

ABB's Industrial^{IT} sets the pace for formic acid production in Kemira



Formics, part of Kemira Chemicals, has started up a new production line at its Oulu facility in Finland for the manufacture of formic acid based products. The goal of this investment is to meet the growing demand for formic acid based products by increasing factory productivity. One of the most important elements in this investment was the ABB Industrial^{IT} technology solution.

The start-up schedule for the factory rebuild was brought forward by six months, requiring maximum flexibility and resource utilization from the participants in this project.

The growing market for formic acid together with the advanced age of the methyl formiate section of the Formics Group's oldest formic acid line made the EUR 17 million investment a necessity.

In order to increase capacity a completely new acid production line, or hydrolization section, was built. The old formiate line was rebuilt and extended at the same time. The investment also improved the productivity of Kemira Oulu Works as a whole, as the increase in capacity also enabled the carbon monoxide generated by the Oulu factory complex to be fully utilized - carbon monoxide is one of the raw materials for formic acid.

Industrial^{IT} integrates the old and the new

For Kemira it was important to have the best possible process automation for the chemical processes. Another very essential consideration was that ABB were able to combine the process control of the old production lines with the architecture of the new technology.

“ABB was our choice. Industrial^{IT} continued the tried and proven ABB delivery”, says **Ilkka Palsola**, who is in charge of factory services at Formics. “In this case the possibility for integration was a very important factor for us. Apart from the integration factor, the decision also obviously took into account the amount of capital that would be tied up in an investment of this nature, as well as the cost-effectiveness of the system to be installed”, states **Palsola**.

The ABB delivery included Operate^{IT} workstations, Control^{IT} process stations, redundant system bus, S800 Exi I/O units and Profibus DP network for distributed I/O-units and drives control.

The system included more than 700 I/Os, a fiber optic plant network and a similar control

network connected on two parallel Aspect and Connectivity servers to provide redundancy as a backup.

ABB’s Aspect Object technology associates elements of production with the plant of the business in which they operate. It makes information gathering simpler than ever before. When clicking on the relevant object, different aspects enable every user to zoom in at the same time on the exact information they want.

Record results through good planning

Ilkka Palsola points out that formic acid is manufactured in a very slow process, which is precisely controlled. This facilitates process control in spite of the requirement for high availability. It is only shutdown every second year for a thoroughgoing service.

One of the most important factors in the new formiate line was the good process technology planning that was carried out. The operating team achieved production records practically right from the start. In one week they were able to achieve a 15% increase in the non-stop manufacture of formiates with different specifications.



Caption

Application control with the support of a good partner

“With regard to the system delivered by ABB, the most important benefit is in safeguarding continuity. The supplier’s credibility is a very important factor for us. The ABB personnel at Oulu convinced us with their expertise as well as their commitment to our goals”, reports **Jari Lithovius**, Automation Engineer.

“Software expertise has become increasingly important when aiming for high availability. Open architecture supports us, even though the software programs are sizeable. The systems manager will soon meet a challenge in this, which will require sound support from the supplier, the presence of the partner and flexibility.”

Fast pace of construction

The dismantling of the old formiate line began during the annual shutdown. The dismantling work took two weeks, in preparation for the installation of the new equipment. The new formiate process already started within three months of the commencement of the dismantling work.

“The fast schedule was necessary due to the prevailing market conditions. Because of the high demand for formic acid based products we didn’t want to restrict our capacity any longer”, reports **Lauri Määttä**, Production Manager.

Work done by skilled teams

“With regard to our future human resource needs it is extremely important that even though we have shifted to a quite different automation platform in comparison with the old one, the automation control itself is very much the same kind. The process control framework has not changed, although we now have a lot more auxiliary tools of various kinds”, says **Lauri Määttä**.

Kemira Chemicals:

The international chemical industry group, Kemira, has production facilities in more than 30 countries and a global clientele. In 2001 Kemira’s turnover was EUR 2,454 million with an operating profit of EUR 144 million.

Kemira commenced formic acid production at Oulu in 1981. A second factory started up in 1987 and a third in 1995. As a result of the new formic acid production line, which started up in 2002, the annual production capacity of the plant increased from 60,000 tons to 80,000 tons. With the new capacity, Kemira will clearly be the second largest formic acid producer in the world.

The environmentally friendly formic acid is the simplest organic acid present in nature and in addition to ants, it can also be found in various other plant and animal species. Formic acid is mostly used as an industrial raw material, in pH-control, in agricultural and industrial preservation processes and in cleaning applications.





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