Industrial IT for Papermaking

Paper Machine Drive PMC800
Basic Drive
The Basic Drive

ABB has created the unique PMC800 Basic Drive to meet the needs of papermakers with middle sized and smaller paper machines. The PMC800 Basic Drive offers the functionality of the most advanced systems using high-class general-purpose industrial products for processes and machinery such as pulp-drying, special papers or tissue paper production as well as for the specific finishing machinery on the same production lines.

The PMC800 Basic Drive includes the high performance, well-proven features of the PMC800xA solution, to enhance papermaking processes:

- Reliability and control precision
- Efficiency, safety and availability
- Integrated functionality
- Conformance to stringent standards
- A high level of industry expertise

The latest Paper Machine Drives solution, the PMC800xA, is ABB’s premier solution for the demanding drive systems of the paper industry. It incorporates a lifetime of experience with paper production lines, providing all of the features a drive system needs in paper production.

With the latest technology for general-purpose products, the Basic Drive can offer many of the same advantages as the most advanced system products traditionally used in high-performance processes.

Decades of experience and thousands of projects have honed ABB’s application software for automation platform use. The control solution and electrical drive design have been molded into that most suitable for the widest range of products and systems.
Core components of the Basic Drive

The basic components of both advanced and basic systems are the motors providing the needed torque; motor control to match the accuracy demands of the process; and coordinated drive control for any production status of the whole machine, at the operator's command:

- Motors
- Frequency converters
- System controls
- Services

Motors

Squirrel cage induction motors offer excellent availability, reliability and efficiency. Also, the combination of a frequency converter and a squirrel cage motor usually leads to considerable savings in energy and environmental terms. However, not all motors are suitable for variable speed drive. There are several points that have to be taken into account in the design and selection of a motor intended for paper machine systems.

Motors offered in the PMC800 Basic Drive system are totally enclosed and open drip-proof, three phase squirrel cage type, dimensioned to provide the optimal torque in papermaking machinery and built to comply with international IEC and EN standards.

Motors conforming to other national and international specifications are available on request.

The ABB general-purpose motor is designed for use in general industry, meeting the demands of standard machinery applications. Motors are mainly readily available from central stock locations around the world. Within the general purpose motor range, ABB offers motors designed for both direct-on-line and variable speed applications.

The PMC800 Basic Drive is designed mainly with general-purpose motors:

- Frame sizes: 71 to 355
- Output power: 0.18 to 250 kW
- Voltage: 380–480 VAC, 50/60 Hz
- Enclosure: IP 55
- Temperature rise class: B

Rigid design and high reliability
Industrial AC Drives and system control with excellent performance

Frequency converters

A PMC800 Basic Drive system is always designed with ABB industrial drives, highly flexible AC drives that can be configured to meet the precise needs of industrial applications. Drive configuration for the exact demands of the paper machine is an integral part of the PMC800 offering. The ABB industrial drives come with a ready designed range of inbuilt options needed in paper machine applications.

AC Drive installed in the switchgear cabinet

The PMC800 Basic Drive is factory-assembled in switchgear enclosures and ready for installation in a normal paper industry environment. The switchgear can include drives of different sizes and a common AC supply. The system includes the same emergency stop functionality and start safety functions as the leading PMC800xA system does.

The installation of drives in ABB’s MNS switchgear is based on a solution designed and tested for industrial use, where attention has been paid to the space required for installation and maintenance. The MNS solution with drives is equipped with drive and cable compartments, making the installation and use easy and safe.

Cabinet dimensions:

<table>
<thead>
<tr>
<th>Width</th>
<th>Depth</th>
<th>Height</th>
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<tr>
<td>400 mm</td>
<td>600 mm</td>
<td>2200 mm</td>
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Energy savings with high efficiency products
System control

The PMC800 applications are based on software specially designed for paper machine drive control, including control libraries for dedicated functions of the coordinated drive system.

The software is managed by the Compact Control Builder, a programming tool that is installed in a standalone engineering station, without the need for separate servers with data networks. It is a powerful IEC-compatible programming tool for even advanced function block and control module programming. The communication with other paper machines' control systems is managed with a standard OPC interface.

The coordinated drive control requires total management of the dynamic reference value chain. For the Basic Drive system, this resides in one AC800M main control unit, with the necessary I/O units.

Operation

The PMC800 Basic Drive is designed with compact LCD display panels with the necessary functions and standard data displays needed in the basic drive controls. Control desk equipment for drive safety and emergency operations is also included.

For the electrical room operations, the Basic Drive includes a drive maintenance tool for drive parameterization and trending, and a drive panel.

When necessary, a wider selection of graphical operator panels can be offered to provide a more dedicated operator interface for system operation.

The application software of the PMC800 comprises the following basic functions:
- Common external interlock
- Common internal interlock and alarm
- Sectional interlock and protection
- Drive-specific external control and interlock
- Sectional run and crawl interlocking
- Computation of the actual values for the drive section
- Monitoring of motor temperatures

All product features fully utilized in the system control
Proven solution and expert analysis for improved production efficiency

Machine-specific standard solution

The PMC800 Basic Drive is a solution configured through the use of a wide variety of products. To include the global solution experience efficiently, with a broad selection of components and functions, the more stringent standards are applied in the project engineering. This way, with a little less customization and customized documentation, the basic system includes all of the necessary functionalities to fulfill operational demands in all situations.

The PMC800 functionality includes the following machine-specific functions:
- Reference chain from the master section
- Starting alarm
- Machine speed setting
- Speed ramp of the machine
- Reverse crawl, jog and slack take-up
- Speed control
- Speed/torque selector and load share setting
- Torque control
- Web tension control with draw setting
- Web tension setting
- Load share function

Process requirements are comprehensively met
**Product services**

A wide range of product services, for maintenance and operations are available from ABB Service Centers across a vast number of countries. The ABB Call Center provides extensive product services day and night.

**Application services for paper machine drives**

*Runnability+* is our unique Asset Optimization Service for improving machine runnability. It helps you to determine the actions to choose for less downtime, fewer breaks or better web alignment.

*Speed+* is a service program that helps operators to decide on the drive system changes required in order to increase the paper machine web speed and increase the production capacity of the machine.

*Remote Service* allows a highly specialized expert to search the process remotely for the root causes of problems. Fast system access reduces unplanned downtime and enables rapid stabilization of the processes.

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**Phase I**

- Opportunity Analysis

**Phase II**

- Implementation and Value Assessment

*Easy communication*

between other control systems