Stora Enso's Kvarnsveden mill: aiming for 1 million tonnes

Heimbach: How press felts impact saturation

REDD: Reducing forest loss and climate change

Propapier: Huge PM2 line in Germany starts up
Four years on and still going strong

A record-breaking paper machine and energy-saving systems have improved conditions and cut costs at the huge Kvarnsveden mill in Sweden. Vince Maynard reports

Visiting the Kvarnsveden mill in January may not have been the wisest of moves given the Swedish weather, but the warm welcome given me on arrival more than made up for the snow and freezing temperatures.

Stora Enso's Kvarnsveden mill is just outside the town of Borlänge and its newest addition was PM12, installed by Metso. The line was initially started up in November 2005; since when it has set a world production record for SC paper production in 24 hours of 1,926 m/min.

Today, anyone returning to the mill to see the progression from its initial start up configuration will be able to see first hand the work that the mill's own staff have put in place to streamline the production process. Installed in a 300-m long purpose-made building, PM12 has a capacity to make 420,000 tonnes with a trim width of 1,040 cm.

PM12 represented a significant investment by Stora Enso and when the production capacity is coupled with the other three paper machines, the Kvarnsveden site will exceed one million tonnes a year.

Much of the work carried out by the highly-qualified staff at Kvarnsveden has been aimed at further reducing energy consumption, a task that is both ongoing and something that is under constant review.

Production manager for magazine paper Anders Nordin explained that one of the areas under scrutiny were the pumps and how to maximise their use while reducing the energy consumption. Having analysed the current production on PM12, the mill's engineers will start to change the pumps or pump wheels to reduce the power required at source to further enable a more reflective use of energy tailored to production demand.

It has to be said that they know their mill inside out, identifying areas where savings can be made in energy reduction are more than evident when walking round the mill.

One such example is the removal of the second-stage cleaning pump from the mill's configuration. This was seen as non-essential and while two others were operational they could safely take it out of use. It will however remain in situ should they need to reconnect it. With Kvarnsveden consuming about up to 2 per cent of Sweden's entire electrical grid capacity, Stora Enso have made huge efforts to...
minimise the mill’s impact on the environment.

PM12 was designed to minimise energy consumption and the installation of ABB technology went a long way in helping achieve this goal. In fact ABB provided power distribution, process electrification, building electrification, paper machine drive system, refiner motors, and project execution services: project management, engineering, site management, start-up, and training of the mill personnel. (A more detailed review of ABB solutions will be included in our next issue).

Through analysis of the mill’s design and projected production, ABB’s dedicated pulp & paper industry specialists came up with a solution that incorporated projected production and energy needs and production efficiency.

By incorporating variable speed drive motors into the mill’s heart of operation, the need to have motors running at capacity and then having to throttle them back was eliminated. This in real terms would represent an energy saving of about 1 per cent.

Another aspect of the drive selection was that they are water cooled which has a dual benefit. Firstly the room/floor space needed to house the drive units is greatly reduced by about half which at Kvarnsveden represents a reduction from around 16 rooms down to the eight they currently use for the machine section. Secondly, the near silent environment in which the drives are housed enables technicians to work without the need of the specialist noise protection equipment often associated with air-cooled plant.

Further updates from the Kvarnsveden mill are planned which will be described in future issues.