

## Sappi Ngodwana invests in correct decision-making and plant management

Client: Sappi Limited

Location: Mpumalanga, South Africa

Scope of Delivery: Papermaking Suite 3.0 delivery including a Distributed Control System, Drive System, single drives and engineering, installation, start-up, training and after-sales services.

*Sappi wanted a supplier that continuously trained their own people, would understand Sappi's business and culture, and had specific roll out references in the pulp and paper industry with connectivity to other systems.*

*"ABB had all all these elements, plus their platform (Industrial IT) had all the right controls" said **Andrea Rossi**, Sappi Strategic Projects Director.*



**Sappi invested in automation in order to obtain the right information to make correct decisions and manage the plant. Since no one wants interfaces anymore, a papermaker's first choice is an integrated platform. Automation is essential, not just to augment a skills shortage, but to optimize existing equipment efficiencies.**

Sappi Ngodwana mill is situated close to the captivating scenery and wildlife of the Kruger National Park. Although Sappi's tag line is "the word for fine paper", here, in their country of origin Sappi is about far more. Their Kraft Product division produces newsprint, containerboard, sack kraft and pulp.

ABB's installations within Sappi in South Africa are extensive. DCS systems are installed at the Saiccor, Enstra, Usutu, Lignotech and Tugela operations. There are also QCS systems at the Ngodwana, Saiccor, Enstra, Adamas, Stanger and Tugela mills. ABB's sectional and standard drives are in most of Sappi's mills.

## Advanced automation with enhanced asset utilization

The control system replacement at Ngodwana began in 2000 with a millwide study of the existing control system, which was found out to be at the end of its life span without a well-defined upgrade path.

Having identified with ARC Advisory Group that ABB's Industrial<sup>IT</sup> platform offers Process Automation & System Strategy (PASS) system for a lifecycle of 15-20 years, the mill began the upgrade process. Further motivation for installing the new automation system was the opportunity to achieve enhanced asset utilization, reduction in the total cost of ownership, and implementation of Sappi's enterprise optimization initiatives.

## Enterprise integration key to project success

Due to the large capital expenditure and resource-intensive requirements, Sappi decided to implement the DCS upgrade over a number of phases.

Digester No2 on the pulp side, and the newsprint machine on the paper side, were identified for phase one of the DCS upgrade. On the recovery side of the mill, the evaporation No1 plant, and the chemical recovery furnace No1 were identified for Phase II.

## Detailed engineering and digester upgrade set pace

Pre-engineering for the first phase of the project began in late 2001, and the project's scope was defined so detailed engineering — which turned into a real team effort — proceeded smoothly.

Importantly, the detailed engineering defined the way the new DCS would be configured, installed and operated. The detailed standards were developed in parallel to ensure that quality and consistency would be maintained through all phases of the upgrade.

The DCS upgrade of the digester No2 plant, including, feed, cooking, screening and washing, also included the complete replacement of the TDC control system with all associated I/O Modules and cabling totaling more than 1,200 I/Os. The upgrade covered more than 40 new inline instruments, installed to ensure that the control base was ready for level II control implementation.



Digester No2 was successfully commissioned on schedule over a 14-day shutdown, beginning March 18, 2003. In parallel, the OSIsoft PI (Process Information) system was integrated with the new ABB Industrial IT DCS equipment, allowing a seamless transition of historical data collection from the old TDC2000/3000 system to the new ABB Industrial IT DCS.

## Newsprint PM - teamwork delivers

The newsprint DCS upgrade was far more complex. In addition to the control system replacement with associated I/Os, all the old Asea Tyrak 8 drives with the DS8 controllers were replaced with ABB ACS600/DCS600 drives and AC80 controllers, and all the local operator stations were replaced.

Months of intense planning paid off when more than 2,300 I/O points were changed over in a nine-day shutdown in July 2003. According to Sappi, the start-up of the newsprint machine was testimony to the professional implementation by all concerned, with production going from 16% of budget to well over 75% of budget in just two days. Meanwhile, phase two was also well under way and commissioning was completed at the end of 2003.



### Starting the plant with the push of a button

“The fact that you can start the whole plant with one push of a button is great. There is much less room for operator error; you simply can't start it up in the wrong sequence,” says the mill's General Manager, **Marius Fischer**.

Longer term, the mill can look forward to all the benefits of ABB IndustrialIT's real-time information connectivity. With Industrial IT, each physical object in the mill becomes a unique software shell that bundles electronic product characteristics such as instruction manuals, drawings, control faceplates, configuration tools, etc., into a 'virtual' replica of the real component. Mill workers have mouse click access to the information required to install, configure, operate or optimize IT. When an operator starts up, he can look on the system and see what the optimum settings of the machine were when a particular product was made. This means less shrinkage, less time wasted and that is just the beginning.

### Sappi

Sappi Fine Paper's main product line is high quality, branded coated fine paper, but it also supplies uncoated graphic and business paper, coated and uncoated speciality paper, and casting release paper used in the manufacture of artificial leather and textured polyurethane applications. Its customers in 100 countries include leading printers, advertisers, publishers and designers.

Sappi Forest Products, the pulp, packaging and newsprint business based in South Africa, is the world's largest producer of chemical cellulose (dissolving pulp). It provides the group with a pulp revenue stream that hedges the pulp purchases of Sappi Fine Paper, reducing exposure to volatile world pulp prices. The division owns and manages 540,000 hectares of plantations, and produces bleached and unbleached kraft pulp, container-board, packaging paper, newsprint and sawn timber.

Sappi Forest Products comprises the following business units:

- Sappi Saiccor, producing 15% of the world's chemical cellulose
- Sappi Kraft, which is a leading producer of packaging paper and newsprint.
- Sappi Forests, which manages the plantations and sawmills.

The division contributed 19% to total group sales and US\$191 million to the group operating profit, reflecting the strong performance of Sappi Forest Products in financial 2004, despite the impact of the strengthening of the Rand.





**ABB Oy**  
Process Industry  
P.O.Box 94  
FI - 00381 Helsinki, Finland  
Telephone +358 10 22 11  
Fax +358 10 22 24267

[www.abb.com/pulpandpaper](http://www.abb.com/pulpandpaper)