

## Open-pit mining control program (OPM CP) Shovel and dragline application



Digging hard rock material is a challenge regarding the dynamic requirements for torque and load cycle for electric rope shovels or draglines.

The OPM control program is an integrated motor inverter firmware and enables a precise motion control with a high performance in torque accuracy.

ABB Open-pit Mining in Cottbus delivers an Open-pit mining firmware loading package which is a part of the ACS800 drive for mining with a firmware manual for the OPM control program.

### OPM control program in use

The ABB customer Vale is one of the leading companies for mining iron ore with about 300 Mt/year output. In Brazil, Vale equipped several shovels with the OPM control program firmware.

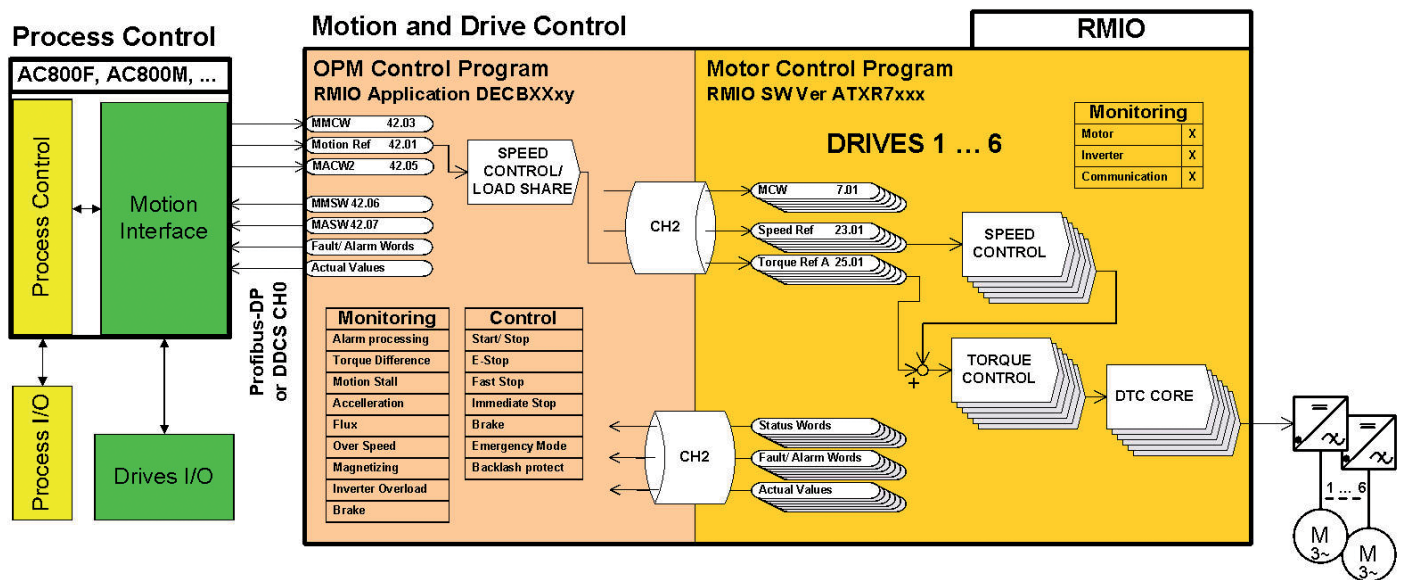
### Reliable motion control

Different main motions are operating on shovels and draglines, hoist, crowd/drag, swing and propel/walk. Each motion consists of more than one motor, driven by an ACS800 multidrive frequency converter. So the main task for motion control is to provide load share functionality and supervisory parallel operation of all motor inverters.

OPM CP software fulfils not only this functionality, it is integrated in the frequency converter firmware. The motion's master board communicates with the followers through the advanced, bi-directional high-speed connection which allows excellent control performance. At the same time it provides all important data for HMI in real time.

### Emergency run mode

OPM CP can handle the emergency run mode. When power modules of a frequency converter are deselected all limitations are set to corresponding figures to prevent overload situations and the operation can continue.



### OPM control program features

- Coordination of all motors of a motion
- No extra drive controller
- Fast response speed control
- Torque limitation (as function of actual speed)
- Reduced and emergency run modes
- Backlash protection
- Decoupling of separate motor action inside one motion
- Over speed monitoring
- Speed difference monitoring
- Torque difference monitoring
- Acceleration and deceleration monitoring
- “First In” alarm/fault detection
- Simple communication interface to overriding control for several protocols (DDCS, PROFIBUS, Ethernet/IP, Modbus/TCP, etc.)

### Customer benefits

- Part of ACS800 drive for mining
- Reduction of hardware components and spare parts
- Several communication protocols available
- Reduced commissioning time
- Quick and easy limitation adjustments
- Safety functions implemented and all time activated
- Use of ABB standard commissioning tools
- Highest dynamic DTC performance with ACS800 drive for mining
- Exact torque limitation
- Reduced wearing for ropes, gear boxes and others
- Operation with and without speed encoders possible
- Strong support in fault analysis
- Internal fault logger and configurable data logger

### Scope of supply

- Open-pit Mining control program
- E-learning course (H660e)
- Instructor led training (H661)
- See <http://www.abb.com/AbbUniversity/Courses.aspx>

For more information please contact:

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