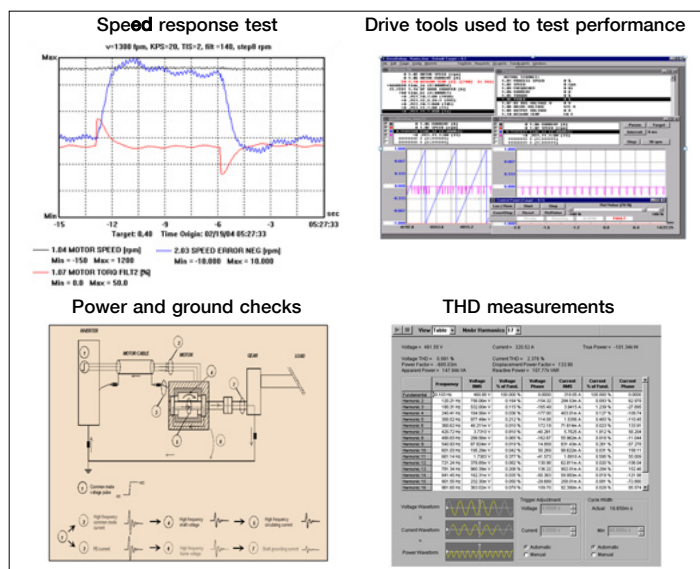


# Drive Performance Health Check

## Identify opportunities for drive system performance improvement

### Issues we typically see

- Offsets in finished rolls
- Incorrect surface speeds
- Tension loop control problems at the size press, calendar, and reel
- Sheet breaks due to draw adjustment and incorrect surface speeds
- Premature motor bearing failures
- Power and grounding problems



### Solution and Process Testing

The Drive Performance Health Check is a platform-independent, non-invasive service that can be applied to any drive system. It is an industry proven diagnostic service, which provides both a performance benchmark and improvement plan.

Testing and analysis for several drive performance indicators measures performance and identifies improvement area potential (See Figure 1)

#### These areas include:

Diagnostic data is collected for each drive under typical production conditions for a single grade. The data is evaluated by comparing measurements to limits specified for each drive-motor combination.

The following is the list of measurement points and general guidelines for assessing the condition of individual drives:

- **FPM:** Surface speed of the roll or section
- **Motor Rated Current:** Motor nameplate data
- **Motor Actual Current:** Should not exceed the rated current.
- **Motor Torque %:** Motor torque (filtered value) should never exceed or run near 100%, and torque variations exceeding the baseline reading +/- 10% should be investigated.
- **Encoder Feedback Ripple:** The lowest possible values for ripple are desirable, however any value of 75 units or higher should be investigated. Misalignment of encoder, defective encoder coupling or bad bearings in encoder are problems typically causing high than normal readings.

- **Motor Temperature:** Typically problems related to high motor temperature are motor overloading and lack of cooling. Motor temperatures should never exceed 120 C.
- **Inverter Temperature:** Temperature should never exceed 85 C. The drives are set to trip at 85 C.
- **Fault Logger:** Each drive has a dedicated fault logger. They contain a record of all alarm and fault occurrences for the associated drive.
- **Parameter Check:** Each drive parameter list is compared to a known good parameter list and checked for any unacceptable differences. Measurements found to be outside the limits are investigated to identify the root cause of the anomaly. If additional investigation – requiring machine downtime or tests performed on-site – is necessary, recommendations are provided. If the source of the problem is identified during the diagnostic session, appropriate corrective actions are described in a report. The contents of the individual drive fault loggers are reviewed to identify unusual alarm and fault occurrences.
- **Backup & Recovery:** Backup files of the controllers, drives, and spares are made, and the data files are stored on an external hard drive for safety.

## Improvement recommendations

Once data has been analyzed, ABB field service experts provide improvement recommendations, which include expected financial benefits for each recommendation.

### Improvement recommendations may include:

- Replacing encoders or running without encoder
- Correcting sources of system disturbances source such as load cells and current feedback devices.
- Speed tuning drives with load
- Optimizing or adding control logic
- Updating operating procedures
- Power and grounding audit with the aid of an oscilloscope and Rogowski coil

## Implementation planning

Once analysis and reporting has been completed, a meeting is scheduled to review findings and discuss improvement recommendations. The improvement plan is determined and scheduled.

Improvements may be completed all at once or scheduled to be completed incrementally over time. An ABB project manager will be assigned to lead improvement activities, using on-site or ABB personnel.

## Why ours is better:

### Typical annual savings potential: \$25,000 to \$100,000

The Drive Performance Health Check provides data vital to identifying and capturing higher productivity and improved profitability. It is a unique service, which utilizes software tools and Industry-proven data mining techniques. The diagnostic methodology is based on ABB's proven Drive performance indicators and standard service methodology.

Advanced processes and highly-experienced field engineers have saved system drive customers tens of thousands of dollars by identifying barriers to production efficiency and reliability.

### Drive Health Check report

The included Drive Health Check report includes all collected data and analyses information as well as system performance improvement recommendations and estimated financial benefits of each.

