In January this year, ABB completed the commissioning of a PMC800 multi-drive control system in a high-end coated paper project at Huatai Paper. Installed on the mill’s PM8, a machine with an annual production of 700,000 tons, the system met Huatai’s design requirements – it solves the problem of off-machine coating automation control, ensures smooth and highly efficient operation and realizes energy savings and emission reduction.

There are only two off-machine coaters of the same type in China, and each is equipped with ABB drive systems. Commissioned in 2004 and 2005 respectively, each is operating well.

Lin Shuming, head of ABB Pulp and Paper North Asia, said: "It indicates that, by integrating unique innovative technologies, ABB’s customized service model successfully passed the test of China’s high-end paper projects."

**Optimal utilization of advanced technology**
During a recent interview, Chen Linfeng, Sales Director of ABB Pulp and Paper China, said that ABB tailored the drive control system PMC800 installed on Huatai’s PM8 according to customer requirements and specific application needs. The drive system on Huatai’s PM8 and coating machine is by far one of the most complicated drive systems used today. The system includes 223 drive sections, 241 AC frequency conversion motors and 10 AC800M controllers, as well as additional control equipment. It provides AC drive and control for specific parts of the production line, including the paper machine, rewinder, off-machine coater, super calendar and winder.

Production lines of this type are commissioned at the average rate of one every three years. The difficulty lies in the control of the off-machine coater, particularly the flying splice control. While the off-machine coater operates at a designated speed, this control method is applied so that online roll-changing can proceed without shutdowns.

Meeting this challenge requires drive equipment that has control precision down to a millisecond level (1-10 ms), along with extensive cooperation and experience between the drive supplier and equipment supplier.
At Huatai, there are numerous tension control points on the production line. When the speed on the production line varies, it is very difficult to precisely control the tension. The maximum speed of PM8’s coater is 2,100 meter/min, which is the extreme speed of the machine and motor. But ABB’s leading drive control technology ensures the production line will operate smoothly and continuously.

To minimize energy consumption, ABB installed customized motors with optimization design on various parts of Huatai’s production line, including the winder, rewinder, super calendar and coater. This kind of motor is much smaller and lighter than standard motors. Its design is optimized according to a piece of equipment’s specific load requirements, so that control and efficiency are optimized.

The current installed power of paper machines in China’s paper industry is dramatically higher than it was in the past. This renders the 400V motor, which was previously prevalent, unable to meet new industrial demands. As a result, ABB promotes its 690V grade low voltage motor – the ABB M3BP is the most high-efficiency AC motor in the industry.

“It has higher voltage than the 400V motor, so there is less heat loss due to smaller current, contributing to energy-saving,” said Linfeng. The efficiency of ABB’s standard motor is 3.8 percent higher than that of a normal motor. On Huatai’s PM8 production line with total installed power estimated to be 390,000 kW, this motor can annually save nearly USD 7.6 million in electricity costs and almost 3,700 tons of coal.

Problem-solving with the world’s best combined service resources

In terms of technology, PM8 is the most complex paper machine in China – or even the world. So ABB selected its best global service team to ensure the project’s smooth implementation. ABB Finland sent its principal engineers to meticulously oversee the software and equipment design work, key technology, project progress, etc. They worked with a Chinese team consisting of highly-skilled engineers who are experts in different aspects of the automation. These Chinese specialists could fully utilize local service and equipment manufacturing systems to provide Huatai with the most efficient and high-quality service possible.

Said Linfeng: “Engineers from ABB Finland and China cooperated by contributing their strengths and advantages, which overcame many technical difficulties, accomplished the project meeting its schedule, quality and quantity requirements, and achieved customer satisfaction.”

Linfeng added: “Currently, the most challenging and state-of-the-art paper equipment and projects in the world are in China. ABB has many customers similar to Huatai, such as, Sun Paper, Lee Man Paper, APP, HengAn, Nine Dragons Paper and Shan Ying Paper. ABB finds the best cooperation points with these customers, and establishes long-term partnerships. This is due to the tailor-made service, which provides a very cost-competitive plan.”

Shuming said: “The paper industry is a high energy-consumption industry. ABB’s automation technology could significantly help customers improve energy efficiency, and realize green environmental production and sustainable development. Shandong Huatai Corporation is a world-leading paper enterprise. The long-lasting cooperation between ABB and Huatai demonstrates the mutual trust between the two partners, raising excellent cooperation model and energy-saving example for the industry.”

For more information, please contact:

ABB Ltd.
Finnabair Industrial Park
Dundalk, Co. Louth, Ireland
Tel: +353 42 9385100
Fax: +353 42 9385124

ABB Engineering Ltd.
S.P. Building, No. 5, Lane 369, Chuangye Road
Kangqiao Town, Pudong District
Shanghai, 201319, P. R. of China
Tel: +86 21 6105 6777
Fax: +86 21 6129 8499

ABB Inc.
579 Executive Campus Drive
Westerville, Ohio 43082, USA
Tel: +1 614 818 6300
Fax: +1 614 818 6571
www.abb.com/pulpandpaper

© 2011 by ABB Inc.