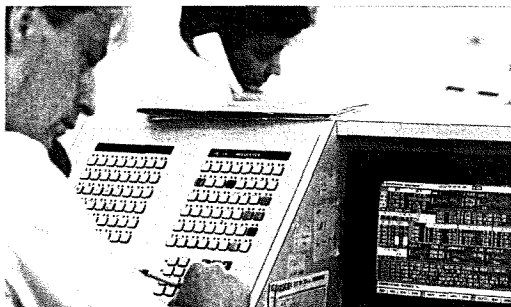
### Environmental Control



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Industrial Processes  
Indoor Climate  
Gadelius  
Service  
Components  
Cooling  
Resource Recovery

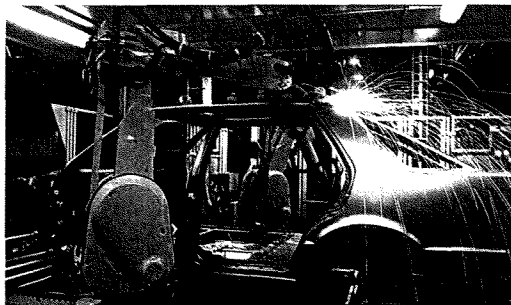
### Financial Services



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Treasury Centers  
Leasing & Financing  
Insurance  
Trading & Trade Finance  
Stockbrokerage &  
Investment Management  
Other Financial Services

### Various Activities



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Power Lines & General Contracting  
Installation Material  
Service  
Motors  
Robotics  
Superchargers  
Communication and Information Systems  
District Heating  
Telecommunications  
Others

## Scope of Activity

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Rolling stock for main line rail transportation, including diesel and electrical multiple units, tilting trains, and very high speed trains. Diesel-electric and electric locomotives. Light and heavy transport vehicles for mass transit systems. Electrical equipment such as propulsion packages for locomotives, mass transit vehicles, and coaches as well as air conditioning systems. Communication and control systems. Mechanical equipment including

bogies, car and locomotive bodies. Fixed power supply installations and signalling systems. Complete rail systems including civil engineering.

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Outdoor Environment – air pollution control; resource recovery; industrial waste water treatment; and environmental services.

Indoor Climate – indoor climate systems and products for industry; commercial and public buildings; housing ventilation; and marine ventilation.

Industrial plants and products – paint finishing; pulp and paper process equipment; products for air and energy transfer, air

preheaters, fans, heat exchangers, control valves; refrigeration for food.

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Treasury Centers – manage ABB Group assets, borrowings, and foreign exchange transactions. Leasing & Financing – provides asset-based financing to ABB customers and large financial packages for third parties; undertakes financing for ABB investments. Insurance – direct insurance, reinsurance, and insurance brokerage. Trading & Trade Finance – project and export finance advisory services, countertrading, and commodity

trading. Stockbrokerage & Investment Management – portfolio management, equity, option and bond trading, investment research, and corporate finance services. Other Financial Services – venture capital investments.

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Power Lines and General Contracting – construction contractors on projects such as power plants, transmission lines, and railway electrification. Installation Material – electrical installation equipment for buildings, lighting, and safety products. Service – network of 75 shops and centers in 30 countries for ABB and other customer equipment. Motors – full range of industrial AC motors.

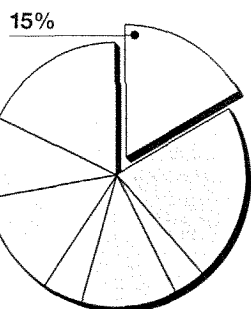
Robotics – complete product line of industrial robots as well as automation systems. Superchargers – medium and large diesel engine superchargers. Communication and Information Systems – broadcasting equipment and antennas. District Heating – complete central heating systems for towns and cities. Telecommunications – satellite communications, radio links, and military systems.

# POWER PLANTS

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	5,999	3,046	2,187
Revenues	4,653	2,733	2,502
Operating earnings	242	219	231
Employees	29,205	16,230	16,081

Segmental Share of Total Group Revenues



## Market Conditions and Performance

The power generation market continues to grow. Environmental concerns and uncertainty about emission control legislation have so far kept back investments in some parts of power generation. However, escalating electrical consumption and shrinking power reserve margins have created a major increase in demand for gas turbines and combined-cycle capacity.

ABB has maintained its strong position in Europe and the Middle East, including an important advance into the UK market. Through acquisitions and investments a major presence has been established in the U.S. A substantial increase in market presence has also been achieved in the Far East.

The demand for gas-fired combined-cycle power plants continued strong in 1990 due to the relatively short construction times and low investment costs, combined with the high efficiency and low emission levels, of this type of plant. Three combined-cycle orders are particularly representative of ABB's position in this vital technology:

- National Power, the largest UK utility, placed an order with NEI ABB Gas Turbines Ltd for a 650 MW combined-cycle plant in Killingholme, Humberside, England;
- Korea Electric Power ordered two gas-fired combined-cycle plants;
- Aluminium Company Bahrain ordered a combined-cycle power plant for smelter operations.

The environmental concerns facing our society favor the use of hydro-generation as a clean, renewable and economic source of energy. ABB continues to maintain its leadership in this area by developing and utilizing the most modern technologies.

ABB has enhanced its position in the presently stable but important market for

large, base-load steam power plants and is specifically targeting the growing service and retrofit market. One of the orders received in 1990 was for a steam turbine generator set for Imatran Voima, Finland.

In nuclear power, in addition to ABB's position as one of the leaders in all major reactor technologies, the service and reload fuel fields are also important markets for the Group. During the year the Swedish State Power Board awarded a series of contracts to ABB Atom for the delivery of reload fuel.

ABB is a leader in clean coal technology, supplying the first three commercial pressurized fluidized bed combustion (PFBC) plants. Operations started successfully in 1990.

The power plant control business also had a very strong year. For example, a significant order was placed by Stadsreininig Amsterdam for control of the largest waste to energy plant now under construction in Europe.

## The 1990s

The comeback of the power generation market will be the hallmark of the 90s. It has already started with a surge in the demand for gas turbines and combined-cycle plants. To benefit from this opportunity, equipment sup-



Gas turbine rotor blades are manufactured to tolerances measured in fractions of a millimeter from high-technology materials. Gas and steam turbines are major components in ABB's complete line of power plant systems.



**ABB's pressurized fluidized bed combustion (PFBC) and gas-turbine technologies combine to make this power plant near Escatron, Spain, an efficient and clean source of electricity.**

pliers will have to respond to a wide range of requirements. Environmental awareness and energy-saving goals will be among the forces driving the development of new technologies. With rapidly increasing R&D investments, power generation will become a truly global business based on large volumes and a worldwide distribution network. Escalating competition in the marketplace will also set high standards regarding customer service and cost efficiency.

ABB is well positioned in power generation to take on these challenges. Its technology base covers virtually every type of power generation equipment. In fossil power, the entire product chain of boiler, turbine generator, emission control, and power plant control can now be integrated into a single system tailored to a specific customer's needs. Major investments are being made in clean coal technologies, spearheaded by the PFBC plants. New concepts are being developed for the growing retrofit-repowering market. In the nuclear field, a pressurized water reactor project in South Korea and several other near-term prospects have formed the base for further development of next-generation nuclear technology. Nuclear fuel is making advances with boiling water reactor fuel successfully introduced in the U.S. and pressurized water reactor fuel in Europe. A joint ven-

ture has been established in Italy with Ansaldo and Fiat for development of the Pius reactor.

The acquisition of Combustion Engineering has established ABB as a local power generation supplier in the U.S. and strengthened Group presence in several overseas markets. The drastic changes in the political environment in Central and Eastern Europe have produced new business opportunities. Joint ventures have already been formed in Poland (ABB Zamech and ABB Dolmel), in Hungary (ABB LANG), and in Yugoslavia. Investments in manufacturing facilities are also being made in the eastern provinces of Germany. Efforts will continue to further strengthen our global network of local marketing and manufacturing units.

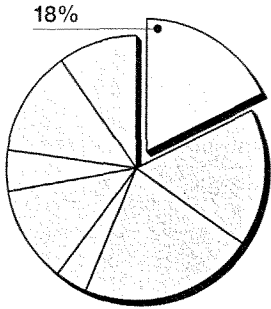
The internal restructuring program started in 1988 to increase efficiency and take advantage of economies of scale is proceeding well. The original streamlining of engineering and production between Switzerland and Germany has been completed. A similar program for Combustion Engineering is well under way and integration plans for the new joint ventures in Europe are being implemented.

# POWER TRANSMISSION

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	5,397	4,828	3,376
Revenues	5,287	4,775	3,619
Operating earnings	421	288	28
Employees	34,099	34,978	23,569

Segmental Share of Total Group Revenues



## Market Conditions and Orders

Investments in power transmission installations typically follow power plant investments with a time lag of two to four years. It is anticipated that the upsurge in power plant business will be reflected in power transmission from the middle of the 90s and beyond.

The other major driving force – the effects of which can be seen already – is the need to increase the capacity and efficiency of existing power transmission systems.

In 1990, the market for transmission products showed considerable regional variations. In Europe, investment activity is still reasonably high in most EC member states, but has decreased appreciably in the Nordic countries. The slowdown in housing starts in the United States is beginning to affect order intake for certain products but may be partially offset by an increasing level of retrofit investments by utilities. The Far East shows strong growth. The demand in South America is generally low and will revive only when the major countries there again show good growth rates.

HV Switchgear recorded a strong order intake in 1990. Significant orders were obtained in Egypt and several Far East countries for both open and gas-insulated substations.

Among the stand-alone products, circuit breakers and measuring transformers showed strong increases. Distribution transformers also developed very well, in spite of the onsetting slowdown in the U.S. market. In Europe, demand is now rising for the dry-type Resibloc transformers favored by an increasing number of utilities and industries for environmental reasons. Other business areas with good volume development were Power Transformers, and Cables and Capacitors. The Cables and Capacitors Business Area received an order for another HVDC submarine cable for the Konti-Skan link between Sweden and Denmark. The Relays Business Area received an important order from Holland for distributed control systems for five substations according to the Pyramid™ concept, and also signed an agreement with several U.S. power utilities for the delivery, over five years, of equipment to protect the 500 kV transmission system along the Pacific coast.

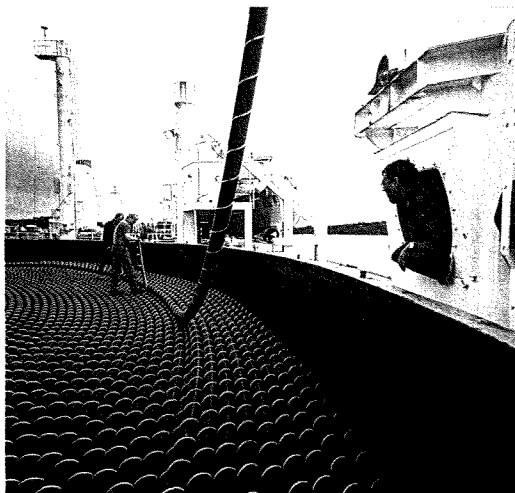
## Technology

Technical development is driven by market forces which, during the coming decade, will demand systems and components with lower losses, new features to improve controllability, more integrated functions, and still higher reliability. The increasing cost of electric energy will justify more advanced low-loss designs. New materials will be employed, such as the amorphous core steel now available for distribution transformers.

New solutions, such as the controlled series capacitor, are being developed to improve the controllability of existing systems. Ultimately, an entire family of "fast controllers" for power systems will emerge.

Further advances in computer-based technologies will result in more integrated systems for supervision, control, and protection. One example is the recently introduced Pyramid™ system for totally coordinated protection and control of substations. Another example is the circuit breakers with features for synchronized switching. High reliability is

A 500 MW, 350 kV submarine cable being loaded for transport to New Zealand, where it will be part of the Cook Strait HVDC transmission system linking that country's North and South islands.





achieved by simplification in design and the increasing use of built-in, self-checking features.

Among the recently launched conventional products are an SF<sub>6</sub> circuit breaker, based on the self-blast technique, and the Exlim™ surge arrester, in which developments in material technology have resulted in considerably improved protection characteristics.

In product development, the pooling of research data, knowledge, and experiences from several countries and Centers of Excellence is now common practice and is showing rewarding results.

The expenditures for research and development, \$ 300 million in 1990, will continue to rise, with an increasing share devoted to new or emerging technologies.

## The Future

The still growing share of electricity in total energy consumption, as well as population increases and industrialization in developing countries, are important drivers behind the upsurge in power generation. Trends toward more dispersed generation and more non-utility generators will require flexible transmission systems.

Utilities are now facing difficulties in obtaining rights-of-way for new transmission lines. At the same time, higher consumption and changed consumption patterns require increased capacity in parts of the network – the alternative is a higher frequency of black-outs.

Increased controllability of power flows will be required to cope with reduced operating margins and increased demands on operational flexibility.

Environmental concerns will not only affect the design and location of new installations, but may also require redesign, relocation, or forced retirement of existing facilities.

Today's transmission technology can help solve some of the problems but intensive further development is required to meet all the challenges of this decade.

The strategy of the Power Transmission Segment is to enhance customer value by utilizing its global strength in technology and know-how, in financing, and in the competence and commitment of its employees. ABB's unparalleled presence around the world will make it possible for the Segment to be a leading local supplier of power transmission equipment and systems in all markets.

**The Sandy Pond converter station outside Boston, Massachusetts, is one of three such stations supplied by ABB for the Quebec-New England HVDC power transmission project.**



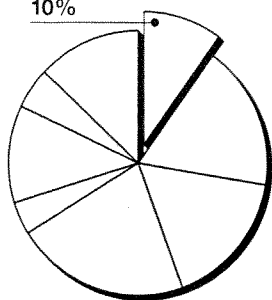
# POWER DISTRIBUTION

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	3,104	2,644	2,522
Revenues	3,073	2,516	2,480
Operating earnings	199	140	106
Employees	25,429	25,121	24,769

Segmental Share of Total Group Revenues

10%



## Market Conditions and Performance

Market conditions for Power Distribution products in most major countries were stable and showed moderate growth during 1990. Demand in Germany continues to be strong while the order rate in some other European nations shows signs of slowing.

The low-voltage apparatus business experienced good growth in programmable logic controller and sensor markets while the demand for electromechanical products slowed. ABB continued its buildup of marketing channels and programs, emphasizing improved delivery, service, and total quality.

Due to declining industrial investment and lower building activity, early measures were taken to adjust capacity to demand levels. Simultaneous to the expected lower growth in Western Europe has been the opening of new Central and Eastern European markets, where growth strategies are being implemented.

As the largest manufacturer in the world of medium-voltage equipment, ABB's market position in this product line further improved during the year. Sales and marketing initiatives were undertaken in Eastern Germany as well as Southern Europe and the Far East.

ABB maintained its position as the leading supplier of Distribution Plants in Northern Europe. Growth in developing countries resulted in several substantial awards for complete distribution plants and substations.

The Installation Business Area experienced solid growth in 1990. Already the market leader in Northern Europe for complete electrical infrastructures for buildings and plant sites, the Business Area continued its strategy to expand operations into Central and Eastern Europe as well as Asia.

The Power Distribution Segment product program was completed in 1990 with the

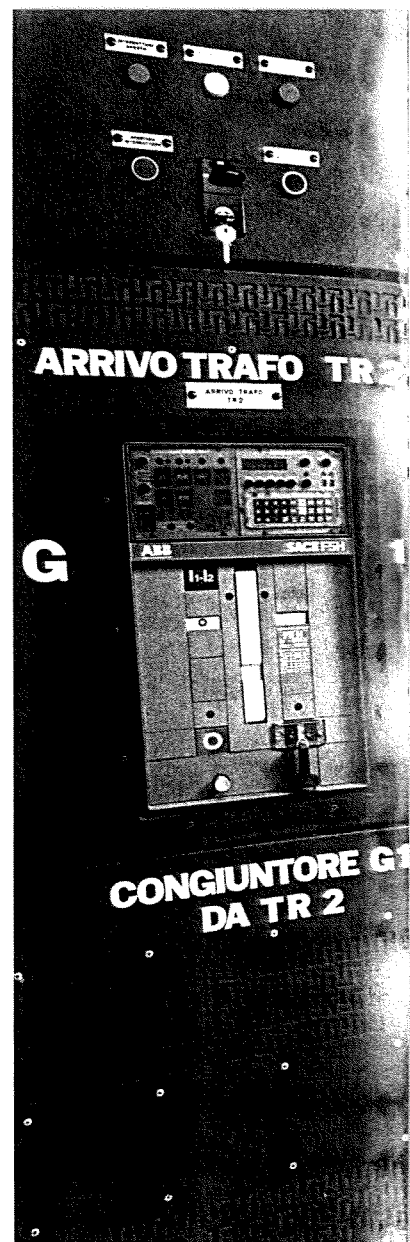
**ABB provides complete low- and medium-voltage power distribution switchgear as well as integrated monitoring and control systems for customer facilities such as this chemical plant located in Ferrara, Italy.**

introduction of a new generation of highly efficient and reliable circuit breakers and compact switchgear as well as micro-computer based systems for monitoring, supervision, and control.

## Restructuring and New Operations

Most of the products in the Power Distribution Segment can now be preengineered and manufactured in small quantities with specifications to satisfy a particular customer need. The organization is now adapted to fit this short lead time, customer-oriented manufacturing, and marketing environment.

In Czechoslovakia ABB and EJF have signed an agreement to form a joint venture company. EJF is a leading supplier in that







country of medium-voltage circuit breakers, switchboards, and other medium- and low-voltage apparatus for power distribution systems.

As a market leader, the Power Distribution Business Segment is capitalizing on its size and product line strengths to further drive investment in the latest manufacturing systems.

## The 1990s

Improving and expanding ABB's local market presence in more than 40 countries while opening new markets in Central and Eastern Europe as well as in Asia will contribute to future success. Strong research and development commitments will provide the next generation of products and systems for the world market. The Power Distribution Segment will continue its profitable growth.

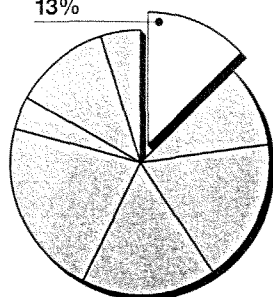
# INDUSTRY

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	4,208	2,637	2,296
Revenues	4,022	2,363	2,381
Operating earnings	123	153	43
Employees	27,973	20,451	20,056

Segmental Share of Total Group Revenues

13%



## Market Conditions and Orders

Despite slowing growth in many customer industries, overall market demand remained strong throughout the year. Driven by the need to improve quality, reduce costs, and comply with increasingly stringent environmental regulations, customers continued to make investments.

Orders sharply increased during the year, primarily as a result of improved market positions both in Europe and North America. The following orders received in 1990 deserve special note:

- AC sectional drive system for Mitsubishi Heavy Industry for an Indonesian paper

mill. This order demonstrated ABB Drives' leadership position versus Japanese and European competitors;

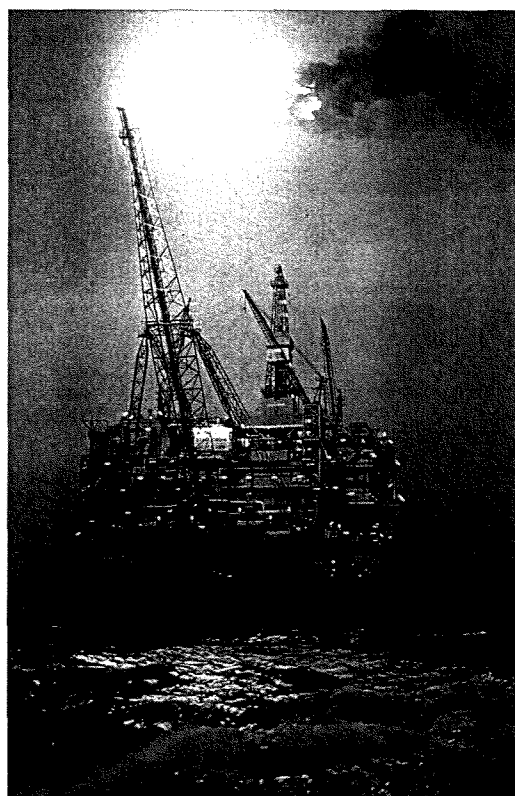
- Lummus Crest's Catofin process was selected for a 500,000 metric tons per year methyl tertiary butyl ether plant in Texas. The Catofin process provides a simpler, more reliable, and less costly approach for the reformulation of gasoline;
- Electric propulsion equipment for three cruise ships. This order further strengthens the Marine, Oil and Gas Business Area's leadership in this market.

## Restructuring and New Operations

1990 was a year of major change for the Industry Segment. The Process Engineering Business Area, consisting of Lummus Crest and Simcon (both from Combustion Engineering), was added to the Segment. Also added was the Instrumentation Business Area, which includes UK-based Kent and the instrumentation activities of C-E's Taylor unit. Through the addition of C-E's AccuRay and Taylor automation systems businesses, the Process Automation Business Area nearly doubled in size. The organization responsible for the development and production of high-power semiconductors was made a separate business area to increase the focus on this important technology. The greater size and combination of these different businesses has broadened the product and application experience base. Finally, it has strengthened ABB's local presence in a number of markets, particularly in North America and several Asian markets. Thus, the Industry Segment has substantially enhanced its ability to meet the needs of its industrial customers.

## Synergies

Successful cooperation between Segment operations resulting in significant customer benefit is illustrated by the cooperation between Drives and Process Automation in supplying a highly automated new green field paper mill in South Carolina, USA. Through an integrated single window system including the ABB Master distributed control system and



ABB's Marine, Oil and Gas business is the leading supplier of electrical equipment and control systems for North Sea oil platforms.

ABB drives, plant operators can quickly diagnose and address operating problems from any control station in the mill.

During 1990 the Segment also demonstrated its ability to bundle ABB products and services to the steel industry. ABB was chosen as the sole electrical contractor for a state-of-the-art steel complex in Korea. Here ABB acted as the systems integrator for all electrical systems, combining transformers, switchgear, instrumentation, drives, and automation equipment.

## The 1990s

The Industry Segment's strategy is based on optimizing all phases of customer industrial processes. Most importantly, systems have been established to focus the entire organization on a mission of customer satisfaction. As industrial customers increasingly look for strategic partnerships based on value from their suppliers, the combination of the Segment's global capabilities with strong, customer-focused local organizations will constitute a major source of competitive advantage.

Any one of more than 30 work stations, using an ABB Super-Vise process automation system, can control, monitor, and analyze all operations in one of Europe's largest and most efficient bottling plants, located in Wakefield, England.



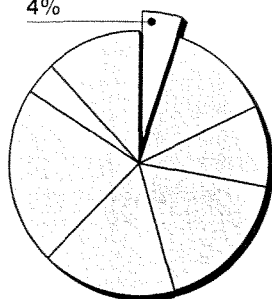
# TRANSPORTATION

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	1,798	1,119	993
Revenues	1,309	957	747
Operating earnings	22	57	46
Employees	9,107	6,801	4,732

Segmental Share of Total Group Revenues

4%



## Market Conditions and Performance

Market trends in the transportation business were very positive throughout the year. As the world's leading supplier of rail systems and equipment, ABB is favorably positioned to meet the increasing demand for efficient, non-polluting transport systems.

The expected comeback of railbound transportation systems is now increasingly evident.

The ABB Transportation Segment capitalized on its strong position as a total supplier offering an extensive product portfolio for transportation solutions, and this resulted in a substantial increase in orders received. The following orders deserve special mention:

- 75 freight locomotives ordered by the Swiss Federal Railways, with an option for 19 ad-

ditional units. This is the largest single order ever booked by the Segment for electric locomotives;

- 19 ICE high-speed trains for the German railways. This is an addition to an order for 41 trains ordered from a German consortium of which ABB Henschel is a major partner;
- Danish State Railways - 35 IC3, three-car passenger trains as a continuation of earlier orders totalling 50 trains. Also ordered were 17 ER-Regional four-car trains for electrified sections of the Danish system, and 12 type EA locomotives;
- An increased presence in Middle and Far East markets led to major orders booked in Turkey, Iran, and Indonesia.

## New Operations

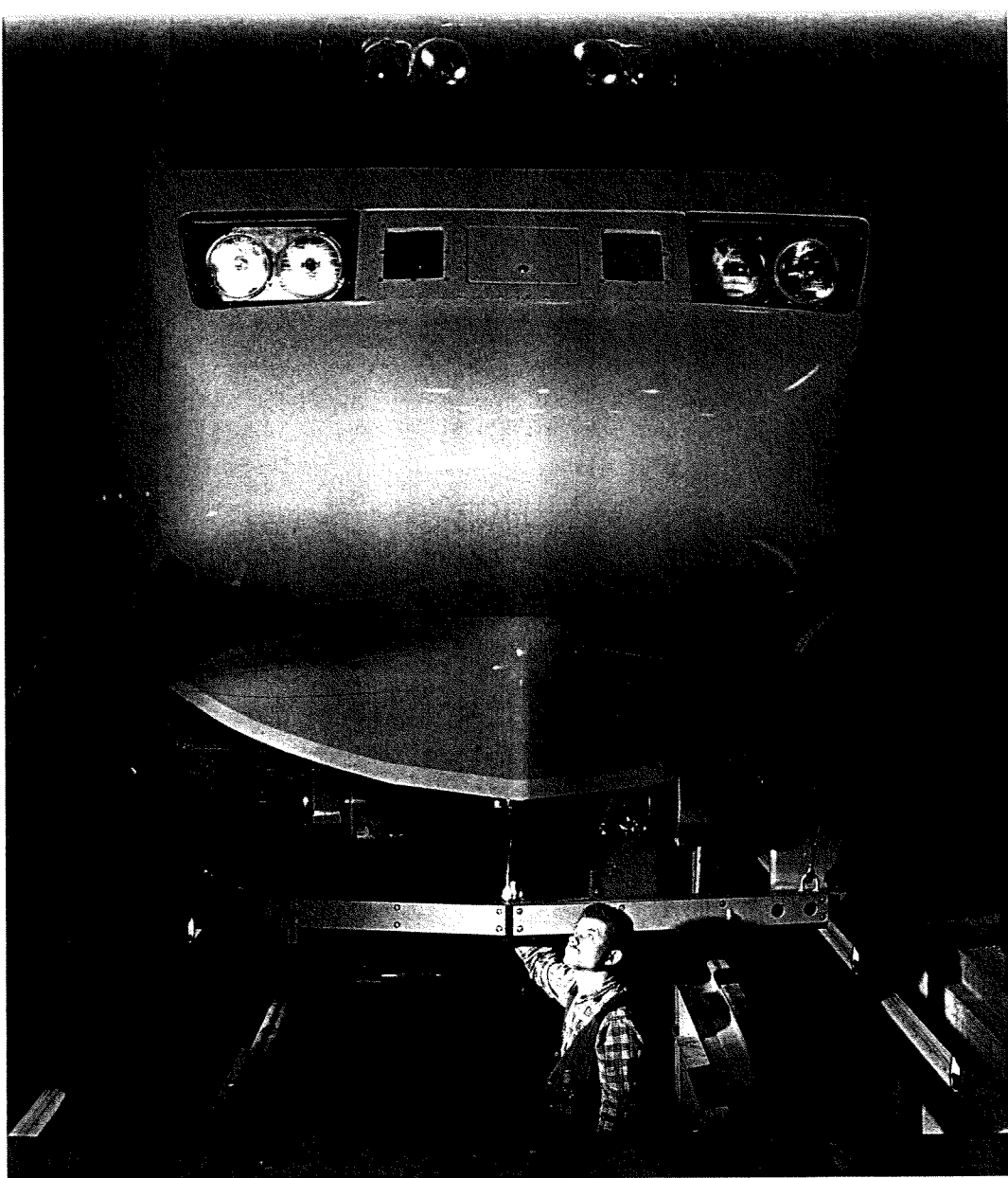
The Transportation Segment's strong market presence was further enhanced through additional acquisitions and strategic alliances. The most significant was the joint company formed with Thyssen in Germany. ABB and Thyssen are equal owners of the new company, called ABB Henschel, with management responsibility lying with ABB. The establishment of this new enterprise was in response to market demand for complete railway systems to meet the challenge of upcoming structural changes in the transportation sector and within railway companies. This grouping of electrical and mechanical capabilities will enable this new company to plan and market complete rail vehicles and rail transportation systems. It will have a turnover of well over one billion Deutschmarks, and a workforce of approximately 3,900.

In Australia, where ABB has been a successful supplier for many years, the Group further strengthened its position by acquiring COMENG, a local manufacturer of rolling stock. Further acquisitions were made in Denmark and Portugal.

The ABB Transportation Segment now has production facilities in most major European countries, the United States, and Australia. Crossborder manufacturing integration and realization of synergy effects will further improve ABB's position as a competitive supplier.

The new IC3 intercity train, developed by ABB Scandia for the special needs of the Danish State Railways, offers the latest in diesel-powered technology as well as passenger amenities such as telephone and telefax services.





The ABB X2000 tilting train, here shown in assembly, represents the latest in fast-train technology. The X2000 was put into operation on the Stockholm–Gothenburg line in 1990 and has reduced travel time between the two cities by nearly 25 percent.

## The 1990s

Growing problems of congestion and pollution generated by road and air transportation will make clean, efficient railbound transportation systems a favored solution in the '90s.

This will lead to a rapid expansion and upgrading of public transportation systems. High-speed trains will become a competitive alternative to road and air transport. Efficient mass transit systems will be a necessity in an increasing number of large cities. We will also see expansion of goods transport on rail with faster freight trains and improved cargo handling systems.

As a leading total systems supplier, ABB is very well positioned to offer complete solutions for all major rail transportation needs, including several different concepts for high-speed and very high-speed trains.

ABB's extensive product range is supported by heavy investments in research and development, both in products and in complete train systems, to maintain its position at the leading edge of technology.

The Group plans to play a leading role during the next decade in this rapidly growing market.

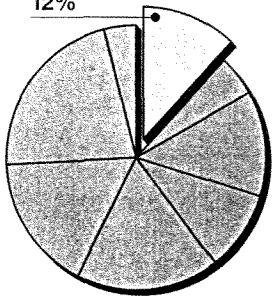
# ENVIRONMENTAL CONTROL

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	4,067	3,115	2,790
Revenues	3,684	2,843	2,515
Operating earnings	168	130	77
Employees	21,666	20,999	19,996

Segmental Share of Total Group Revenues

12%



## Market Conditions and Order Intake

Market demand for environmental protection, cleaning, and control systems continues to increase throughout the industrialized world.

The Environmental Control Business Segment consists primarily of the ABB Fläkt businesses, which focus on air and energy technology and provide systems and products for environmental protection, energy saving, efficient industrial processes, and indoor climate control. ABB Fläkt provides these environmental control products and services to customer groups including the construction, power, automotive, pulp and paper, and food industries.

ABB Fläkt is today the world leader in environmental control products and services. The following orders received in 1990 reflect the broad scope of Segment businesses:

- Design through assembly of a complete auto paint facility plant in Oakville, Ontario, Canada, for the Ford Motor Company;
- Flue-gas cleaning system for a coal power plant in Taipei, Taiwan;

- Desulfurization and gas cleaning system for a coal-fired power plant in Asnaesverket, Denmark;
- Ventilation system for the rail transportation tunnel under the English Channel;
- Air conditioning and ventilation systems for five cruise ships.

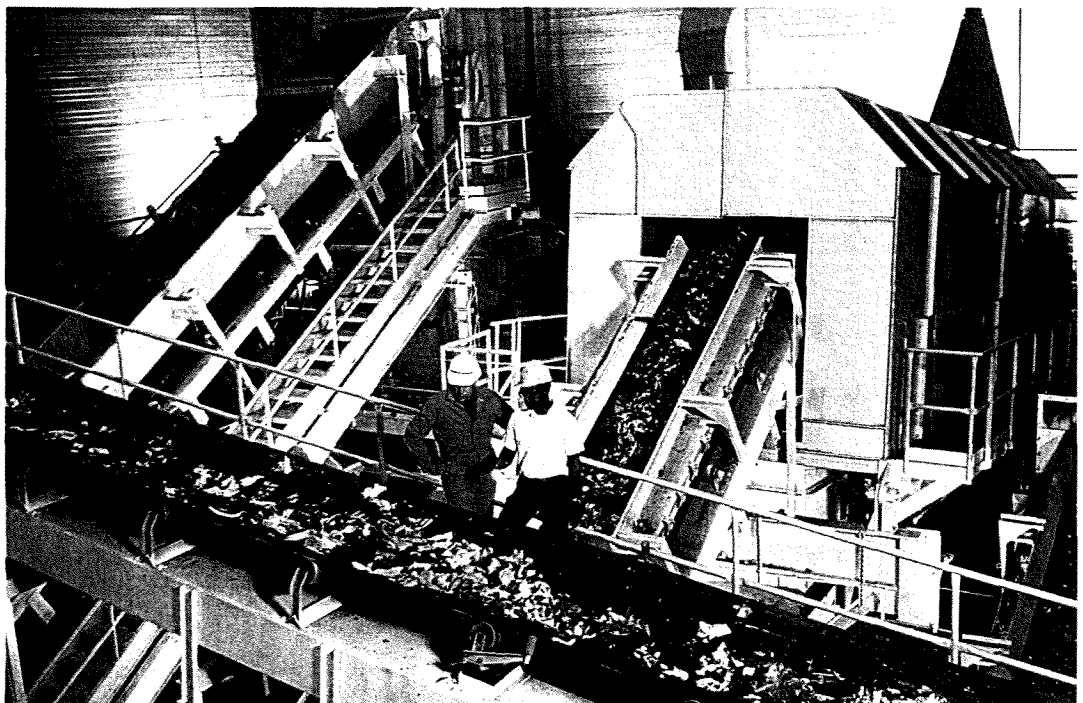
In the United States the passage of the 1990 Clean Air Act established a framework for utilities and manufacturers to reduce pollution sources. Long-term investment programs can now be planned and executed, particularly in flue-gas desulfurization systems for power plants. The Industrial Processes Business Area has been headquartered in Atlanta, Georgia, since early 1990 and is the U.S. market leader in industrial process technologies.

The need for up-to-date pollution control systems in Central and Eastern Europe offers opportunities for ABB to assist in improving both the indoor and outdoor environments in these nations.

## Operations and Restructuring

The addition of the environmental operations of Combustion Engineering in early 1990 increased the Business Segment's market presence in the U.S. and added significant technological strength in the resource recovery and hazardous waste fields. In early 1991 the Ransburg paint finishing operations, headquartered in Indianapolis, Indiana, were acquired. These operations will enhance ABB's market position in the United States and Japan.

Municipal waste is presorted and shredded prior to burning at the Mid-Connecticut (USA) waste to energy plant built by ABB Resource Recovery Systems. The facility has met or exceeded some of the most stringent air compliance standards in America.





The major industrial markets which the Environmental Control Segment supplies are also served by other ABB business areas. For utility and independent power producers, the Environmental Control and Power Plant segments team together to structure and deliver the best possible air pollution control systems. In supplying paint finishing systems, coordination with the Robotics and Process Automation business areas make lowest-cost, best-technology bids easier to achieve, for the mutual benefit of the customer and ABB.

## The 1990s

The increasing worldwide awareness of the effects of pollution and the need for improved environmental protection is resulting in more stringent regulations and demands to conserve resources. Technologies now exist that can support "sustainable growth" – that is, continued industrial development without further degradation of the environment.

The industrial environmental field will be a growth industry in this decade and beyond for companies that can help their customers produce energy and products in a more efficient and environmentally sound manner. Environmental Control occupies a technological leadership position in air pollution control as well as indoor climate systems, industrial dryers, and paint finishing systems. The Segment is expanding the range of its products to provide total environmental services including audit and waste water treatment. The Environmental Control Segment intends to provide systems to help sustain worldwide industrial growth while safeguarding the environment. Strong growth is expected to double the size of this Business Segment by the mid-1990s.



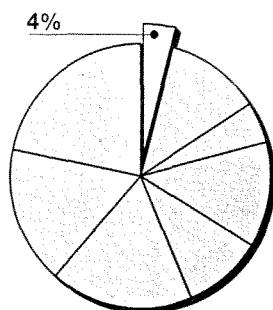
One of the world's first operational, full-scale De-Nox cleaning systems for a waste to energy plant was installed by ABB Fläkt during 1990 at the München Süd incineration plant in Germany.

# FINANCIAL SERVICES

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	1,092	1,422	1,065
Revenues	1,092	1,446	1,046
Operating earnings	175	95	74
Employees	715	597	515

Segmental Share of Total Group Revenues



## Market Conditions and Performance

Despite volatility in the world's financial markets, 1990 was a very successful year of expansion for this Business Segment. Local Treasury Centers were established in Germany, Switzerland, the UK, Canada, and Australia. New leasing companies were formed in Denmark and Canada, an investment management company was established in Norway, a new stockbrokerage company in the Netherlands, and a Financial Services holding company in the UK. After Combustion Engineering joined the Group last year, ABB's Financial Services expanded rapidly to serve the new, combined U.S. operations.

The goal of Financial Services is to be profitable on a stand-alone basis and to maximize synergies within ABB's industrial operations. Its relations with these operations are always at arm's length. The Group's companies utilize Financial Services only if these services are price competitive. In this way the autonomy of the industrial companies is maintained while economies of scale are fully utilized.

The following projects illustrate the synergies between operations and the expertise Financial Services contributes to Group success:

- HVDC, New Zealand: To support Power Systems' successful commercial bid for this \$136 million project, Project Finance arranged the financing for the proposal, ABB Credit signed a leasing contract for equipment, ABB Credit B.V. arranged interim financing, the World Treasury Center served as lenders, and Sirius supplied credit risk insurance;
- Alba, Bahrain: For this \$480 million contract award to ABB Kraftwerke for gas and steam turbines, Project Finance arranged and negotiated a multi-source financing package involving six different countries,

and ABB Trading negotiated and will manage a required offset obligation calling for equity/loan investments in local industry;

- New Jersey Transit Authority, USA: ABB Credit structured a crossborder leasing arrangement for six Swedish-built locomotives for New Jersey Transit on such beneficial terms that the agreement was expanded by the Authority to cover nine more locomotives for a total order value of \$66 million;
- ABB companies issued medium- and long-term debt instruments totaling \$ 1.25 billion. By lengthening the maturity structure of the Group's liabilities, the total financing cost for ABB was reduced and availability of funds assured.

## Operations

The success of ABB Financial Services is the result of a concentrated focus on five guiding principles:

1. Act as "super wholesalers" focusing on large, complex, tailor-made transactions which allow Financial Services to add value;
2. Focus on niches where Financial Services has a competitive advantage and special know-how;
3. Financial Services needs the best people in its field to succeed; therefore, special attention is paid to attract, develop, and retain the key asset of this business – eager and committed employees. An international trainee and job rotation program provides a pool of top-level professionals for the future;
4. Risk control is the theme of the business – broking is always preferred to position taking. Profitability objectives are not only related to equity but also to the risk taken on each operation. Return on risk is a key operational measure.
5. Financial Services operates closely with the industrial operations in all major markets according to ABB's multidomestic concept.



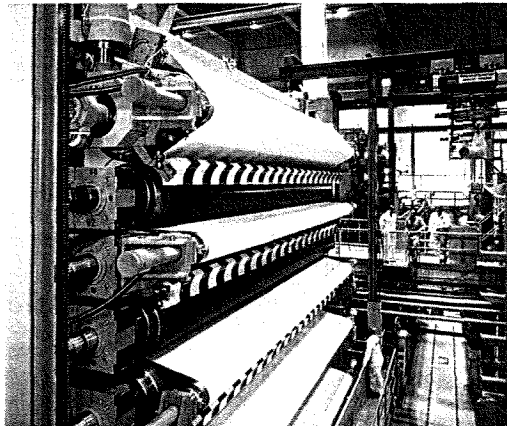


The ABB World Treasury Center has the main responsibility for Group financing in international money and capital markets.

## The 1990s

Tighter money markets and higher capital requirements on banks have created a global liquidity squeeze. Responding to ABB's needs, the Treasury Centers will focus on increasing the maturity of the Group's debt.

Governmental privatization and deregulation policies, growing budget deficits, and increasing signs of a global recession all create a need for alternative means to finance desperately needed infrastructure projects in the developed as well as the developing world. In Eastern Europe, for example, the need for infrastructure investment is tremendous, but financial sources there are scarce or nonexistent. Leasing solutions, countertrade arrangements as well as credit insurance, political risk coverage, and currency hedging are all increasingly becoming the key factors in the successful sale of large-scale ABB projects. There is a solid market for sales support services provided by ABB Financial Services. The Segment looks forward to a decade of continued geographic and financial expansion as ABB's industrial operations grow.



An example of the services provided by ABB Treasury Consulting is the cash pool arrangement structured for a Scandinavian pulp and paper company.

# VARIOUS ACTIVITIES

## Segmental Overview

US\$ in millions	1990	1989	1988
Orders received	7,290	5,206	4,961
Revenues	7,126	5,250	5,037
Operating earnings	514	319	300
Employees	66,960	64,316	59,741

Businesses in this segment are primarily electrical engineering-related operations. The larger business areas are treated separately below.

## Power Lines and General Contracting

Order intake for this business was good. The strategy to focus on areas of market leadership continued. Power generation and transmission as well as transmission lines and railway electrification systems remain strong businesses. Promising opportunities are emerging in the mining, materials handling, and grain storage industries. The market position in Eastern Germany was strengthened through the acquisition of Energiebau Dresden.

## Installation Material

This business area was created in January 1991. It consists primarily of the electrical installation material companies ABB Stotz, ABB CEAG, and Busch-Jaeger Elektro, headquartered in Germany, and ABB Elettroconduttore, located in Italy. The companies now comprising this business area have expanded very quickly during the past several years and together represent more than \$1 billion in revenues with very good profitability. Market conditions in Germany are expected to fuel continued growth in revenues and earnings.

## Service

Markets for the Service Business Area remained very strong throughout the year, with an overall order increase of 47 percent. Particularly strong demand was experienced in the Nordic countries, as well as in France and Belgium. The market trend toward externally purchased service contracts is continuing and should drive further growth in sales and earnings.

## Motors

The European market for small industrial AC motors experienced a moderate decline during 1990, and capacity was adjusted accordingly. As one of the largest suppliers to this market, orders received by ABB Motors were maintained at last year's levels in this more competitive environment. Business development is focused on higher productivity through modernization of manufacturing facilities and total customer service programs.

## Robotics

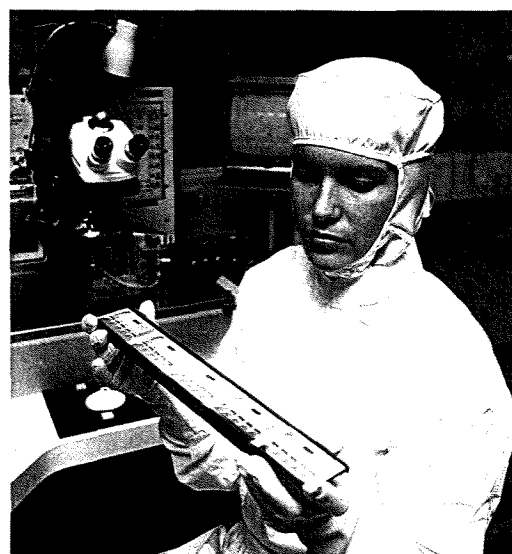
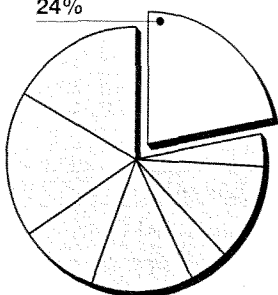
The markets for ABB robots continued strong in most industrialized countries and as a result orders increased. An increased presence in the Far East has resulted in higher order volume from that region. During 1990, Robotics also improved its position in Europe with important orders from Ford, Nissan, Citroën, and Volvo. In the U.S., the robotics division of Cincinnati Milacron was acquired, which significantly strengthened ABB's presence there.

## Superchargers

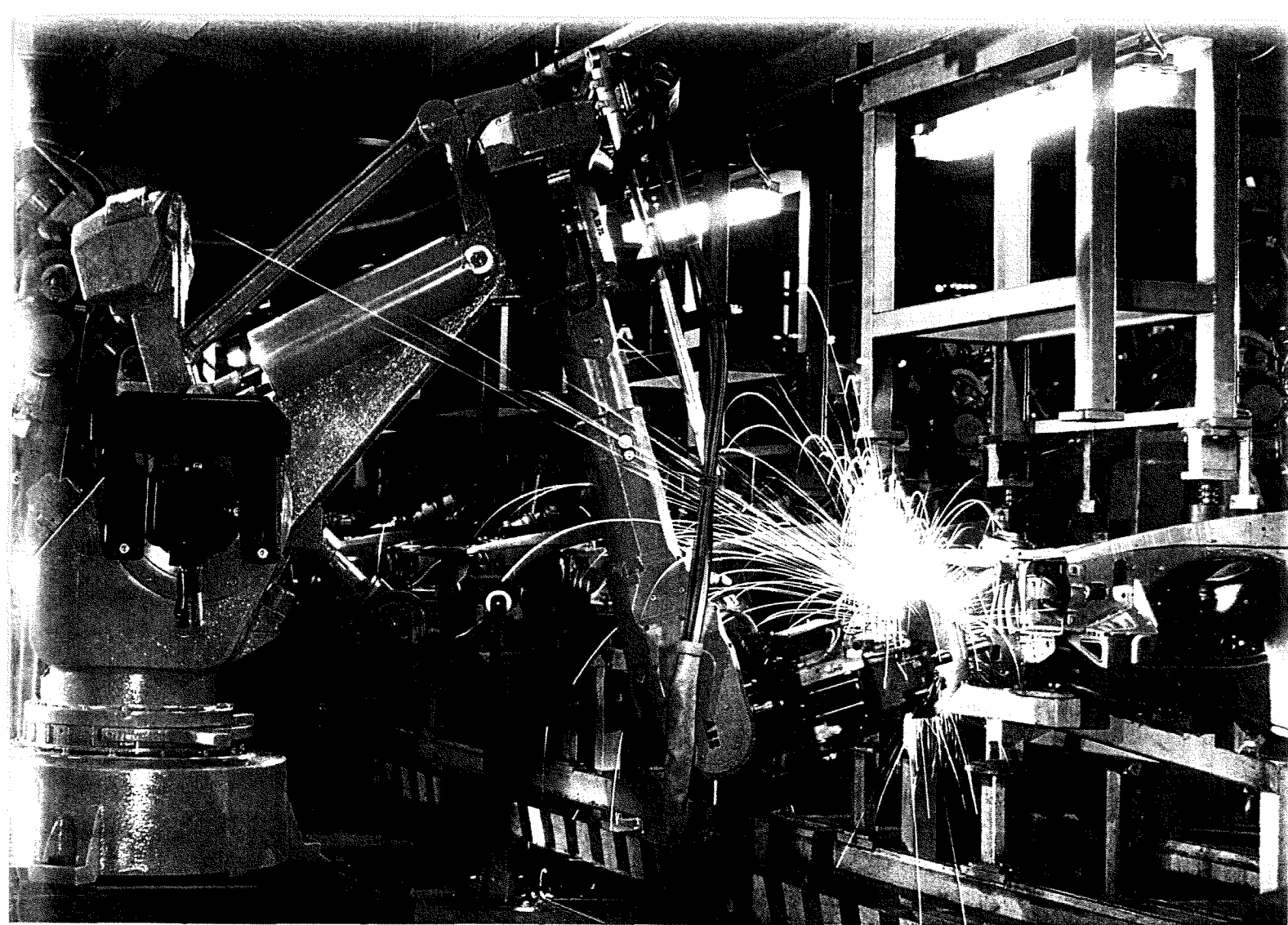
This business area continued to successfully grow. It is the world's leading supplier of superchargers for medium and large diesel engines. This business is benefiting from markets which continue to grow, particularly the

Segmental Share of Total Group Revenues

24%



ABB's Integrated Circuits business includes the manufacture of thermal printheads for bar code printing in a wide range of industrial and commercial applications.



positive shipbuilding business cycle and the rising demand for diesel-fueled power plants. Improved delivery procedures, an extension of the service network, and restructuring measures also contributed to the overall improvement in performance.

## Telecommunications

This business area consists mainly of the telecommunications activities of the EB Corporation, which is headquartered in Norway. Orders received continued to develop positively. EB is a world leader in satellite communication systems, particularly for marine telecommunications applications. Other products include radio link, military, and business communications equipment.

## Other Activities

– ABB Asea Skandia, the largest electrical wholesaler in the Nordic region, experienced declining markets, particularly in Sweden. ABB Selfa, a manufacturer of

standard electric products and installation material, and ABB Truck, a producer of battery-driven fork-lift trucks, showed modest gains. The integrated circuits business of ABB HAFO showed satisfactory development.

- ABB Plast, an industrial plastics group specializing in composites and other advanced materials for special applications as well as for traditional insulation, experienced a declining market. ABB Powdermet, a development company with advanced powder metallurgy technologies, has good market opportunities.
- ABB District Heating is a leading supplier of preinsulated pipe systems for district heating and cooling of houses, offices, and factories. Including acquisitions, order levels increased substantially and first orders have been booked in Poland and Eastern Germany.
- ABB Communication and Information Systems, a maker of broadcasting transmitters, was affected by delayed projects and lost revenues in Middle East markets.

**The IRB 6000, ABB Robotics' new, heavy robot, is being introduced to the market in 1991 following extensive testing at customer sites in the automotive and materials handling businesses.**

# RESEARCH AND DEVELOPMENT

## Overview

US\$ in millions	1990	1989	1988
Expenditure for R&D	1,931	1,361	1,255

## Technology Leadership

ABB is a technology-based company. It is the role of R&D to build and maintain the technological competence of ABB businesses. This requires a thorough understanding of what markets demand as well as what is technologically possible. R&D objectives include productivity improvement, implementation of advanced electronic systems including high-power devices, development and application of computer and software techniques, and improved pollution control systems.

The ABB Group's total R&D investment amounts to \$ 1.9 billion, or 7 percent of sales. More than 90 percent is spent by the individual Business Areas. Each Business Area has full responsibility for both short- and long-term R&D in its own fields of operation.

## Corporate R&D Activities

The role of the Corporate R&D Organization is to provide specialized skills and resources that can be most effectively and efficiently managed on a centralized basis. It

conducts research in areas where, although the potential benefits to ABB are large, the technical risk is substantial; and where the benefits are of generic interest to more than one business. An important role for Corporate R&D is to provide a window to the future, to identify early the changes and developments in global science and technology that have the potential to significantly impact ABB's businesses.

Some specific examples of ABB research activities include:

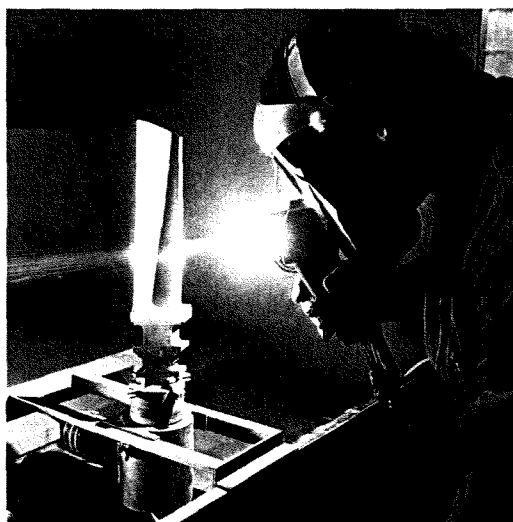
**Combustion:** Improvement of combustion processes to increase fuel utilization and reduce emissions. Areas of specific interest are fluid dynamic modelling and catalytic burning.

**Power Semiconductors:** Power semiconductor devices are key components for several ABB activities including transportation, motor drives, and power transmission. Micro-electronic technologies are being integrated into power semiconductors, thereby forming the basis for next-generation equipment.

**Materials:** Developing strategically important materials for future products includes research in powder metallurgy, polymers and composites, ceramics and fiber-reinforced plastics. An example is the use of isostatic pressing for critical turbine parts, which will reduce production costs and improve mechanical properties. The loss-free transmission of electrical current through the use of high-temperature superconductors is being explored through basic research and application-oriented projects.

**Computer Science:** A base is being developed for future control systems within several application areas: industrial process automation, power plants, power network control and protection, power distribution, and factory automation. Software engineering tools, system theory, and artificial intelligence constitute some of the processes being developed and increasingly applied.

ABB is investigating surface and process technologies, such as the application of corrosion resistive layers on turbine blades, to improve the quality and durability of its products.



## Business Segment R&D Applications

**Power Plants:** Practical application of ABB's combined-cycle clean coal research occurred in 1990 with the commissioning of the first three pressurized fluidized bed combustion (PFBC) power plants ever built. The second generation of the premix double cone burner was launched commercially for gas turbines. Significant improvements in the emission levels from coal-fired boilers have been realized through the introduction of a new concentric firing design for the burners.

**Power Transmission:** ABB is the supplier of the world's first large multi-terminal HVDC project, the Quebec-New England scheme, the first two terminals of which were commissioned in November 1990. In Brazil, ABB's 800 kV series capacitors were installed to increase transmission capacity on the AC link between the Itaipu hydro power plant and São Paulo. In the new product line for high-voltage breakers, self-blast current interrupting technology has now been introduced. An example of a new semiconductor application is the outdoor thyristor switch for controlled series compensation systems. The development of microprocessor-based control and protection systems continues with applications in HVDC as well as in AC substations.

**Power Distribution:** Microcomputer-based systems for monitoring, supervision, and control were introduced, as was a new generation of efficient and reliable circuit breakers and compact medium-voltage switchgear.

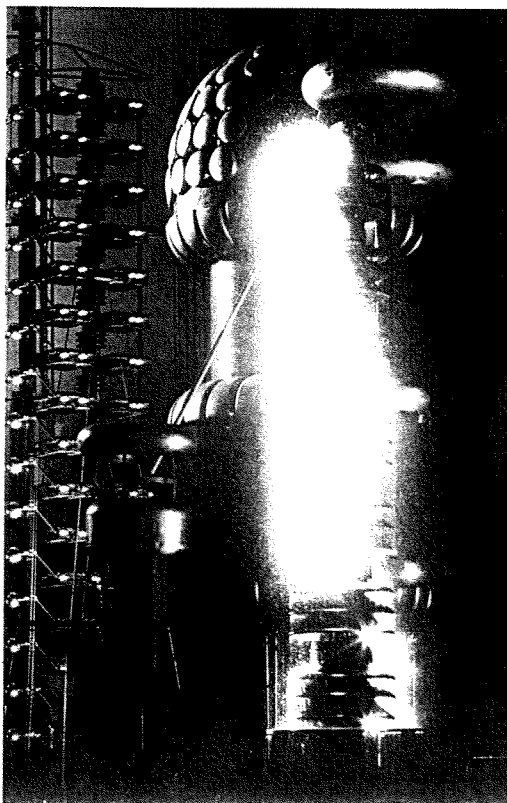
**Industry:** The Master and Taylor MOD 300 process automation systems were further developed to include group alarm functions and enhanced graphics. A series of totally enclosed, fan-cooled induction motors was introduced to the market. Within Instrumentation, a range of process pressure transmitters was developed and introduced which incorporate microprocessor-based electronics and digital serial transmission. The new ABB system for automatic positioning and sway control of container cranes significantly improves operation of this equipment.

**Environmental Control:** Development has been completed on a remote control system for climate monitoring and technical

installations in buildings. A state-of-the-art paint finishing system for Volvo was installed, which improves efficiency and incorporates the latest pollution-control systems. A new range of one-stage high-pressure fans was launched.

**Transportation:** The Swedish X2000 high-speed tilting transit system was put into service on the Stockholm-Gothenburg line in 1990. A new signal and control system, called Automatic Train Protection, was installed as a part of this project. In Denmark, the IC3 intercity train, characterized by light weight and a modular design, was put into operation.

**Various:** Power Lines is developing compact overhead transmission lines to better utilize existing rights of way, minimize environmental impact, and increase transmission capacity. Motors is testing a 6,000 rpm variable speed drive, suitable for compressors. A new generation of highly efficient spot welding robots is being launched. Turbochargers introduced a new generation of high-efficiency units for large diesel engines. District Heating introduced an environmentally friendly, low-cost insulation material for commercial applications.



High-voltage testing to establish design limits is a central part of the development of new ABB products.

## **BOARD OF DIRECTORS**

**Fritz Leutwiler** (born 1924), Co-Chairman  
Switzerland

**Curt Nicolin** (born 1921), Co-Chairman  
Sweden

**Bernd Müller-Berghoff** (born 1930)  
Federal Republic of Germany

**Donald H. Rumsfeld\*** (born 1932)  
United States of America

**Stephan Schmidheiny** (born 1947)  
Switzerland

**Gaston Thorn** (born 1928)  
Luxembourg

**Peter Wallenberg** (born 1926)  
Sweden

**Heinrich Weiss** (born 1942)  
Federal Republic of Germany

The **Chief Executive Officer** and **Deputy  
Chief Executive Officer** of **ABB Asea Brown  
Boveri** participate in Board meetings, but  
have no voting rights.

## **AUDITORS**

**KPMG** Klynveld Peat Marwick Goerdeler SA  
Zurich, Switzerland

\*Appointed member of the Board of Directors as of June 1, 1990.

# GROUP EXECUTIVE MANAGEMENT

**Percy Barnevik** (born 1941)  
President and Chief Executive Officer

Business Segment Environmental Control

**Thomas Gasser** (born 1933)  
Deputy Chief Executive Officer

Corporate Staffs Audit, Control, Corporate Development, Legal Affairs, Management Resources, Taxes and Customs, Export Control

**Arne Bennborn** (born 1932)  
Executive Vice President

Business Regions Latin America, Africa and Arabian Peninsula, West and South Asia, Southeast Asia, Northeast Asia, Australia, New Zealand and Japan

**Erwin Bielinski** (born 1926)  
Executive Vice President

Business Segment Power Plants (Hydro and Nuclear Power Plants, Power Plant Control)

**Sune Carlsson** (born 1941)  
Executive Vice President

Business Segments Power Distribution, Various Activities (Robotics, Telecommunications, Motors)

Business Regions Norway, France, Ireland, United Kingdom, Benelux Countries

**Eberhard von Koerber** (born 1938)  
Executive Vice President

Corporate Staffs Marketing, Information

Business Segment Various Activities (Installation Material, Other Activities Germany)

Business Regions Germany, Italy, Austria, Eastern Europe, Greece

**Göran Lindahl** (born 1945)  
Executive Vice President

Business Segment Power Transmission, Various Activities (Power Lines and General Contracting)

**Göran Lundberg** (born 1940)  
Executive Vice President

Business Segment Power Plants (All Fossil Power Plants, Utility, and Industrial Steam Power Plants)

**Gerhard Schulmeyer** (born 1938)  
Executive Vice President

Corporate Staffs Purchasing

Business Segment Industry, Various Activities (Other Activities USA)

Business Region USA, Canada

**Edwin Somm** (born 1933)  
Executive Vice President

Business Segment Various Activities (Superchargers, Communication and Information Systems, Other Activities Switzerland)

Business Region Switzerland

**Bert-Olof Svanholm** (born 1935)  
Executive Vice President

Business Segment Transportation, Various Activities (District Heating, Service, Other Activities Sweden)

Business Regions Sweden, Finland, Denmark, Spain and Portugal, Iceland

**Craig Tedmon\*** (born 1939)  
Executive Vice President

Corporate Staffs Research and Development, Technology, Quality Assurance

Business Segment Various Activities (Integrated Circuits)

**Lars Thunell** (born 1948)  
Executive Vice President

Corporate Staffs Corporate Finance, Insurance and Risk Management, Investor Relations, Real Estate, Pensions

Business Segment Financial Services, Other Activities (Energy Ventures)

\* Appointed Executive Vice President as of January 1, 1991, to replace Executive Vice President Bertold Romacker, who left ABB at the end of 1990.



# MANAGEMENT

## Corporate Staffs

Audit	Renato Fassbind
Control	Jean-Pierre Dürig / Tomas Ericsson
Corporate Development	Bengt Skantze
Corporate Finance	Günter Bauer
Information	Heinz Haussmann
Insurance and Risk Management	Paul York
Investor Relations	Jan Hedman
Legal Affairs	Beat Hess
Management Resources	Arne Olsson
Marketing	Bruno Broich
Purchasing and Export Control	Roland Andersson
Quality Assurance	Werner Eisl
Real Estate	Walter Stücklin
Research	
– in the Federal Republic of Germany	Adolf Josef Schwab
– in Norway	Markus Bayegan
– in Sweden	Jan Martinsson
– in Switzerland	Maurice Campagna
Taxes and Customs	Alfred Storck
Technology	Klaus Ragaller

## Business Area Managers

### Power Plants

Fossil Combustion Systems & Services	Fred Rullo
Gas-Turbine Power Plants	Fritz Gautschi
Hydro Power Plants	Gorm Gundersen
Industrial Steam Power Plants	Lars Vågman
Nuclear Power Plants	Lennart Fogelström / Manfred Simon
Power Plant Control	Michael Pöhr
Pressurized Fluidized Bed Combustion	Carsten Olesen
Utility Steam Power Plants	Alfred Hohn
All Power Plants Business Areas*	
– in the Federal Republic of Germany	Manfred Simon
– in Sweden	Lennart Fogelström
– in Switzerland	Fritz Gautschi
– in the U.S.	Richard Slember

### Power Transmission

Cables and Capacitors	Lars Erik Wirsén
Distribution Transformers	Olaf Mehus
Electric Metering	Anthony McGrath
High-Voltage Switchgear	Anders Larsson
Network Control	Hubertus Zinke
Power Systems	Anders Narvinger
Power Transformers	Sune Karlsson
Relays	Ulf Gundemark
All Power Transmission Business Areas*	
– in the Federal Republic of Germany	Sune Karlsson
– in Sweden	Anders Narvinger
– in Switzerland	Willy Roos
– in the U.S.	Jan Lindelöw

### Power Distribution

Distribution Plants	Kurt Hakansson
Installation	Tom Sjökvist
Low-Voltage Apparatus	Tom Sjökvist
Low-Voltage Systems	Tom Sjökvist
Medium-Voltage Equipment	Rolf Schaumann
All Power Distribution Business Areas*	
– in the Federal Republic of Germany	Tom Sjökvist
– in Switzerland	Nicolaas Hellinga
– in the U.S.	Jan Lindelöw

### Industry

Drives	Thorolf Damén
Instrumentation	John Notley
Marine, Oil and Gas	Jan Wennesland
Metallurgy	Holger Schubert
Process Automation	Jörgen Centerman
Process Engineering	Jean-Paul Richard
All Industry Business Areas*	
– in the Federal Republic of Germany	Klaus von Hörde
– in Sweden	Lars Erik Lindbäck
– in Switzerland	Alois Sonnenmoser
– in the U.S.	Jean-Paul Richard

\* list limited to the four largest countries



### Transportation

All Transportation Business Areas	Adri Baan
Complete Rail Systems	not named
Fixed Railway Installations	not named
Main Line Rolling Stock	Åke Nilsson
Mass Transit Vehicles	Peter Albexon
Railway Maintenance	not named
Signalling	Reidar Kuvaas

### Environmental Control

Fläkt	Björn Stigson
– Components	Bo Malmgren
– Cooling	Einar Norelius
– Gadelius	Göran Holmquist
– Indoor Climate	Hans Johansson
– Industrial Processes	Jerry Leitman
– New Ventures	Göran Lundgren
– Service	Anders Berg

### Financial Services

Insurance	Lars Wesslau
Leasing and Financing	Thomas Hjelm
Stock Brokerage and Investment Management	Peggy Bruzelius
Trading and Trade Finance	Management Team: Kjell Åkesson Gunnar Johannesson Richard Molvidson
Treasury Centers	Jan Roxendal

### Various Activities

Communication and Information Systems	Wilhelm Tschol
District Heating	Soren Vinther
Energy Ventures	Peter Giller
Integrated Circuits	Erik Björck
Installation Material	Georg Demling
Motors	Birger Titusson
Power Lines and General Contracting	Luigi Ruggieri
Robotics	Stelio Demark
Service	Karl-Erik Ridderstråle
Superchargers	Heinrich Uehlinger
Telecommunications	Asbjörn Birkeland

## Regional and Country Managers

### Western Europe – European Community

Belgium	Hubert van Vreckem
Denmark	Kaare Vagner
Federal Republic of Germany	Eberhard von Koerber
France	Gilles Breguet
Greece	Olof Doverholt
Ireland	Diarmuid O'Sullivan
Italy	Giovanni Bertola
Luxembourg	Jos Graas
Netherlands	Hendrik Kok
Portugal	Hans Henning Hjort
Spain	José Montes Heredia
United Kingdom	Eric Drewery

### Western Europe – EFTA

Austria	Klaus Woltron
Finland	Matti Ilmari
Norway	Kjell Almskog
Sweden	Bert-Olof Svanholm
Switzerland	Edwin Somm

### Eastern Europe and the USSR Region

Martin Thomann

### North America

Canada	Peter Janson
USA	Gerhard Schulmeyer

### Latin America Region

Roberto Müller

### Africa and the Arabian Peninsula Region

Peter Felix

Australia, New Zealand

Ian Imrie

Japan

Eric von Euw

### Northeast Asia Region

John Kempster

### Southeast Asia Region

Gösta Björkenstam

### West and South Asia Region

Amiya Bhattacharyya

# MANAGEMENT'S DISCUSSION – ANALYSIS OF THE GROUP

## Key Figures

(US\$ in millions, unless otherwise stated)

	Total Group		Industrial Operations		Financial Services	
	1990	1989	1990	1989	1990	1989
Orders received	29,281	21,640	28,189	20,218	1,092	1,422
Revenues	26,688	20,560	25,596	19,114	1,092	1,446
Operating earnings after depreciation	1,790	1,257	1,601	1,176	175	95
Earnings after financial items	1,130	922	938	835	178	101
Net income	590	589	455	530	126	68
Stockholders' equity	4,247	3,907	3,348	3,308	899	608
Total assets	30,247	24,156	29,148	22,351	11,210	9,234
Capital expenditure for tangible fixed assets	961	783	935	766	26	17
Capital expenditure for acquisitions of shares and participations	677	3,090	676	3,084	1	6
Operating earnings/revenues	6.7%	6.1%	6.2%	6.2%	–	–
Return on equity	14.5%	16.8%	13.7%	18.2%	16.7%	11.3%
Return on capital employed	19.7%	17.0%	16.6%	15.5%	–	–
Return on total assets	–	–	–	–	14.3%	10.1%
Interest coverage ratio	1.9	2.4	2.0	2.6	–	–
Debt/equity ratio	1.5	1.4	2.1	1.6	–	–
Capital turnover rate	0.98	0.95	0.99	0.95	–	–
Number of employees	215,154	189,493	214,439	188,896	715	597

## Market Conditions and Sales

Signs of an economic slowdown already apparent in some countries in 1989 continued into 1990. Growth rates weakened in North America, the UK, Australasia, and Scandinavia. In some countries in Southern Europe there was a downturn in growth rates during the second half of 1990, whereas demand in Central Europe, particularly in Germany, remained strong. The newly industrialized countries in Asia continued to record strong growth, whereas many developing countries only showed small increases. Developments in Eastern Europe offer great opportunities in the long term, but growth in 1990 was hampered by initial adjustments to a market economy.

Demand in 1990 was good for infrastructure equipment. Many large orders were placed by European railway companies. Certain types of power plants such as gas turbine and combined-cycle showed strong growth, while other power utility

investments continued at a low level. Investment in environmental infrastructure increased strongly. Market demand for industrial automation also kept up well. Slower growth in market demand had some impact on standard products and certain types of capital goods for customers in the construction and manufacturing industries.

Against this background, ABB's orders received in 1990 totaled \$ 29,281 million, an increase of 35 percent compared to \$ 21,640 million for 1989. Adjusted for acquisitions and divestitures, growth was 18 percent or, expressed in local currencies, 8 percent. It was strongest in Asia, North America, and Africa. In Europe, substantial increases were recorded in Denmark, Spain, Switzerland, and the UK. Major orders received during the year included gas turbine and combined-cycle power plants from Asia, Europe, and North America, large orders from the Danish and Swiss state railways, and equipment for air treatment from power utilities and the automotive industry.

On a segmental basis, orders received developed strongly in Power Plants, Industry, Transportation, and Environmental Control.

The conflict in the Middle East only had a limited direct impact on ABB in 1990, but some projects in the Gulf area were delayed and will lead to reduced load in some plants in 1991. At the same time, however, rebuilding projects can be expected later in the year.

Revenues increased by 30 percent, totaling \$ 26,688 million (1989: \$ 20,560 million). Adjusted for acquisitions and divestitures, growth was 11 percent or, expressed in local currencies, 1 percent. The order backlog at the end of 1990 amounted to \$ 25.7 billion, compared to \$ 18.1 billion at the end of 1989.

## **Personnel and Organization**

The number of employees increased by some 35,000 through net acquisitions. Ongoing restructuring and streamlining programs cut net personnel figures by some 10,000. Thus, at year end, the ABB Group had approximately 215,000 employees compared to 190,000 a year earlier. In preparation for an economic downturn in 1991, recruitment of personnel is now very selective and has stopped altogether in many companies. Whenever possible, vacancies will be filled by internal candidates.

ABB continued to decentralize its operations into profit centers and legal entities. In North America, following the acquisition of Combustion Engineering, its operations underwent comprehensive reorganization in line with ABB principles; numerous profit centers were created, headquarters staff was reduced, and a flatter organization was achieved. ABB's decentralized Group organization aims at promoting increased understanding of business demands, local entrepreneurship, and employee motivation. ABB's Employee Share Ownership Program, launched in September 1990 and offered to some 160,000 employees worldwide, is a specific program to enhance Group unity. In spite of weakened equity markets around the world during the offering period, approximately 40,000 employees took advantage of the offer to buy a combination of debentures and warrants, exercisable into ASEA and BBC shares.

Internal training programs are an important ingredient in personnel and management development. During 1990, for example, a series of international seminars was organized for some 400 ABB

managers to provide a forum for a discussion of critical issues and strategy implementation with Group Executive Management. Furthermore, several hundred senior-level managers and engineers from Eastern Europe participated in various ABB seminars.

Customer focus programs were conducted throughout the ABB Group with thousands of participants. The objective is to increase customer satisfaction by improving quality and reducing cycle times. Apart from the tangible benefits for the customer and for internal efficiency, the objective of the many ongoing projects is to permanently change the corporate value system and to focus more closely on our customers and their needs.

## **Investments and Capital Expenditure**

### **Acquisitions and Divestitures**

Restructuring of the electrotechnical industry continues. ABB still made acquisitions and entered into joint ventures, but at a slower pace. \$ 677 million was invested in acquisitions compared to \$ 3,090 million in 1989. In 1990, ABB concentrated its efforts on consolidation and on integrating its recent acquisitions, thereby laying the foundations for early improvements in performance.

The acquisition of the U.S.-based Combustion Engineering Group was finalized early in 1990, and it is consolidated as of January 1, 1990. Out of the total acquisition cost of \$ 1.56 billion, \$ 0.1 billion was paid in 1990. This acquisition established ABB as a major domestic supplier to the North American market and also complemented the product range in ABB's core businesses.

After a successful \$ 100 million tender offer, UK-based ABB Kent (Holdings) plc is now fully owned by ABB. The operations of the Spanish CCC Group, which manufactures equipment for power and transportation, were acquired and added some 2,900 people to the ABB Group. In Portugal, ABB became a minority owner of SET, a company with 5,000 employees operating in the power and transportation industries.

ABB has responded quickly to the dramatic political and economic changes in Central and Eastern Europe. Some 25 acquisitions or joint ventures were concluded or are under negotiation in former East Germany and in other countries. The potential in the fields of energy, transportation, and environmental control is huge and ABB aims to build new

home markets in these countries, just as it has in Western Europe. Risk exposure is limited and several companies already had technical cooperation agreements with ABB in earlier years. First signs of improved quality and productivity are encouraging.

Some non-core businesses were divested during the year. Total divestitures amounted to \$ 1,078 million, of which \$ 580 million were raised with the divestiture of former Combustion Engineering units including Georgia Kaolin, C-E Minerals, and Sprout-Bauer. In Italy, the minority holding in Franco Tosi Industriale was sold.

The agreements concluded in January 1989 on joint ventures in Italy with Finmeccanica/Ansaldo were renegotiated. Through the new agreements finalized in January 1991, ABB took full ownership of the power transmission activities and Ansaldo acquired all ABB minority participations in the power generation joint ventures. Ansaldo will use ABB technologies for generators and steam turbines and the two companies will also cooperate in the development of an intrinsically safe nuclear power generation system. The new agreements included a considerable net cash payment to ABB.

#### **Capital Expenditure**

Capital expenditure for the ABB Group in 1990 amounted to \$ 961 million (1989: \$ 783 million), of which \$ 195 million (1989: \$ 223 million) was in land and buildings and \$ 766 million (1989: \$ 560 million) in machinery and equipment. The increase in 1990 can be attributed to incremental capital expenditure in acquired companies.

## **Financial Review**

#### **Financial Activities**

ABB's strategy of safeguarding availability of funds proved its worth when liquidity was reduced in many markets. The flight to quality among investors also created a number of opportunities for ABB. Efforts were made to increase the proportion of medium- and long-term loans compared to short-term loans. The Group's funding coordinator, ABB World Treasury Center, arranged several private placements and public issues. In 1990, ABB companies issued medium- and long-term debt instruments totaling \$ 1.25 billion, including the issues by U.S.-based ABB Finance Inc. of three bond loans in the Euro market: 100 million in Australian dollars, 100 million in Canadian dollars, 100 million in ECU.

The proceeds were swapped into floating U.S. dollars. The issues were supported by keep-well agreements assigning the same strong credit rating for long-term debt as ABB Asea Brown Boveri Ltd, Zurich, has: Aa2 by Moody's and AA by Standard & Poor's.

In December 1990, ASEA and BBC paid \$ 100 million each as their remaining contribution to the new \$ 500 million ABB share capital subscribed in 1989.

#### **Financial Statements**

The Financial Services operations differ distinctly from the Group's industrial operations from a balance sheet viewpoint and, to some extent, even in terms of the income statement. In addition to the Group's consolidated accounts, separate financial statements for industrial operations and for financial services – with accompanying notes and ratios – have been compiled. This should provide stockholders and other interested parties with additional relevant information and make it easier to see on the balance sheet the effects of the Group's ongoing capital rationalization programs for industrial operations.

#### **Financial Position**

Liquid assets for the ABB Group totaled \$ 4,975 million at the end of 1990 (year-end 1989: \$ 4,332 million). The rise is mainly due to funds from divestitures, some effects of capital rationalization programs, and an increase in debt to ensure ready access to money. Net interest expense is expected to improve during 1991 as a result of proceeds from divestitures received in late 1990 and early 1991, and of continued improvements in ABB's capital rationalization program. Operating cash flow was clearly positive in 1990 and is likely to remain so for 1991.

#### **Capital Rationalization**

The efforts to reduce capital employed continued during 1990. Inventories decreased from 28 percent of revenues in 1989 to 27 percent in 1990. The relative improvement in inventories since 1987, when the capital rationalization programs were initiated, represents approximately \$ 2.7 billion. Trade receivables remained at the same relative level, days of sales outstanding (DSO) amounted to 67 days. Since the formation of ABB, the relative improvement totaled \$ 1.0 billion. There is clearly room for further improvement in both areas and the outcome for 1990 was not satisfactory. Reducing the

level of capital tied up in operations is still a top priority for the company. A number of projects to reduce cycle times were initiated.

In the area of fixed assets, the main focus was on real estate projects. Real estate companies were created in several countries in line with ABB's policy of charging market rents to ABB industrial companies. This increases the incentive to reduce occupied space, or to relocate to more cost-efficient locations. Freed-up space can then be rented to third parties or divested. On some sites, the potential value can best be exploited by starting redevelopment projects. In 1990, divestments of approximately \$ 400 million were completed. Major transactions were undertaken in Austria, Denmark, Germany, Italy, and Sweden.

Other real estate projects focused on integrating the real estate of recently acquired industrial companies and on relocating several regional ABB headquarters to more economic sites. There is potential for further real estate divestments in 1991 and beyond.

#### **Foreign Exchange Effects**

The U.S. dollar weakened against all major currencies during 1990. This had an expanding effect on the ABB balance sheet, as assets and liabilities are translated into dollars at year-end exchange rates. The average U.S. dollar exchange rates used to translate the various home country income statements had a positive effect on revenues and earnings figures for 1990.

### **Earnings**

In 1990, operating earnings for the ABB Group after depreciation increased by 42 percent to \$ 1,790 million (1989: \$ 1,257 million). The strongest earnings growth was reported by the Power Transmission Segment as well as the Power Distribution, Financial Services, and Environmental Control business segments. The Power Plants Segment continued as a major profit contributor and, although earnings increased, they were curbed by restructuring and development efforts. While showing a substantial improvement in its established operations, the Industry Segment reported a profit decrease due to the restructuring of newly acquired Combustion Engineering operations. The Transportation Segment's earnings fell because of some unprofitable contracts and the integration of recently acquired units. In

the Various Activities Segment, the strongest growth was reported by the Superchargers and Installation Material business areas.

On a regional basis, the largest contributions to operating earnings after depreciation came from Finland, Germany, Italy, Sweden, and Switzerland. In addition to Germany and Italy, strong growth in earnings came from Austria, France, Southeast Asia, and some companies in Latin America. The Combustion Engineering business, including acquisition costs, made a negative contribution to earnings after financial items.

Earnings after financial items amounted to \$ 1,130 million in 1990, an increase of 23 percent (1989: \$ 922 million). Net financial items included \$ 47 million in earnings from associated companies. The UK-based railway equipment manufacturer BREL was an important contributor.

Nonrecurring costs totaled \$ 193 million, mainly due to restructuring activities (1989: \$ 265 million). Nonrecurring income, mostly capital gains, amounted to \$ 168 million (1989: \$ 254 million) resulting in a net charge of - \$ 25 million (1989: - \$ 11 million).

Total taxes for the ABB Group in 1990 amounted to \$ 477 million (1989: \$ 283 million). This corresponds to an overall tax rate of 43 percent (1989: 31 percent). The increase reflects higher income taxes because of strong profit increases in countries where taxes are relatively high, and also taxes paid by the former Combustion Engineering operations. However, a substantial part of the increase was caused by deferred taxes amounting to \$ 76 million (1989: \$ 2 million). Deferred taxes reflect the impact of temporary differences between income before taxes according to ABB accounting principles and income according to local tax laws and regulations.

Net income for 1990 was \$ 590 million compared to \$ 589 million in 1989. Return on capital employed increased to 19.7 percent (1989: 17.0 percent). Return on equity totaled 14.5 percent (1989: 16.8 percent).

The outlook for 1991 is addressed in the President's Comments.

# MANAGEMENT'S DISCUSSION – ANALYSIS OF THE BUSINESS SEGMENTS

## Data per Business Segment (US\$ in millions)

	Orders Received		Order Backlog	
	1990	1989	1990	1989
Power Plants	5,999	3,046	8,994	5,278
Power Transmission	5,397	4,828	4,390	3,895
Power Distribution	3,104	2,644	1,571	1,272
Industry	4,208	2,637	2,808	1,695
Transportation	1,798	1,119	3,572	2,321
Environmental Control	4,067	3,115	3,055	2,170
Financial Services	1,092	1,422	–	–
Various Activities	7,290	5,206	2,960	2,457
Total	32,955	24,017	27,350	19,088
Intra-Group transactions	– 3,674	– 2,377	– 1,690	– 1,016
Net Total	29,281	21,640	25,660	18,072

	Revenues		Operating earnings after depreciation	
	1990	1989	1990	1989
Power Plants	4,653	2,733	242	219
Power Transmission	5,287	4,775	421	288
Power Distribution	3,073	2,516	199	140
Industry	4,022	2,363	123	153
Transportation	1,309	957	22	57
Environmental Control	3,684	2,843	168	130
Financial Services	1,092	1,446	175	95
Various Activities	7,126	5,250	514	319
Total	30,246	22,883	1,864	1,401
Intra-Group transactions	– 3,558	– 2,323	– 74*	– 144*
Net Total	26,688	20,560	1,790	1,257

\* Includes corporate items

	Capital Expenditure		Number of employees	
	1990	1989	1990	1989
Power Plants	123	92	29,205	16,230
Power Transmission	157	125	34,099	34,978
Power Distribution	68	54	25,429	25,121
Industry	106	95	27,973	20,451
Transportation	36	38	9,107	6,801
Environmental Control	93	81	21,666	20,999
Financial Services	26	17	715	597
Various Activities	365	285	66,960	64,316
Total	974	787	215,154	189,493
Intra-Group transactions	– 13	– 4	–	–
Net Total	961	783	215,154	189,493

## Power Plants

### Major Business Areas in the Power Plants Segment

	Orders Received US\$ in millions	
	1990	1989
Gas Turbine Power Plants	2,027	783
Utility Steam Power Plants	889	845
Industrial Steam Power Plants	400	406
Hydro Power Plants	524	532
Nuclear Power Plants	768	254
Power Plant Control	387	225
Fossil Combustion Systems	476	—
Fossil Combustion Service	518	—
Other	10	1
Total	5,999	3,046

The strong demand in the gas turbines and combined-cycle plants market continued and orders received exceeded \$ 2 billion. Demand remained stable in other power generation markets. For the Segment as a whole, orders received for 1990 almost doubled to \$ 5,999 million. Excluding the Combustion Engineering activities in Fossil Combustion Systems, Fossil Combustion Service, and Nuclear Power Plants, the increase in orders received was 51 percent.

Several large orders from Korea, Malaysia, the U.S., the UK, and others were booked in the Gas Turbines Business Area, and orders for power plants to equip aluminum smelters were received from Bahrain and Nigeria. Good order growth was reported by Nuclear Power Plants, with major orders for re-load fuel from Sweden; and by Power Plant Control, with orders for automation and control systems from the Netherlands and Germany. Utility Steam Power Plants defended its strong position in a weak market through increased service and retrofit activities and a large order from Germany. A major retrofit project in Egypt was booked by Hydro Power Plants which, like Industrial Steam Power Plants, maintained last year's level.

Revenues in 1990 amounted to \$ 4,653 million, an increase of 70 percent, primarily attributable to the inclusion of Combustion Engineering's activities. The three first PFBC (pressurized fluidized bed combustion) plants, in Sweden, Spain, and the U.S., are nearing completion and will be operational in 1991.

Operating earnings in 1990 amounted to \$ 242 million, an increase of 10 percent. Revenues in 1990 included some old low margin orders, and the

invoicing of some other projects was delayed until 1991. Profit development was also curbed through restructuring measures in acquired units, although Combustion Engineering made a contribution to operating earnings in this Segment. Research and development costs increased substantially during the year in most business areas, particularly in Gas Turbines and Fossil Combustion. These R&D investments are long-term projects to keep ABB at the technological forefront.

Restructuring of former Combustion Engineering units is proceeding according to plan, and the operations are now fully integrated into ABB's international network. In the second half of 1990, first steps were taken to integrate the operations acquired from the Spanish CCC companies. New joint ventures were formed in Poland with ABB Zamech and ABB Dolmel, and in Hungary with ABB Lang. Decentralization continued through the creation of legal entities in Austria, Germany, Italy, and Switzerland.

The business outlook remains optimistic for 1991 and beyond. Higher margin orders will replace lower ones in the backlog and major restructuring efforts, mainly in the U.S., will be completed. In addition, programs are under way to help reduce throughput and cycle times in manufacturing and engineering, and to enhance product quality. Earnings are expected to improve in 1991.

## Power Transmission

### Business Areas in the Power Transmission Segment

	Orders Received US\$ in millions	
	1990	1989
Cables & Capacitors	1,203	1,275
Distribution Transformers	815	666
High Voltage Switchgear	1,296	981
Electric Metering	131	110
Network Control	193	116
Power Systems	262	266
Power Transformers	1,172	1,120
Relays	325	294
Total	5,397	4,828

The Segment showed good growth of 12 percent, with orders received amounting to \$ 5,397 million. High-Voltage Switchgear, Distribution Transformers, and Network Control showed substantial increases



in orders received. Regionally, good growth was reported from Germany and the United States and, through acquisitions, from Spain and Australia.

Development of revenues in 1990 was similar, and amounted to \$ 5,287 million or 11 percent up on the previous year.

Operating earnings for the Segment rose by 46 percent to \$ 421 million, a substantial increase compared to 1989. Most business areas showed satisfactory development and contributed to the good result. Distribution Transformers made good progress in the USA, HV Switchgear performed well with its new factory in Switzerland, and Power Transformers improved strongly in Italy. Relays showed improvements in most entities, and Power Systems benefited from efficient execution of ongoing projects. Cables & Capacitors was a major contributor to the overall result. In the Network Control and Electric Metering business areas earnings were improved through concentrating resources. The result in Network Control, however, is still unsatisfactory.

Earnings growth was good in the United States as a result of the restructuring programs initiated at the beginning of 1990 after taking over all the Westinghouse transmission and distribution business. In spite of weaker demand in the Nordic countries and the U.S. during the fourth quarter of 1990, earnings for the whole year developed very satisfactorily.

Most of the restructuring activities were finalized in Europe during 1990, but the programs will continue in the USA, Canada, and Australia. The main focus is still on achieving higher quality in every sense of the word, on increasing productivity further, and on continuing investments in future technologies.

On the basis of the present situation, it is anticipated that earnings in 1991 will reach at least the 1990 level.

## Power Distribution

### Business Areas in the Power Distribution Segment

	Orders Received US\$ in millions	
	1990	1989
Low-Voltage Apparatus	507	426
Low-Voltage Systems	299	266
Installation	1,363	1,070
Medium-Voltage Equipment	736	636
Distribution Plants	199	246
Total	3,104	2,644

After developing well in the first half of 1990, market demand for Power Distribution products and services weakened in most industrial countries during the second half. The overall change in the market is related to declining industrial production and less construction activity. The strategy of penetrating new market segments and defending existing high market shares has resulted in an increase of 17 percent in orders received in 1990, amounting to \$ 3,104 million. Lower industrial investments in some important markets influenced order volume for Low-Voltage Apparatus and Systems during the second half of the year. The Installation business had good order growth except in the Norwegian market. The Medium-Voltage Equipment activities showed stable development, whereas order intake in the Distribution Plants business was lower, mainly due to postponed orders from the Middle East region.

Revenues increased by 22 percent to \$ 3,073 million.

Operating earnings for the Segment amounted to \$ 199 million, an increase of 42 percent compared to 1989. Manufacturing capacity was well utilized for most manufacturing facilities and improved results were realized in Installation, Distribution Plants, and Low-Voltage Systems. Low-Voltage Apparatus and Medium-Voltage Equipment maintained earnings at a high and stable level. Much of the profit improvement was achieved through the rationalization measures implemented after the merger. For the Segment as a whole, good earnings were recorded in Finland, Germany, Italy, and Sweden. Weak market demand in Norway is still affecting results there.

Market development for 1991 is uncertain. In spite of continued productivity improvements, increasing price pressure and lower volumes will make it difficult to exceed 1990 profits.

## Industry

### Business Areas in the Industry Segment

	Orders Received US\$ in millions	
	1990	1989
Drives	1,342	1,005
Marine, Oil and Gas	467	276
Metallurgy	179	450
Process Automation	1,005	561
Instrumentation	521	345
Process Engineering	694	—
Total	4,208	2,637

A slowdown in market growth was experienced by many of the end-use industries for the products, systems, and services of this Segment. Despite this, orders received developed well, up 60 percent to \$ 4,208 million. Excluding the new Combustion Engineering operations, the increase in orders received was 16 percent.

After successful development of the marine and offshore markets, the Marine, Oil and Gas Business Area showed the steepest increase in orders received, up 69 percent. Drives, Instrumentation, and Process Automation reported good increases for comparable units. Metallurgy recorded good market development for furnaces, although its other products faced declining markets. The Process Engineering Business Area experienced a slowdown in the Middle East but received several important orders from other markets.

Revenues amounted to \$ 4,022 million, an increase of 70 percent. All business areas showed good increases. A major management objective of improving deliveries and revenues was achieved despite reorganization and operational changes.

Operating earnings amounted to \$ 123 million. This is lower than in 1989 although revenues were higher. The reason for this result is twofold: On the one hand, earnings continued to increase from an already good level in most of the units restructured in 1988 and 1989. On the other hand, the massive task of reorganizing and integrating the newly acquired operations from Combustion Engineering had a strong — though short-term — negative impact on the Segment's 1990 performance.

Process Automation was subjected to major reorganization and restructuring in order to integrate the former Combustion Engineering activities. Sales and engineering activities were merged in several

countries, manufacturing facilities were reorganized, outsourcing of components was increased, facilities were closed, and personnel was reduced. Most of these measures have been satisfactorily concluded, but earnings for 1990 suffered. Drives continued to improve its earnings from an already excellent level, primarily through volume increases and productivity improvements. A major restructuring program within Instrumentation is well under way, its objective being to rationalize manufacturing and to streamline the product range. Earnings in the European operations developed well. The Process Engineering Business Area showed low earnings. Improved procedures for project and risk management are now in place and anticipated losses have been provided for. Metallurgy achieved a very satisfactory level after its reorganization in 1989, and Marine, Oil and Gas also showed higher earnings. Regionally, continuing positive development was achieved by Brazil, Germany, Italy, Sweden, and Switzerland, whereas the USA reported major losses.

Growth of customer investment plans is likely to remain slow in 1991. However, ABB's enhanced market penetration should stabilize demand for the Group's products. A substantial increase in earnings is anticipated on completion of the restructuring programs in North America.

## Transportation

### Business Areas in the Transportation Segment

	Orders Received US\$ in millions	
	1990	1989
Rolling Stock	1,417	838
Fixed Installations	191	145
Signalling	190	136
Total	1,798	1,119

Demand for railway equipment remained high in 1990, especially in Western Europe. Improvements in railway and mass transit services are needed in many countries. Orders received amounted to \$ 1,798 million, an increase of 60 percent. Order intake increased considerably in all business areas, most notably in Rolling Stock with the award of the piggyback locomotive order from Switzerland and additional high-speed train orders from Germany. After having acquired a majority in ABB Scandia in Denmark, substantial order volume was received

in connection with the modernization program being implemented by the Danish State Railways. The Segment is also building up its local presence in other markets. In Germany, a joint venture was formed with Thyssen, involving a work force of about 3,900; Comeng, a manufacturer of rolling stock, was acquired in Australia; and a joint venture was formed in Portugal to cover railway equipment.

As a result of the strong order intake during the past few years, revenues increased by 37 percent to \$ 1,309 million.

Operating earnings totaled \$ 22 million compared to \$ 57 million for 1989. This drop in earnings is mainly due to some unprofitable contracts and to restructuring activities undertaken in recent acquisitions. The Segment has been reorganized to respond to the rapid growth in demand. Several new business areas are being created in order to concentrate resources and meet customer needs. Close coordination between the new units and local activities together with specialized manufacturing within the Segment will lead to cost reductions.

The UK-based BREL, in which ABB has a 40 percent holding, made a contribution to Group profits on an equity accounting basis. Steps have been taken to improve productivity and cut throughput times.

Demand for the Segment's products is expected to continue, though growth will be slower than in 1990. Earnings should improve in 1991.

## Environmental Control

### Business Areas in the Environmental Control Segment

	Orders Received US\$ in millions	
	1990	1989
Industrial Processes	1,294	900
Indoor Climate	1,245	1,061
Gadelius	605	718
Service	258	211
Components	280	205
Cooling	230	182
Resource Recovery	274	–
Eliminations	–119	–162
Total	4,067	3,115

Awareness of the importance of environmental protection and efficient use of energy is growing. An excellent example is the Clean Air Act passed in the United States in 1990. This environmental concern had a favorable impact on orders received by the Segment, which amounted to \$ 4,067 million, an increase of 31 percent. Most business areas showed good growth. Strong demand from the power generation and automotive industries in North America, Germany, and Sweden contributed to the substantial order increase in Industrial Processes. Resource Recovery, which comprises units of Combustion Engineering and the Swiss-based W+E Umwelttechnik, booked some large orders in 1990. Excluding the recent acquisition of the Barrett & Wright Group in the UK, orders received grew only moderately in Indoor Climate mainly because of the slowdown in construction activities. Orders received for Gadelius declined in 1990 compared with 1989 – an exceptional year with several large orders from the Japanese pulp and paper industry.

Revenues increased by 30 percent to \$ 3,684 million.

The Segment continued to show good growth in profits, with operating earnings increasing by 29 percent to \$ 168 million. Industrial Processes and Gadelius recorded strong improvements, and earnings in Indoor Climate increased because of the good performance in Marine and Housing Ventilation. Earnings were satisfactory for the other business areas.

Although the economic slowdown will also affect this Segment, earnings for 1991 are expected to remain at the 1990 level. A steady expansion of revenues and earnings is anticipated in the long term.

## Financial Services

### Major Business Areas in the Financial Services Segment

	Operating Earnings after Depreciation US\$ in millions	
	1990	1989
Treasury Centers	75	45
Leasing & Financing	13	9
Insurance	76	24
Trading & Trade Finance	1	10
Stockbrokerage & Investment Management	10	7
Total	175	95

Since its inception, ABB Financial Services has focused on efficient risk control and strong back-office functions. These priorities enabled the Segment to weather a year of turmoil in the financial markets without being notably affected.

Operating earnings after depreciation increased very satisfactorily from an already high level, up 84 percent to \$ 175 million. The Treasury Centers Business Area improved earnings from an already good level in 1989. The World Treasury Center and the Swedish and Finnish Treasury Centers generated most of the profits. The Insurance Business Area showed significantly improved earnings despite sluggish insurance markets. The Sirius Group had a weak insurance result, but managed to reach earnings far above last year's due to good investment results, particularly through gains on real estate. The return on insurance funds and other capital investments exceeded market averages. The decentralization process continued, strengthening the functions of the former divisions, which are now incorporated companies. The Leasing & Financing Business Area reported growth in earnings, mainly attributable to continued expansion of its operations, both geographically and in volume. Due to restructuring efforts, the Trading & Trade Finance Business Area recorded a poor result. A restructuring program was commenced in 1990, aimed at reducing trading activities with limited ABB synergies and, instead, emphasizing countertrading activities. The investment management companies, which manage both ABB and external funds, outperformed relevant market indices by more than two percentage points on average. This resulted in high performance fees and, consequently, in good earnings. ABB Aros

Securities increased its market share on the Stockholm Stock Exchange to more than five percent.

One of the Financial Services Segment's main objectives is to obtain synergies with ABB's industrial operations. During 1990, vital sales support was provided by various Financial Services companies: ABB Credit signed \$ 600 million of asset-based financing to ABB customers, ABB Project & Export Finance arranged financing for ABB projects worth \$ 1,300 million, and ABB Trading undertook counter-trade transactions on ABB projects worth some \$ 1,300 million. Treasury Centers expanded their lending to ABB companies to \$ 7,000 million. The netting system for intercompany payments was extended, increasing annual savings for participating Group companies.

The consolidated Financial Services balance sheet amounted to \$ 11,210 million at the end of 1990, compared to \$ 9,234 million at the end of 1989. The majority of the assets relate to lending by Treasury Centers to ABB Group companies, investments in leases, and investments by the Sirius Insurance Group. At the end of 1990 financial assets and liabilities between Financial Services and ABB's industrial operations exceeded \$ 10 billion.

Recent volatile developments in financial markets created opportunities for ABB Financial Services to provide financial engineering solutions as a competitive tool in the sale of ABB industrial projects.

1990 was a year of extremely good results for the Segment. This level will be difficult to maintain in 1991.

## Various Activities

### Major Business Areas in the Various Activities Segment

	Orders Received US\$ in millions	
	1990	1989
Power Lines and General Contracting	1,518	1,102
Installation Material	1,018	802
Service	650	441
Motors	371	330
Robotics	336	286
Superchargers	259	203
Communication and Information Systems	172	212
District Heating	170	115
Telecommunications	135	173
Integrated Circuits	50	44
Other Activities Sweden	1,052	921
Other Activities Germany	174	19
Other Activities Switzerland	133	98
Miscellaneous	1,252	460
Total	7,290	5,206

As there is limited interaction among the business areas that make up the Various Activities Business Segment, the larger business areas are treated separately below.

While orders received increased significantly, revenues remained at the 1989 level for the Power Lines and General Contracting Business Area. The share of Power Lines in total revenues decreased to less than half, with the bulk of the remainder made up by contracting activities in Energy and Industry related businesses. Europe and Australia continued to be the main centers of activity.

Earnings did not develop satisfactorily, mainly because of losses in one infrastructure development project. A major effort was made to redefine strategy and to focus on areas of special strength; several profit-improvement projects were launched.

The Installation Material companies strengthened their positions as leading European producers. Orders received showed a good increase. The business climate was healthy, especially in Germany, but there were signs of a slowdown in Northern and Southern Europe. Earnings increased from an already high level. Several steps were taken to further improve sales and profits, such as additions to the

product range, new product generations, European crossborder logistics, and a reduction of staff.

The Service Business Area recorded a strong increase in orders received, up 47 percent to \$ 650 million. Service activities were largely unaffected by the downturn in demand experienced in other businesses. The strongest growth was achieved in Scandinavia, France, and Belgium.

Increased focus on cost and efficiency is forcing customers to concentrate on core businesses and to reduce their own maintenance and service capacities. This provides additional business opportunities for ABB Service: it is a strong partner as a full service supplier but also an alternative to the customer's own service organization.

Earnings improved slightly in 1990. Growth in sales and particularly in profits is expected in the coming years.

In 1990, there was a downturn in demand for the Motors Business Area in European markets. This trend is expected to continue during 1991. Several steps were taken to improve productivity and adjust to more sluggish market conditions: the number of employees was cut, the number of production units in Europe producing the same size motors was reduced, and efforts to decrease working capital were continued. The manufacturing activities in Australia were discontinued. Earnings showed a modest increase in 1990, and are expected to remain at this level in 1991.

1990 was another good year for the Robotics Business Area. Orders received and revenues increased in a market where competitive pressure was stronger and prices lower. ABB Robotics is well placed to offer cost-efficient, overall solutions for customer problems, and has a good base for further expansion. A new product generation for welding applications met with great interest in the marketplace. The acquisition of Cincinnati Milacron's robot business was an important step to strengthen ABB's position in North America. ABB now has a robot population of 8,000 in North America, which makes it number two there. In Europe, where ABB is number one, several centers have been created for advanced applications in industrial automation. Penetration of the industrial markets in Asia was given high priority and results are encouraging. A good profit level was maintained in 1990.

Good demand again led to further growth for the Superchargers Business Area. In addition, higher delivery readiness and extension of the service network boosted orders received as well as revenues. The Business Area's objective is to be the leading

supplier of turbochargers for medium and large diesel engines. Consequently, the Comprex activity of supercharging for passenger cars was sold during 1990.

Continued efforts in cost reduction programs, investments to improve production efficiency, and favorable market conditions again brought a substantial increase in earnings.

Other Activities Sweden is dominated by ABB ASEA Skandia, the largest electrical wholesaler in the Nordic countries. A substantial downturn in the Finnish market and unsatisfactory development in some Swedish entities were offset by good performance in Norway and in most Swedish operations. The positive development in Norway is the result of consolidating the Norwegian operations during 1989. Earnings for 1990 were maintained at a good level.

# CONSOLIDATED INCOME STATEMENT

(US\$ in millions)

		Total Group	
Year ended December 31		1990	1989
<b>Revenues</b>	Note 1	<b>26,688</b>	<b>20,560</b>
Material expenses		- 10,851	- 9,545
Personnel expenses		- 8,821	- 6,068
Other expenses	Note 2	- 4,613	- 3,407
Changes in work in progress and finished goods		137	266
Depreciation of fixed assets	Note 3	- 750	- 549
<b>Operating Earnings after Depreciation</b>		<b>1,790</b>	<b>1,257</b>
Earnings from associated and divested companies		47	21
Dividend income		11	8
Interest income		1,006	641
Interest on advances		- 351	- 300
Interest expense	Note 4	- 1,375	- 731
Exchange differences		2	26
<b>Earnings after Financial Items</b>		<b>1,130</b>	<b>922</b>
Nonrecurring items	Note 5	- 25	- 11
<b>Income before Taxes</b>		<b>1,105</b>	<b>911</b>
Taxes	Note 6	- 477	- 283
<b>Net Income before Minority Interest</b>		<b>628</b>	<b>628</b>
Minority interest		- 38	- 39
<b>Net Income</b>		<b>590</b>	<b>589</b>



# **SPLIT INCOME STATEMENT** (Note 21)

Industrial Operations		Financial Services	
1990	1989	1990	1989
25,596	19,114	1,092	1,446
-10,348	- 8,514	- 503	-1,031
- 8,756	- 6,017	- 65	- 51
- 4,287	- 3,141	- 340	- 252
137	266	-	-
- 741	- 532	- 9	- 17
<b>1,601</b>	<b>1,176</b>	<b>175</b>	<b>95</b>
47	21	-	-
11	8	-	-
700	504	1,283	607
- 351	- 300	-	-
- 1,071	- 599	-1,281	- 602
1	25	1	1
<b>938</b>	<b>835</b>	<b>178</b>	<b>101</b>
- 26	- 5	1	- 6
<b>912</b>	<b>830</b>	<b>179</b>	<b>95</b>
- 420	- 262	- 52	- 26
<b>492</b>	<b>568</b>	<b>127</b>	<b>69</b>
- 37	- 38	- 1	- 1
<b>455</b>	<b>530</b>	<b>126</b>	<b>68</b>

# CONSOLIDATED BALANCE SHEET

(US\$ in millions)

		Total Group	
December 31		1990	1989
<b>ASSETS</b>			
<b>Current Assets</b>			
Cash and marketable securities	Note 7	4,975	4,332
Trade receivables		5,528	4,397
Other current receivables	Note 8	2,181	1,710
Unpaid share capital		—	200
Inventories	Note 9	7,277	5,774
<b>Total Current Assets</b>		<b>19,961</b>	<b>16,413</b>
<b>Fixed Assets</b>			
Financing receivables	Note 10	2,173	1,076
Shares and participations	Note 11	864	2,183
Intangible assets		2,000	437
Construction in progress		188	123
Machinery and equipment	Note 12	2,472	1,887
Land and buildings	Note 12	2,589	2,037
<b>Total Fixed Assets</b>		<b>10,286</b>	<b>7,743</b>
<b>TOTAL ASSETS</b>		<b>30,247</b>	<b>24,156</b>
Assets Pledged	Note 18	639	712
<b>LIABILITIES AND EQUITY</b>			
<b>Current Liabilities</b>			
Trade payables		3,030	2,622
Provisions		4,059	3,334
Other current liabilities	Note 13	3,979	2,907
Short-term loans	Note 14	4,373	4,346
<b>Total Current Liabilities</b>		<b>15,441</b>	<b>13,209</b>
Advances from Customers		4,937	3,379
Medium- and Long-term Loans	Note 15	2,712	1,746
Employee Share Ownership Debentures	Note 16	399	—
Pension Liabilities		1,547	1,235
Deferred Taxes		496	212
Minority Interest		468	468
<b>Stockholders' Equity</b>	Note 17		
Share capital		1,750	1,750
Restricted reserves		938	808
Retained earnings		969	760
Net income		590	589
<b>Total Stockholders' Equity</b>		<b>4,247</b>	<b>3,907</b>
<b>TOTAL LIABILITIES AND EQUITY</b>		<b>30,247</b>	<b>24,156</b>
Contingent Liabilities	Note 19	917	1,196

**SPLIT BALANCE SHEET** (Note 21)

Industrial Operations		Financial Services	
1990	1989	1990	1989
5,448	4,068	2,989	2,858
5,418	4,311	130	100
1,858	1,039	6,129	5,041
—	200	—	—
7,233	5,700	44	74
<b>19,957</b>	<b>15,318</b>	<b>9,292</b>	<b>8,073</b>
1,215	513	1,781	1,014
815	2,142	49	41
1,964	399	36	38
188	123	—	—
2,423	1,849	49	38
2,586	2,007	3	30
<b>9,191</b>	<b>7,033</b>	<b>1,918</b>	<b>1,161</b>
<b>29,148</b>	<b>22,351</b>	<b>11,210</b>	<b>9,234</b>
2,992	2,468	57	171
3,670	2,977	389	357
3,875	2,647	478	1,017
6,002	4,799	6,697	5,518
<b>16,539</b>	<b>12,891</b>	<b>7,621</b>	<b>7,063</b>
<b>4,951</b>	<b>3,379</b>	<b>2</b>	<b>—</b>
<b>1,785</b>	<b>1,127</b>	<b>2,303</b>	<b>1,289</b>
<b>399</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>1,539</b>	<b>1,228</b>	<b>8</b>	<b>7</b>
<b>235</b>	<b>57</b>	<b>261</b>	<b>160</b>
<b>352</b>	<b>361</b>	<b>116</b>	<b>107</b>
2,893*	2,778*	773*	540*
455	530	126	68
<b>3,348</b>	<b>3,308</b>	<b>899</b>	<b>608</b>
<b>29,148</b>	<b>22,351</b>	<b>11,210</b>	<b>9,234</b>

\* Total of share capital, restricted reserves, and retained earnings

# CONSOLIDATED STATEMENT OF CHANGES IN FINANCIAL POSITION (US\$ in millions)

	Total Group	
Year ended December 31	1990	1989
<b>Financing from Operating Activities</b>		
Revenues	26,688	20,560
Material expenses	– 10,851	– 9,545
Personnel expenses	– 8,821	– 6,068
Other expenses	– 4,613	– 3,407
Changes in work in progress and finished goods	137	266
Financial items	– 660	– 335
	<b>1,880</b>	<b>1,471</b>
Change in current receivables	– 1,602	– 610
Change in short-term loans; Financial Services	–	–
Change in current noninterest-bearing liabilities	2,205	1,049
Change in inventories	– 1,503	– 399
Change in advances from customers	1,558	– 15
Net current assets from purchased and sold companies	– 1,024	362
	<b>– 366</b>	<b>387</b>
Nonrecurring items after adding back capital gains	– 193	– 265
Current taxes	– 388	– 281
Minority interest	– 38	– 39
	<b>– 619</b>	<b>– 585</b>
<b>Net Financing from Operating Activities</b>	<b>895</b>	<b>1,273</b>
<b>Investments</b>		
Change in financing receivables	– 1,097	– 536
Capital expenditure for:		
Acquisitions of shares and participations	– 677	– 3,090
Tangible fixed assets	– 961	– 783
Sales of shares and tangible fixed assets	1,562	444
<b>Net Investments</b>	<b>– 1,173</b>	<b>– 3,965</b>
<b>External Financing</b>		
New issue paid up	200	300
Change in short-term loans; Group and Industrial Operations	27	2,967
Change in medium- and long-term loans	966	205
Employee Share Ownership Debentures	399	–
Change in pension liabilities	312	195
Change in minority interest	–	82
Net external financing from purchased and sold companies, net of cash acquired	– 1,252	– 85
Dividends	– 234	– 133
Transfer of funds		
Translation differences and other	503	– 3
<b>Net External Financing</b>	<b>921</b>	<b>3,528</b>
<b>Change in Cash and Marketable Securities</b>	<b>643</b>	<b>836</b>

# **SPLIT STATEMENT OF CHANGES IN FINANCIAL POSITION** (Note 21)

Industrial Operations		Financial Services	
1990	1989	1990	1989
25,596	19,114	1,092	1,446
- 10,348	- 8,514	- 503	- 1,031
- 8,756	- 6,017	- 65	- 51
- 4,287	- 3,141	- 340	- 252
137	266	-	-
- 663	- 341	3	6
<b>1,679</b>	<b>1,367</b>	<b>187</b>	<b>118</b>
- 1,926	- 333	- 1,118	- 3,100
-	-	1,179	4,476
2,445	918	- 621	- 973
- 1,533	- 626	30	227
1,572	- 15	2	-
- 1,024	362	-	-
- <b>466</b>	<b>306</b>	- <b>528</b>	<b>630</b>
- 193	- 261	-	- 4
- 404	- 310	16	29
- 37	- 38	- 1	- 1
- <b>634</b>	- <b>609</b>	<b>15</b>	<b>24</b>
<b>579</b>	<b>1,064</b>	- <b>326</b>	<b>772</b>
- 702	- 194	- 767	- 345
- 676	- 3,084	- 1	- 6
- 935	- 766	- 26	- 17
1,532	431	30	13
- <b>781</b>	- <b>3,613</b>	- <b>764</b>	- <b>355</b>
200	300	-	-
1,203	2,921	-	-
658	- 414	1,014	897
399	-	-	-
311	194	1	1
- 9	- 17	9	99
- 1,252	- 85	-	-
- 234	- 133	-	-
- 119	-	119	-
425	25	78	- 28
<b>1,582</b>	<b>2,791</b>	<b>1,221</b>	<b>969</b>
<b>1,380</b>	<b>242</b>	<b>131</b>	<b>1,386</b>

# PRINCIPLES FOR CONSOLIDATED FINANCIAL STATEMENTS

## 1 General

The Group's accounting principles comply in all material respects with International Accounting Standards.

## 2 Principles of Consolidation

The consolidated financial statements include ABB Asea Brown Boveri Ltd and substantially all companies in which the parent company, directly or indirectly, has more than 50% of the voting rights or over which it exerts decisive influence. Companies are included in the consolidation as from the date of acquisition. Earnings in divested companies, up to the date of sale, are included in "Earnings from associated and divested companies".

The consolidated financial statements have been prepared in accordance with the purchase method. Substantial goodwill acquisitions are capitalized and amortized over periods not exceeding 40 years. Smaller amounts are charged directly to stockholders' equity.

The equity method is used for accounting for material investments in companies where the parent company, directly or indirectly, has not less than 20% and not more than 50% of the voting rights ("associated companies").

Assets, liabilities and equity as well as income and expenses of consolidated companies are reflected in their entirety in the consolidated financial statements. The shares in net income and equity attributable to minority shareholders are stated separately in the consolidated income statement and balance sheet.

Intercompany balances and transactions, including intercompany profits, are eliminated.

## 3 Revenues

Revenues include sales, other operating income and interest on advances.

The Group has substantial advances from customers. Customer advances lead to lower gross margins than for orders without advance payments, i. e. operating earnings can be said to contain a hidden interest cost. In order to make the Group financial statements more easily comparable with those of other companies, interest is calculated on advances from customers, and is included in both revenues (and also operating earnings) and interest on advances captions.

## 4 Revenue Recognition

Sales of products and services are recognized on the date of delivery. The sales amount is net of sales or value

added taxes, returned goods, discounts and rebates. Income from long-term contracts is generally recognized only after profits have been realized. This is either at the end of the contract or on completion of clearly identifiable portions thereof. For Group companies in those countries where it is mandatory to use the percentage-of-completion method, this method has been applied both in the individual company and in the Group.

Provisions are made to cover all anticipated losses on loss-making contracts.

## 5 Foreign Currency Translation

Foreign currency receivables and payables covered by forward contracts are stated at contracted future rates. Other receivables and payables in foreign currencies are translated at year-end market rates, as is the portfolio of forward contracts in foreign currencies held by Treasury Centers. Advances from customers are shown at rates in force at the dates when such advances were received, since repayment is not anticipated.

Financial statements of Group companies expressed in other currencies are translated into US\$ at year-end rates of exchange with respect to the balance sheet, and average rates of exchange for the year with respect to the income statement. Translation adjustments are included in stockholders' equity and have no effect on net income. However, financial statements of subsidiaries in high-inflation countries are translated in accordance with the temporal method as follows:

- Monetary assets and liabilities are translated at year-end rates of exchange.
- Inventories (raw materials, work in progress and finished goods), property, plant and equipment and advances from customers are translated at appropriate historical rates of exchange.
- Income and expense items are translated at average rates of exchange, except for cost of goods sold and depreciation, which are translated at appropriate historical rates of exchange.
- Translation adjustments are included in the determination of net income.

Exchange rate differences arising from loans taken as hedges for investments in subsidiaries have been included in stockholders' equity in the consolidated statements in as far as they correspond to translation differences for the relevant subsidiaries taken directly to equity. Deferred tax assets/liabilities have been set up where appropriate. The same procedure has been applied for intra-group foreign currency transactions of a long-term investment nature.

## **6 Land, Buildings, Machinery and Equipment**

Land, buildings, machinery and equipment are stated at cost, less accumulated depreciation.

Buildings are depreciated for financial reporting purposes using the straight-line method over their estimated useful lives. Machinery and equipment are also depreciated using the straight-line method over two-thirds of their estimated useful lives, which corresponds to the degressive depreciation method over their estimated total useful lives.

The depreciation periods are:

- buildings 25–50 years
- machinery and equipment 3–15 years
- production tools (other than wear and tear tools which are expensed) 3 years

## **7 Research and Development**

Research and development and design costs are expensed as incurred, except to the extent directly related to contracts.

## **8 Trading Activities in Marketable Securities by Treasury Centers**

Marketable securities and other financial instruments traded on a professional basis are stated at market value, after consideration of the related financing costs.

## **9 Inventories**

Purchased goods are stated at the lower of cost – determined on the basis of weighted average prices or by the “first-in, first-out” method – or replacement value, while manufactured goods are valued at the lower of manufacturing cost or net realizable value. Appropriate provisions are made for obsolescence.

## **10 Accounting for Pensions**

Various arrangements for pensions and termination indemnities exist within the Group. All commitments not funded with external parties are actuarially computed and accrued in the balance sheet. Pending contributions/fundings to outside entities are recorded up to the full commitment.

## **11 Provisions**

Provisions provide cover for identifiable warranties, penalties, loss orders, committed costs for delivered plant orders and rationalization measures, currency and country risks.

## **12 Taxation**

All taxes estimated to be ultimately payable on reported income, capital and property are provided for. These taxes are calculated in accordance with the regulations in force in each country. Unrecoverable withholding taxes paid on dividends received are included in the tax charge for the year.

In addition, deferred taxes on income are provided for those items of income and expense which affect both the financial statements and the income tax assessment, but in different periods (timing differences). The timing differences relate mainly to accelerated depreciation on machinery and equipment and buildings, reserves for future investments and inventory reserves as permitted by the tax laws in certain countries. In determining the tax rate, the liability method is used for short-term timing differences (normally those expected to reverse within a three-year period). For those timing differences that are expected to reverse in more than three years, a tax rate of 30% has been used. No deferred taxes are provided for permanent differences.

The tax benefits of loss carry-forwards are recognized if the likelihood of realizing those benefits within twelve months is virtually assured.

## **13 Orders Received and Order Backlog**

Amounts stated for orders received and order backlog are expressed at the price level estimated for the date of delivery of each order.

## **14 Split of ABB's Financial Statements into Industrial Operations and Financial Services**

The financial statements of the Group are basically presented on a consolidated basis for all companies. However, Financial Services form an important part of the activities of the Group. From a balance sheet point of view, this part is distinctly different from the rest of the Group, the Industrial Operations. A complementary split of the financial statements with accompanying notes and ratios between the two parts will give stockholders and others substantially more information.



## 15 Definition of Key Ratios

### a) Return on equity

Return on equity is calculated as net income as a percentage of average stockholders' equity.

### b) Return on capital employed

#### (Group and Industrial Operations)

Return on capital employed is calculated as earnings after financial items plus interest expense and exchange differences as a percentage of average capital employed. Capital employed consists of stockholders' equity, minority interest, pension liabilities, short-, medium- and long-term loans, and employee share ownership debentures.

### c) Return on total assets

#### (Financial Services only)

Return on total assets is calculated as earnings after financial items plus interest expense and exchange differences as a percentage of average total assets.

### d) Debt/equity ratio

#### (Group and Industrial Operations)

Debt/equity ratio is calculated as interest-bearing current, medium- and long-term liabilities excluding pension liabilities and employee share ownership debentures divided by stockholders' equity plus minority interest.

### e) Interest coverage ratio

#### (Group and Industrial Operations)

Interest coverage ratio is calculated as earnings after financial items plus interest expense on financial liabilities divided by interest expense on financial liabilities.

## 16 Exchange Rates

	ISO Codes	Aver- age 1990	Year- end 1990	Aver- age 1989	Year- end 1989
Australian Dollar	AUD	1.28	1.29	1.26	1.26
Austrian Schilling	ATS	11.36	10.52	13.07	11.89
Canadian Dollar	CAD	1.17	1.16	1.18	1.16
Danish Krone	DKK	6.20	5.78	7.23	6.57
Deutsche Mark	DEM	1.62	1.49	1.86	1.69
Finnish Markka	FIM	3.82	3.63	4.26	4.03
French Franc	FRF	5.44	5.09	6.31	5.79
Italian Lira	ITL	1,199.05	1,127.40	1,358.70	1,265.80
Netherlands Guilder	NLG	1.82	1.69	2.10	1.91
Norwegian Krone	NOK	6.26	5.88	6.86	6.58
Pound Sterling	GBP	0.56	0.52	0.61	0.62
Swedish Krona	SEK	5.92	5.63	6.41	6.20
Swiss Franc	CHF	1.39	1.27	1.62	1.54

# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENT (US\$ in millions)

## Note 1 Revenues

Revenues include the following items:

	1990	1989
Sales	25,469	19,636
Other operating income	868	624
Interest on advances	351	300
<b>Total</b>	<b>26,688</b>	<b>20,560</b>

The licence income amounts to \$ 37 million (\$ 35 million).

## Note 4 Interest expense

Interest expense is made up of the following items:

	1990	1989
Interest on pension liabilities	121	82
Interest on financial liabilities	1,254	649
<b>Total</b>	<b>1,375</b>	<b>731</b>

## Note 2 Other expenses

	1990	1989
Expenses for:		
Licence fees, rents, leasing and external consultants	1,907	1,117
Packing, freights, sales commission and other delivery expenses	884	957
PTT, advertising, travel and entertainment	885	643
Insurance premiums, repair and maintenance and other expenses	937	690
<b>Total</b>	<b>4,613</b>	<b>3,407</b>

## Note 5 Nonrecurring items

	1990	1989
Capital gain/loss on sales of participations, land and buildings	168	254
Restructuring expenses	- 181	- 224
Other nonrecurring items	- 12	- 41
<b>Total</b>	<b>- 25</b>	<b>- 11</b>

## Note 3 Depreciation of fixed assets

	1990	1989
Machinery and equipment	595	472
Land and buildings	91	58
Goodwill	64	19
<b>Total</b>	<b>750</b>	<b>549</b>

## Note 6 Taxes

	1990	1989
Current taxes, income	- 335	- 242
Current taxes, other	- 53	- 39
Deferred taxes	- 76	- 2
Taxes, associated companies	- 13	-
<b>Total</b>	<b>- 477</b>	<b>- 283</b>

**Note 7**  
Cash and marketable securities

	1990	1989
Cash and bank	2,145	1,647
Marketable securities	2,830	2,685
<b>Total</b>	<b>4,975</b>	<b>4,332</b>

Placements totalling \$ 664 million (\$ 477 million) relating to interest arbitrage transactions are reported as net figures in 1990.

**Note 9**  
Inventories

	1990	1989
Materials	1,345	1,107
Work in progress	5,108	3,929
Finished goods	824	738
<b>Total</b>	<b>7,277</b>	<b>5,774</b>

**Note 8**  
Other current receivables

	1990	1989
Non-trade receivables	1,276	1,151
Prepaid expenses/accrued income	583	304
Advances to suppliers	292	238
Advances to contractors	30	17
<b>Total</b>	<b>2,181</b>	<b>1,710</b>

**Note 10**  
Financing receivables

	1990	1989
Loans granted	1,134	549
Receivables, finance lease	1,039	527
<b>Total</b>	<b>2,173</b>	<b>1,076</b>

Financing receivables comprise loans mainly to companies in which ABB has shares and participations as well as receivables arising out of leasing activities.

**Note 11**  
Shares and participations

Holdings in equity accounted companies (more than 20% and less than 50%)

Company name	Book value
Fabbrica Turbine e Caldaie, Legnano s.r.l.	187
Ansaldo ABB Componenti, Genova	76
BREL Group Ltd, Derby	26
Skeiegruppen A.S., Kristiansand	21
Brown Boveri-York Kälte- und Klimatechnik GmbH, Mannheim	5
Allen Bradley/Strömberg Inc., Milwaukee	3
Others	2
<b>Total</b>	<b>320</b>

Holdings in other companies (less than 50%)	
Company name	Book value
Vetco Gray Inc, Houston	120
BBC shares (whereof \$ 23 million held in trust)	107
Ansaldo Gie S.p.A., Milan	55
ACE Ltd, Hamilton	29
IXYS Corporation, San José	18
Belano AB, Alingsås	11
EXEL Ltd, Hamilton	10
Advent Futures, Partnership, Delaware	10
ASEA shares (held in trust)	9
Swedish Aircraft one KB, Linköping	7
Lapinleimu Oy, Toijala	7
K/S Lörenfaref 1 A/S, Oslo	7
Svenska Charterintressenter KB, Malmö	7
Scholes Group Plc, Wilmslow	6
Svenska Elgrossist AB SELGA, Stockholm	5
ABB Current Oy, Helsingfors	4
CODA Ltd, Hamilton	4
Others	128
<b>Total</b>	<b>544</b>

## Note 12

### Tangible fixed assets

	Machinery and equipment		Land and buildings		Total	
	1990	1989	1990	1989	1990	1989
Acquisition value	5,712	5,029	3,397	2,766	9,109	7,795
Accumulated financial depreciation	– 3,240	– 3,142	– 808	– 729	– 4,048	– 3,871
<b>Residual value of fixed assets</b>	<b>2,472</b>	<b>1,887</b>	<b>2,589</b>	<b>2,037</b>	<b>5,061</b>	<b>3,924</b>

Pre ABB merger revaluations of tangible fixed assets have been reclassified as acquisition costs.

## Note 13

### Other current liabilities

	1990	1989
Taxes due	441	288
Non-trade payables	1,460	1,269
Accrued expenses/ deferred income	2,078	1,350
<b>Total</b>	<b>3,979</b>	<b>2,907</b>

## Note 14

### Short-term loans

	1990	1989
Part of medium- and long-term loans falling due within one year	123	161
Other short-term loans	4,250	4,185
<b>Total</b>	<b>4,373</b>	<b>4,346</b>

**Note 15****Medium- and long-term loans**

Currency in millions	Local currency	US\$		Local currency	US\$	
		1990	1990		1989	1989
U.S. Dollar	USD	1,319	1,319	USD	454	454
Swiss Franc	CHF	908	715	CHF	948	614
Swedish Krona	SEK	879	157	SEK	1,687	272
Danish Kroner	DKK	880	152	DKK	283	43
Spanish Peseta	ESP	8,134	85	ESP	1,890	17
Norwegian Krone	NOK	483	82	NOK	1,126	171
Finnish Markka	FIM	250	69	FIM	93	23
Italian Lira	ITL	72,802	64	ITL	169,620	134
Deutsche Mark	DEM	71	49	DEM	8	5
Pound Sterling	GBP	16	29	GBP	42	68
Indian Rupee	INR	383	21	INR	470	28
Other currencies			93			78
<b>Total</b>			<b>2,835</b>			<b>1,907</b>
Less the short-term portion			- 123			- 161
<b>Medium- and long-term loans</b>			<b>2,712</b>			<b>1,746</b>

**Note 16****Employee Share Ownership Debentures**

The Group's Employee Share Ownership Program, consisting of warrants and debenture loans, was launched in 1990. Under the terms of that Program, the ABB Group has received US\$ 399 millions as follows:

	Original currency amount	US\$
	in millions	
Swiss Franc	484	380
Finnish Markka	70	19
<b>Total</b>		<b>399</b>

The employees participating in the Program are entitled to acquire shares in ASEA AB and participation certificates in BBC Brown Boveri Ltd during the period from December 12, 1992 to December 11, 1995 at a price equivalent to the loan due to them. At the end of that time, those two companies will be obliged to pay in all amounts received by them as a result of the exercise of warrants to ABB Asea Brown Boveri Ltd, plus an equalizing amount to ensure that the ownership of the parents remain on a 50-50 basis. ABB Asea Brown Boveri Ltd will increase its share capital accordingly.

**Note 17****Stockholders' equity**

Group	Share capital	Restricted reserves	Retained earnings	Net income	Total
Opening balance sheet	1,750	808	760	589	3,907
Transfers between reserves		286	303	– 589	–
Proceeds from BBC warrants and convertibles			53		53
Dividend			– 234		– 234
Goodwill write off		– 116	– 16		– 132
Restatement of deferred taxes			– 229		– 229
Swiss tax accrual alignment			– 39		– 39
Translation differences, and other		– 40	371		331
Net income 1990				590	590
<b>Closing balance sheet</b>	<b>1,750</b>	<b>938</b>	<b>969</b>	<b>590</b>	<b>4,247</b>

The restatement of deferred taxes results from a reappraisal of the tax benefit that will result from the deduction of costs covered by restructuring provisions.

**Note 18****Assets pledged**

	1990	1989
Cash equivalent and securities	43	103
Receivables and inventories	332	251
Loans granted, shares and participations	30	16
Land, buildings, machinery and equipment	234	342
<b>Total</b>	<b>639</b>	<b>712</b>

**Note 19****Contingent liabilities**

	1990	1989
Discounted bills of exchange	171	172
Guarantees related to		
financial contracts	201	283
financial operations	233	324
Other contingent liabilities	312	417
<b>Total</b>	<b>917</b>	<b>1,196</b>

As part of the Group's business operations, there are in addition to the contingent liabilities listed above guarantees for the completion of various contractual undertakings. Some of these are of an on-demand nature. There is no indication that such guarantees existing at year-end for deliveries etc. will result in any payment.

**Note 20****Generally Accepted Accounting Principles in the United States (U.S. GAAP)**

The most significant differences between ABB and U.S. accounting practices are described in the following paragraphs:

**Revaluation of assets**

ABB accounting principles do not permit a write-up of fixed assets above the acquisition cost. Pre ABB merger revaluations of tangible fixed assets have therefore been reclassified as acquisition costs. Restatement of 1989 figures has been made accordingly.

**Deferred taxation**

ABB provides 30 percent on timing differences which are not expected to be reversed in the foreseeable future. U.S. GAAP require that the local statutory tax rate be used for deferred tax calculation.

**Goodwill**

Substantial goodwill acquisitions are capitalized and amortized over periods not exceeding 40 years. Smaller amounts are charged directly to shareholders' equity. U.S. GAAP do not allow charging the goodwill directly to stockholders' equity. Instead, all goodwill is capitalized and amortized over a maximum of 40 years.

**Revenue recognition for long-term contracts**

In most countries, revenues from long-term contracts are recognized at the completion of the contract or defined phases thereof. Under U.S. GAAP, revenue recognition normally takes place on a percentage-of-completion basis.

**Sale and lease-back**

Under U.S. GAAP, the profit arising from a sale and lease-back transaction is deferred and amortized to income over the leasing period or the period of depreciation of the asset. This method is applied by ABB as from 1990 for new finance leases only.

If U.S. GAAP were applied, this would have the following estimated effects on net income and stockholders' equity:

US\$ in millions	1990	1989
<b>ABB Group Income Statement Adjustment to U.S. GAAP</b>		
Net income as reported	590	589
Increase / decrease for:		
• Deferred taxes	– 21	– 23
• Goodwill	– 19	– 20
• Revenue recognition	81	34
• Sale and lease-back	– 115	– 46
• Restructuring expenses	– 133	– 105
• Other	– 103	– 12
<b>Approximate net income, U.S. GAAP</b>	<b>280</b>	<b>417</b>

**ABB Group Stockholders' Equity Adjustment to U.S. GAAP**

Stockholders' equity as reported	4,247	3,907
Increase / decrease for:		
• Deferred taxes	– 826	– 770
• Goodwill	493	378
• Revenue recognition	301	189
• Sale and lease-back	– 536	– 360
• Restructuring expenses, not yet incurred	495	628
• Minority interest in adjustments	5	31
• Other	– 54	9
<b>Approximate stockholders' equity, U.S. GAAP</b>	<b>4,125</b>	<b>4,012</b>

The following table shows a summary of the consolidated balance sheet according to ABB accounting principles and U.S. GAAP:

	Balance sheet as reported according to ABB accounting principles		Estimated numbers according to U.S. GAAP	
	1990	1989	1990	1989
Current assets	19,961	16,413	21,027	18,455
Land, buildings, and equipment	5,061	3,924	5,480	4,619
Shares and participations	864	2,183	864	954
Other assets	4,361	1,636	4,666	3,635
	<b>30,247</b>	<b>24,156</b>	<b>32,037</b>	<b>27,663</b>
Current liabilities	15,441	13,209	15,664	14,378
Advances from customers	4,937	3,379	4,936	3,807
Medium- and long-term liabilities	4,658	2,981	5,527	3,827
Deferred taxes	496	212	1,322	990
Minority interest	468	468	463	649
Stockholders' equity	4,247	3,907	4,125	4,012
	<b>30,247</b>	<b>24,156</b>	<b>32,037</b>	<b>27,663</b>



**Note 21****Split of ABB Financial Statements in Industrial Operations and Financial Services**

Transactions between the two parts have been eliminated only in the consolidated financial statements as follows:

	1990	1989
<b>Income statement</b>		
Other expenses	14	14
Interest income	977	470
Interest expense	977	470
Deferred taxes	5	5
<b>Net income</b>	<b>9</b>	<b>9</b>
<b>Balance Sheet</b>		
Cash and marketable securities	3,462	2,594
Trade receivables	20	14
Other current receivables	5,806	4,370
Financing receivables	823	451
<b>Total assets</b>	<b>10,111</b>	<b>7,429</b>
Trade payables	19	17
Other current liabilities	374	757
Short-term loans	8,326	5,971
Advances from customers	16	—
Medium- and long-term loans	1,376	670
Deferred taxes	—	5
Stockholders' equity	—	9
<b>Total liabilities</b>	<b>10,111</b>	<b>7,429</b>

**Auditors' Report**

We have audited the consolidated financial statements of ABB Asea Brown Boveri Ltd and subsidiaries as of and for the year ended December 31, 1990 in accordance with International Auditing Guidelines.

The financial statements of material subsidiaries representing a substantial majority of the total consolidated assets and of the total consolidated revenues were audited by other auditors.

In our opinion, the consolidated financial statements present fairly the consolidated financial position of ABB Asea Brown Boveri Ltd and subsidiaries as of December 31, 1990 and the results of their operations and the

changes in their financial position for the year then ended in accordance with International Accounting Standards as explained and interpreted in the Principles for Consolidated Financial Statements included in this report.

Zurich, March 19, 1991

**KPMG** Klynveld Peat Marwick Goerdeler SA

B. A. Mathers

H. N. Matthews

# ABB ASEA BROWN BOVERI LTD, ZURICH

The following two pages are excerpts from the annual report of ABB Asea Brown Boveri Ltd, the holding company of the ABB Group. Corporate Staff Investor Relations will supply the full report on request.

## Balance Sheet

(Swiss Francs in thousands)

December 31	1990	1989
<b>ASSETS</b>		
<b>Current Assets</b>		
Cash and marketable securities	9,247	173,576
Receivables	352,686	51,562
Unpaid share capital	—	310,000
<b>Total Current Assets</b>	<b>361,933</b>	<b>535,138</b>
<b>Fixed Assets</b>		
Loans granted	166,879	131,694
Shares and participations	5,807,267	4,543,479
Machinery and equipment	17,400	4,200
<b>Total Fixed Assets</b>	<b>5,991,546</b>	<b>4,679,373</b>
<b>TOTAL ASSETS</b>	<b>6,353,479</b>	<b>5,214,511</b>
<b>LIABILITIES AND EQUITY</b>		
<b>Liabilities</b>		
Payables and short-term loans	1,253,238	867,942
Provisions	22,663	18,184
Medium- and long-term loans	632,312	148,000
Bonds	125,000	—
<b>Total Liabilities</b>	<b>2,033,213</b>	<b>1,034,126</b>
<b>Stockholders' Equity</b>		
Share capital	2,380,000	2,380,000
Legal reserve	476,000	320,000
Other reserves	997,737	1,071,388
Retained earnings	96,220	106,102
Net income	370,309	302,895
<b>Total Stockholders' Equity</b>	<b>4,320,266</b>	<b>4,180,385</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>6,353,479</b>	<b>5,214,511</b>
<b>Contingent Liabilities</b>	<b>2,442,279</b>	<b>2,746,273</b>

## Income Statement

(Swiss Francs in thousands)

Year ended December 31	1990	1989
Revenues	17,139	14,445
Operating expenses incl. depreciation	– 111,467	– 97,745
Dividend income	532,460	373,679
Interest income	13,443	50,783
Interest expense	– 124,741	– 36,345
Net profit from sale of participations	84,900	58,617
Merger costs and taxes	– 41,425	– 60,539
<b>Net Income</b>	<b>370,309</b>	<b>302,895</b>

## Proposed Appropriation of Profit

(Swiss Francs in thousands)

	1990	1989
Net Income of the year	370,309	302,895
Carried forward from previous year	96,220	106,102
	<b>466,529</b>	<b>408,997</b>
Allocation to legal reserve	–	– 15,145
Dividend on class A shares in favor of ASEA AB	– 157,895*	– 152,632**
Dividend on class B shares in favor of BBC Brown Boveri Ltd	– 150,000	– 145,000
<b>Net Income carried forward to New Account</b>	<b>158,634</b>	<b>96,220</b>

\*equals net Swiss Francs 150 million after withholding tax

\*\*equals net Swiss Francs 145 million after withholding tax

## Auditors' Report to the Shareholders

As auditors of your company we have examined the financial statements for the year ended December 31, 1990, in accordance with the provisions of Swiss law.

We have come to the conclusion that

- the balance sheet and income statement are in agreement with the books
- the books of account have been properly kept
- the financial position and the results of operations are presented in accordance with the principles of evaluation prescribed by Swiss law and the requirements of the Company's statutes.

Based on the results of our examination we recommend that the financial statements submitted to you be approved.

We further confirm that the proposal of the Board of Directors for the appropriation of the net income is in agreement with Swiss law and the Company's statutes.

Zurich, March 19, 1991

**KPMG** Klynveld Peat Marwick Goerdeler SA

B. A. Mathers

H. N. Matthews

# INVESTOR INFORMATION

# ASEA

Per-share Data (in Swedish Kronor, fully diluted) <sup>1</sup>	A restr. Shares		A unrestr. Shares		B unrestr. Shares	
	1990	1989	1990	1989	1990	1989
Net income	28.90	39.30	28.90	39.30	28.90	39.30
Dividend (1990 proposed)	13.00	12.00	13.00	12.00	13.00	12.00
Equity	235	247	235	247	235	247
Stockprice: - High	850	715	850	710	860	720
- Low	455	385	480	380	450	370
- Year-end	485	710	480	710	487	710
Par value	50	50	50	50	50	50
Vote per share	1	1	1	1	1/10	1/10
<b>Key ratios<sup>1</sup></b>						
Return on equity (%)	15.3	21.3	15.3	21.3	15.3	21.3
Direct yield (%)	2.68	1.69	2.71	1.69	2.67	1.69
Market-to-book (%)	204	285	204	285	204	285
P/E	16.0	17.2	16.0	17.2	16.0	17.2
Number of shares outstanding <sup>1</sup>	48,979,947	48,979,947	1,134,871	1,134,871	15,447,070	9,887,923
Number of shares fully diluted <sup>1</sup>	48,979,947	48,979,947	1,134,871	1,134,871	18,260,171	12,885,182
% of total capital stock <sup>1</sup>	71.6	81.6	1.7	1.9	26.7	21.5
% of voting rights <sup>1</sup>	94.3	95.3	2.2	2.2	3.5	2.5
Stock exchanges listing <sup>2</sup>	Stockholm		Stockholm, London		Stockholm, London, Copenhagen, Helsinki, NASDAQ (ADR)	

<sup>1</sup> Based on year-end data. For 1990, fully diluted does not include 1,901,106 warrants on B unrestricted shares reserved for the ABB Employee Share Ownership Program. <sup>2</sup> In addition, ASEA B unrestricted shares are traded on the "Freiverkehr" (OTC) in Munich. On the NASDAQ in the U.S. they are traded as level-one sponsored American Depositary Receipts (ADR).

ASEA has no restriction as to share ownership for its unrestricted A and B shares. Restricted A shares may only be owned by Swedish citizens.

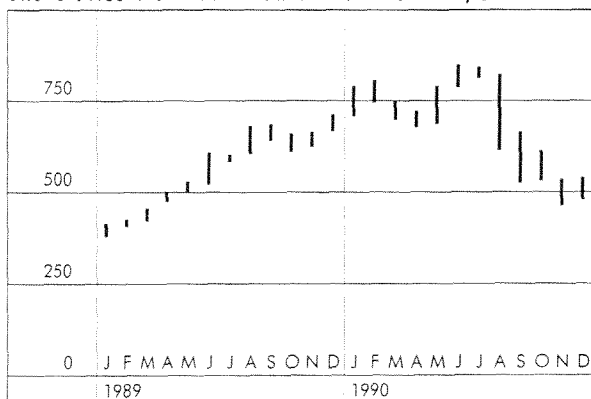
The ASEA portion of the ABB Employee Share Ownership Program could result in the conversion of 1,901,106 warrants into ASEA B unrestricted shares between Dec. 11, 1992 und Dec. 18, 1995. Out of the 2,813,101 convertibles outstanding on Dec. 31, 1990, 2,811,979 had been converted into B unrestricted shares by the end of January 1991.

At the end of 1990, ASEA's market capitalization, fully diluted, was approximately SKr. 33.2 billion (\$ 5.9 bil-

lion), making ASEA the fourth largest company in Sweden in terms of market capitalization.

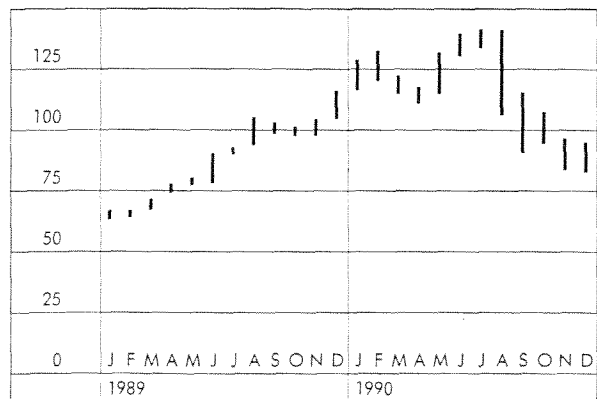
Outstanding as of December 31, 1990	Conversion / Exercise	Type of issue	Equity increase upon exercise
Upon conv. 2,813,101 B unrestr.	Oct. 85 - Jan. 15, 91 SKr. 213.30 per B unrestricted share	Convertible debenture 12%	SKr. 640 m
Upon exerc. 1,901,106 B unrestr.	Dec. 12, 92 - Dec. 11, 95 SKr. 745 per B unrestricted share	Warrants	SKr. 1,432 m

Share-Price Trend for B Unrestricted Shares, Stockholm



Bars indicate highest and lowest price paid for shares each month (in Swedish Kronor). — General Index.

Share-Price Trend for ADRs in the United States



Bars indicate highest and lowest price paid for shares each month (in U.S. Dollars). — NASDAQ Index.

Per-share Data (in Swiss francs, fully diluted) <sup>1</sup>	Bearer Shares		Registered Shares		Part. Certificate	
	1990	1989	1990	1989	1990	1989
Net income	241.45	303.60	48.29	60.72	48.29	60.72
Dividend (1990 proposed)	80.00	61.05	16.00	12.21	16.00	12.21
Equity	1,627	1,713	325	343	325	343
Stockprice: – High	6,330	5,305	1,420	1,260	1,200	922
– Low	3,750	2,716	750	574	671	429
– Year-end	3,880	5,012	780	1,061	676	875
Par value	500	500	100	100	100	100
Vote per share	1	1	1	1	–	–
<b>Key ratios<sup>1</sup></b>						
Return on equity (%)	14.8	17.7	14.8	17.7	14.8	17.7
Direct yield (%)	2.06	1.22	2.05	1.15	2.37	1.39
Market-to-book (%)	238	292	240	309	208	255
P/E	16.1	16.5	16.1	17.5	14.0	14.4
Number of shares outstanding <sup>1</sup>	1,045,694	959,485	1,052,778	954,454	1,889,858	1,792,699
Number of shares fully diluted <sup>1</sup>	1,094,150	1,006,550	1,094,150	1,006,550	2,069,858	2,069,858
% of total capital stock <sup>1</sup>	63.3	62.1	12.7	12.4	24.0	25.5
% of voting rights	50	50	50	50	–	–
Stock exchanges listing <sup>2</sup>	Zurich, Basle, Geneva Vienna, Frankfurt		Zurich, Basle, Geneva Vienna, Frankfurt		Zurich, Basle, Geneva Vienna, Frankfurt	

<sup>1</sup> Based on year-end data. Additional 316,851 Participation Certificates are reserved for the ABB Employee Share Ownership Program. <sup>2</sup> In addition, BBC bearer shares are traded as level-one sponsored American Depositary Receipts (ADR) in the U.S. and on the "Freiverkehr" (OTC) in Munich.

BBC has no restriction as to share ownership, with the exception that no single shareholder can be recorded in the share register with more than 7% of the registered shares issued.

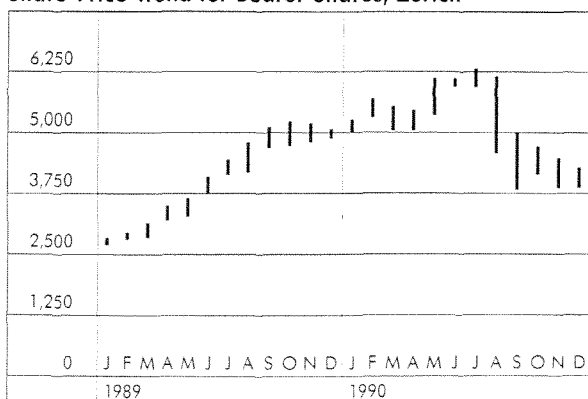
In late 1990 BBC enhanced its U.S. ownership base by introducing a level-one sponsored ADR program.

The BBC portion of the ABB Employee Share Ownership Program could result in the conversion of 316,851 warrants into BBC Participation Certificates between Dec. 11, 1992 and Dec. 18, 1995.

At the end of 1990, BBC's market capitalization, fully diluted, was approximately SFr. 6.5 billion (\$5.1 billion), making BBC the ninth largest company in Switzerland in terms of market capitalization.

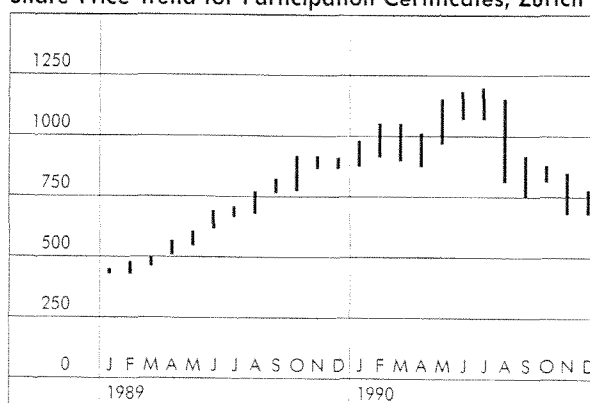
Outstanding as at December 31, 1990	Conversion / Exercise	Type of issue	Equity increase upon exercise
Warrants 28,456 bearer 21,372 reg.	Oct. 1, 87–Oct. 31, 91 SFr. 1,766/bearer share SFr. 315/reg. share	1987–1999 option loan	SFr. 57 m
Warrants 180,000 PC	March 1, 90–Nov. 1, 93 SFr. 870 per PC	1989–2000 option loan	SFr. 157 m
Conv. bonds 20,000 bearer 20,000 reg.	Oct. 1, 90–July 10, 98 SFr. 7,500 per 1 bearer plus 1 registered share	1990–1998 convertible loan, 4%	SFr. 150 m

Share-Price Trend for Bearer Shares, Zurich



Bars indicate highest and lowest price paid for shares each month (in Swiss Francs). — Swiss Performance Index.

Share-Price Trend for Participation Certificates, Zurich



Bars indicate highest and lowest price paid for shares each month (in Swiss Francs). — Swiss Performance Index.

# STATISTICAL DATA

US\$ in millions

<b>Income Statement</b>	1990	1989	1988
Revenues	26,688	20,560	17,832
Depreciation of Fixed Assets	– 750	– 549	– 514
Operating Earnings after Depreciation	1,790	1,257	854
Earnings after Financial Items	1,130	922	560
Income before Taxes	1,105	911	536
Net Income before Minority Interest	628	628	409
Net Income	590	589	386
<b>Balance Sheet</b>			
Cash and Marketable Securities	4,975	4,332	3,496
Other Current Assets	14,986	12,081	10,872
Fixed Assets	10,286	7,743	4,597
Total Assets	30,247	24,156	18,965
Current Liabilities	15,441	13,209	9,193
Advances from Customers	4,937	3,379	3,394
Medium- and Long-Term Loans	2,712	1,746	1,541
Other Long-Term Liabilities	2,442	1,447	1,329
Stockholders' Equity incl. Minority Interest	4,715	4,375	3,508
<b>Changes in Financial Positions</b>			
Net Financing from Operating Activities	895	1,273	680
Net Investments	– 1,173	– 3,965	– 594
Net External Financing	921	3,528	– 1,192
Change in Cash and Marketable Securities	643	836	– 1,106
<b>Other Data</b>			
Orders Received	29,291	21,640	17,822
Capital Expenditure for Tangible Fixed Assets	961	783	736
Capital Expenditure for Acquisitions	677	3,090	544
Expenditure for Research and Development	1,931	1,361	1,255
Dividends Declared Pertaining to Fiscal Year (SFr. in millions)	308	298	205
Number of Employees	215,154	189,493	169,459
<b>Ratios</b>			
Operating Earnings / Revenues	6.7%	6.1%	4.8%
Return on Equity	14.5%	16.8%	12.5%
Return on Capital Employed	19.7%	17.0%	13.6%