

Biomass Plant for Swedspan Polska

Swedspan Polska recently ordered a state-of-the-art biomass plant for its planned ultra-thin HDF production plant in Orla. The biomass plant will provide both the heat needed for the production of HDF boards and green electricity for the plant itself. The installation work is to begin in September 2010 and the plant will be commissioned in April 2011.

Following the opening of the office in Bielsk Podlaski (see OnBoard January), the order for the new biomass plant is another major step towards building the new ultra-thin HDF plant for Swedspan Polska. "We have now completed 85% to 90% of the plant's machinery orders. We are therefore pretty confident to run the first board in May 2011," said Knut Gullesen, Managing Director of Swedspan Polska. Prior to the energy plant, Swedspan Polska had already ordered a forming line and press, as well as the front-end system. The front-end system is being supplied by Metso and the energy plant and the press system will be produced and delivered by Dieffenbacher.

Co-generation system

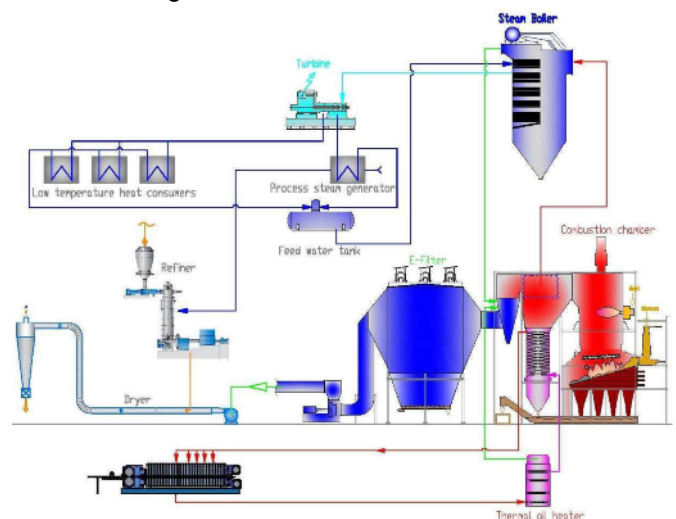
The state-of-the-art power plant has been designed as a co-generation system producing green electricity as well as heat according to a tailor-made steam concept using biomass as the fuel. The green power will be produced by a turbine driven by superheated steam produced in the boiler. A backpressure turbine has an extraction dedicated to the refiner steam needs, while the discharge feeds the air pre-heaters for the HDF production. The facilities of the plant will also receive their heat from this system.

Parallel to the steam consumers, air condensers are used when needed to offset process-related fluctuations. Hot gases from the combustion are used for other processes in the mill, such as the steam boiler and thermal oil heating. All systems are independently controlled to assure optimum process operation and maximum thermal efficiency. The energy system is designed to supply the production needs even without running the turbine to produce green electricity.

Process head demand met

All MDF or HDF production plants have a significantly higher demand for energy than particle-board production plants due to the number of energy consumers:

- Chips have to be cooked and refined to extract fibres from the raw material
- Fibres have to be dried
- The press needs to be heated up to 240°C, which makes the glue react and secure



Main energy consumers within the HDF production process. Steam boiler, Combustion chamber, E-Filter and Refiner.

The boiler of the ordered biomass plant will provide enough capacity – about 60 megawatts of heat. This is equivalent to the heating demands of roughly 15.000 single-family houses. "This capacity will cover the plant's head demand," Knut Gullesen confirms.

The fuel for the biomass boiler comes from the bark and wood waste of HDF production itself, as well as from

other IKEA plants and forest residues like twigs and treetops, etc. The 5 megawatts of electricity that will also be produced by the energy system will therefore be classified as green energy, so that Swedspan Polska will receive greenhouse gas certificates for this amount of energy.

In regard to environmental technology, Swedspan continues to follow its policy of using the best equipment available. A dry filter will be installed to remove the ashes from the hot gas used to dry the fibres. Furthermore, a wet electric filter will be installed to reduce emissions to the environment. This technology will be come from EWK, one of the biggest suppliers of filter systems to the wood-based panel industry. Knut Gullesen: "The installed system will be the biggest filter EWK has ever delivered to the wood-based panel industry. All in all we are delighted to have ordered a comprehensive technology package for producing leading ultra-thin HDF with the lowest possible environmental footprint."

LOTO workshop in Hultsfred

From January 26-28, 2010 a group of Swedspan maintenance managers, electrical engineers and production managers met in the Hultsfred plant to create a foundation for implementing Lockout/Tagout (LOTO), the first cardinal rule of EHS. By the end of this highly successful workshop led by Annamarie Velic, Corporate EHS Manager, the team had appointed LOTO coordinators for every site.

LOTO (see OnBoard January 2010) is a safety programme for de-energizing equipment or machinery before carrying out any servicing task. The basic rule of LOTO is very simple: Before a worker enters a machinery facility, he or she must turn off all hazardous energies (e.g. electrical, mechanical, and pneumatic) and place a personal lock on the respective switch or valve to prevent an unintentional start-up.

A successful LOTO implementation at any plant consists of the following five steps:

- Re-wiring or amending machinery which is not designed for safe de-energizing
- Defining zones to block production lines during various servicing tasks

- Documenting LOTO procedures for equipment with more than one energy type
- Training of authorised employees
- Auditing the program

From theory to complex machine operations

The workshop conducted by Annamarie provided both theoretical and hands-on training. Following the theoretical portion, all participants agreed on the main principles of the Swedspan programme. Afterwards, they took part in a session where they documented a LOTO procedure for the continuous press line, one of the most complex machines in a production plant for wood-based panels.

At the end of the workshop, LOTO coordinators were selected for each plant. Mats Carlsson will serve as the LOTO coordinator heading the program implementation in Hultsfred while Aidas Vaisnora and Vladimír Matušek were appointed for the Giriu Bizonas and Malacky sites. "This is an excellent start for achieving the LOTO introduction goals that the Swedspan management team passed last December," explained Annamarie.

Swedspan wants to implement 10% of all LOTO procedures by the end of 2010. In the next steps, the LOTO coordinators for Malacky and Giriu Bizonas will select a team within each plant to carry out this task. Next year, both plants will need to determine logical zones for their production lines, document procedures, train personnel, purchase locks and other equipment and, ultimately, roll out the full program.

Hultsfred was selected as the site of this workshop because the plant has already started to establish LOTO procedures as part of a daily routine (see textbox). A team under the leadership of Albert Lauenstein, Managing Director at the plant, and Mats Carlsson, Plant Electrical Engineer, already re-wired several machines to ensure a safe lockout, divided the continuous production line into zones, and defined basic communication procedures. Therefore, the Hultsfred plant was an ideal workshop location for teaching co-workers from Giriu Bizonas and Malacky about lockout in general as well as the prerequisites for a successful implementation.



Participants of the LOTO Workshop – bottom left to right: Stanislav Medved, Jorge Calaforra, Michael Lennartsson, Wojciech Sulewski, Rimas Macijauskas, Aidas Krunglevicius, Aidas Vaisnora, top left to right: Vladimir Matusek, Albert Lauenstein, Mats Carlsson, Bengt Johnsson, Annamarie Velic

Hultsfred serves as LOTO prototype

Hultsfred has already completed the main equipment changes, trained all authorised personnel and officially launched the LOTO programme. The Hultsfred plant is now preparing for the process audit, the final step of the implementation. This audit ensures that everyone is complying with the rules to make LOTO a sustainable part of their everyday work. Once completed, Hultsfred will serve as a LOTO prototype within the Swedspan group. "Way to go Hultsfred!"

Through this LOTO initiative, Swedspan has proven once again that ensuring the safety of its employees is just as important for the company's success as producing high quality products and promoting environmental responsibility .

Implementing Low-Emission resin systems at all production sites

One of Swedspan's main objectives is to become the market leader in low-emission and lightweight boards – the use of Low-Emission (LE) resin systems is a crucial factor for that. With the implementation of Low-Emission (LE) resin systems in the production process at every plant Swedspan has recently taken a major step forward to become the leading manufacturer of boards with the lowest emission rates.

The implementation of Low-Emission production with LE resin systems at Swedspan began at the Hultsfred plant in Sweden, followed by the Malacky site in

Slovakia. Since August 2009, Swedspan's Giriu Bizonas plant in Lithuania has also been producing and delivering exclusively low-emission boards based on the LE resin systems. "With the completed implementation of the Low-Emission resin systems, Swedspan has once again shown its eagerness to make high-quality green products at a low emission level. Higher production standards is one of Swedspan's top priorities in order to meet its main objective of becoming the market leader in Low-Emission lightweight boards," said Matthias Gruchot, Wood Processing R&D Team Leader at Swedspan International. At every plant the main tasks during the implementation process were to

- ensure a high level of production capacity
- ensure a high press speed
- maintain the properties for the end use of the boards
- achieve a nearly cost-neutral basis

Emission measurement becomes more important!

In Low-Emission production the fast measurement of the emission in the production becomes more and more important. A suitable online method could be the solution.

During the implementation process Swedspan had to address two major challenges:

- Trials proved that resin systems producing boards at the targeted Low-Emission level affected the speed of production – the press ran a bit slower than established resin systems.
- Measuring perforator values at such a low level proved to be complex. The targeted perforator value for LE boards is very close to the one of natural wood, which could be assumed between approx. 0.3 to 0.7 mg/100g wood. Measuring the emission value is becoming increasingly important. However, the methods are very time consuming which is a clear drawback of emission determination.

A key factor for successful implementation throughout Swedspan was the installation of Low-Emission resin systems that were adapted to the needs of each production line, while ensuring the accuracy of the perforator values in the local quality labs.

What is it – “Low-Emission” and “Perforator Value”?

There are many different standards around the globe, e.g. the emission standards like Californian CARB II and the Japanese F**** and the European content standard, e.g. E1.

The Japanese F**** emission standard is the world's most stringent standard in terms of the emission level of wooden products and furniture for interior usage. Swedspan is eager to provide every customer in the IKEA flat-line furniture-supply chain with boards that comply with this emission standard. At Swedspan, we call our boards Low-Emission boards. Panels produced according Low-Emission on F****-level have a perforator value of 1/3 E1. The perforator value reflects the content.

Reducing emissions further

Swedspan's next goals are to successfully apply the F**** certificate according to the Japanese standard and to stabilize the Low-Emission production at each site. Apart from that, Matthias Gruchot is already thinking about further improvements: “The current implementation of Low-Emission resin systems is only one important step towards Swedspan's goal of manufacturing boards at an emission level that is as low as that of natural wood. We won't stay at the current level, instead we will move on.” Swedspan will implement Ultra Low Emitting Formaldehyde (ULEF) resin systems at all plants in the future. Matthias Gruchot is looking forward to this: “It will encourage local production control to take responsibility for board emissions and board quality.” The Swedspan International R&D Team will be available to support each of the plants in this context.