Wattstrasse 14
CH-9240 Uzwil

+41 71 955 04 50
www.ics-automation.com
info@ics-automation.com

Fiber cement plant

Customer profile

Together with our partner company MFL Faserzement from Liezen, Austria, we supply complete systems or individual plant components for fiber cement plants worldwide.

Starting position

Fiber cement products are widely used especially in Eastern countries, South America or in Eastern Europe. In addition to classic applications such as facade construction or roofing, fiber cement panels are also frequently used for interior finishing in humid regions. The reasons for this, apart from the moisture-drying properties, are the high robustness, the simple handling, the increased fire protection properties as well as the long lifetime.

One of the largest projects we have realized for a customer from Thailand, where four complete production lines were installed.

The four lines were realized in two phases. The realization of the first three lines started in 2013 and was completed in 2014 with a commissioning that lasted several months. The fourth line followed in 2016 and went into operation in 2017.

Requirements

Typical for Fiber cement plants are the large quantities of actuators and sensors as well as the different drives with power ratings from 0.37 kW up to 560 kW.

In order to withstand international competition, short cycle times, a fully automated production as well as a constantly high product quality are of the utmost importance. This requires, among other things:

- Consistent process control
- Job database with recipes
- Traceability of production
- Simple operation
- Robust, long-life control systems
- Registration of several thousand IOs
- Interfaces to further processing plants
- Constant sheet thickness (+/- 0.1 mm)
- High sheet speed (>150 m/min)
- Low cycle time stacker / unstacker (<10 sec.)

Another challenge is the huge scope of the plant, from raw material intake to the destacker located after the transport system. This includes the following plant components:

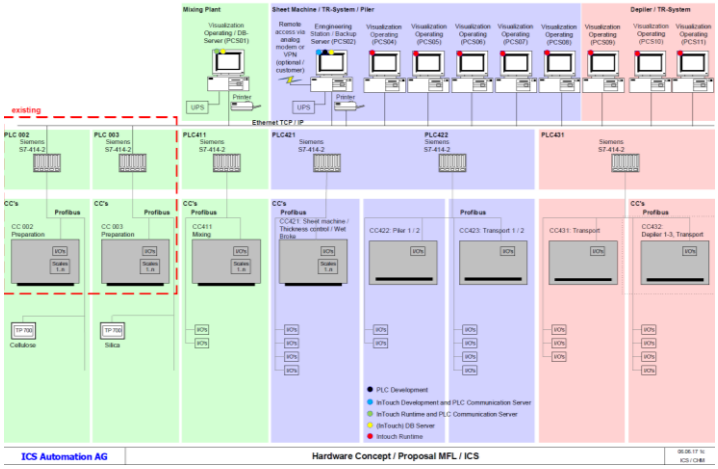
- Raw material intake
- Cellulose preparation / refiner controls
- Silica preparation / ball mills
- Mixing / slurry preparation
- Water and sludge preparation
- Sheet machine with thickness control
- Servo-controlled transfer / cutting tables
- Stacker systems (piler, repiler, depiler)
- Transport systems, autoclave loading
- High pressure sheet press

The engineering and commissioning effort amounts to several man-years and requires efficient order processing and consistent scheduling.

Top modern production plants thanks to long-standing partnerships

Concept / solution

A production line is divided into the areas of raw material preparation, sheet production and transport system and is controlled by separate PLC controllers.



The interfaces between the controllers and the connection of the periphery are made via bus system (Profibus/Profinet). The production line is operated via PC stations, which are installed along the entire line. Certain areas are also equipped with a touch panel to enable operator input or interaction.

The raw material and slurry preparation is implemented as a batch process. With the help of a job and recipe database, the customer can handle his production recipes and track production histories. A production line includes among others:

- Server-client environment with databases
- 7 PC operator stations with Siemens WinCC
- 5 touch panels Siemens TP700
- 5 PLC controllers (S7-400/S7-1500)
- >20 servodrives from SEW (up to 75kW)
- >50 frequency converters from Siemens
- Drives sizes up to 560kW
- >50m switch cabinet
- Safety technology with muting system
- Remote access via e-Won or VPN

Customer benefits

Thanks to the long-term partnership and the experience from more than 30 successfully implemented large-scale fiber cement projects, the following benefits result for the end customer:

- Everything from a single source. ICS provides
  - Installation planning
  - Installation supervision
  - Delivery of electrical hardware (worldwide)
  - Engineering (HW, PLC, Visu, PLS)
  - Commissioning
- Market-leading, innovative and state-of-the-art system
- Fully automated solution
  - Simple, customized operation for the individual production part
  - Safe and reliable production
  - Historical production data
  - Efficient error analysis
  - Process monitoring for entire plant
  - Job control with traceability of individual production batches
- Modern but durable and robust control system
- Motion systems with low cycle times and high repeat accuracy for cutting, conveying or lifting & lowering tasks

ICS Automation AG
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acs ag
Haselweid 1, CH-9542 Münchwilen
+41 71 929 44 44 / info@acs-ag.ch
www.acs-ag.ch