

SUCCESS STORY



Exapilot Optimizes Operations and Reduces Costs at Polypropylene Plant

Location: Sasolburg, South Africa
Order Date: July 2004
Completion: November 2004
Industry: Chemical



About Safripol

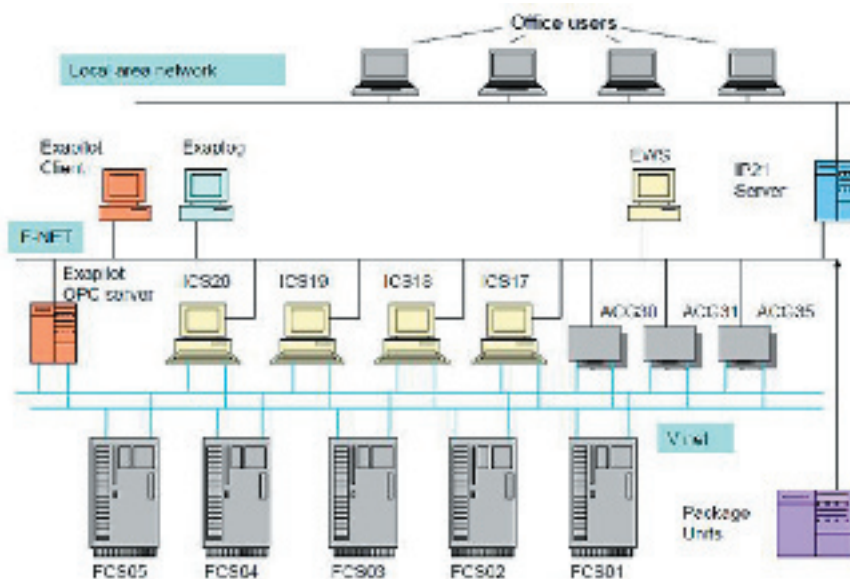
Safripol is a leading plastics manufacturer in South Africa. Safripol utilizes Basell's Spheripol technology to produce 110,000 mt/year of polypropylene (PP), and also produces 160,000 mt/year of high density polyethylene (HDPE). PP and HDPE are used in a wide range of products, from plastic automotive components to food wrapping.

System Overview

The polypropylene plant had used Yokogawa's CENTUM CS for more than 15 years without any major problems. This system had the following features:

1. Modbus communications between Yokogawa's DCS and analyzers as well as other systems provided by companies such as Siemens, Moore APACS, Sasol, and Natref
2. Exaplog alarm management system
3. Automated grade change procedure with Exapilot
4. STARDOM compressor control system

Safripol migrated to the CENTUM CS 3000 in 2007 and plans to install CENTUM VP by the end of 2010.



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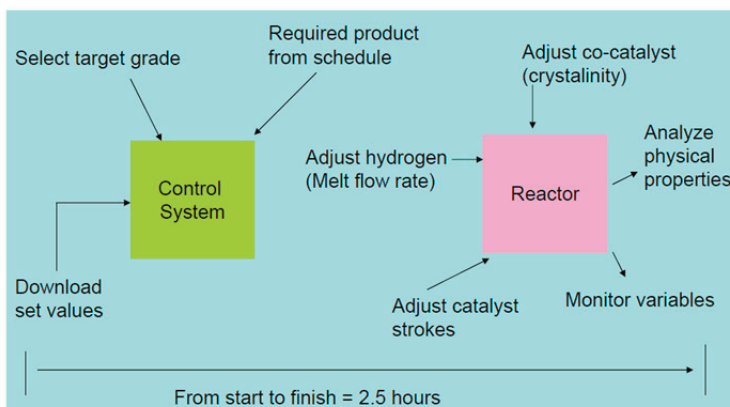
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The Challenges

To remain globally competitive, Safripol is striving to improve the efficiency of this plant's operations. The company is also using the plan do check act (PDCA) methodology to improve the quality of its products and introduce sustainable manufacturing practices. To accomplish these objectives, the manufacturing division at Safripol identified the following challenges that had to be addressed:

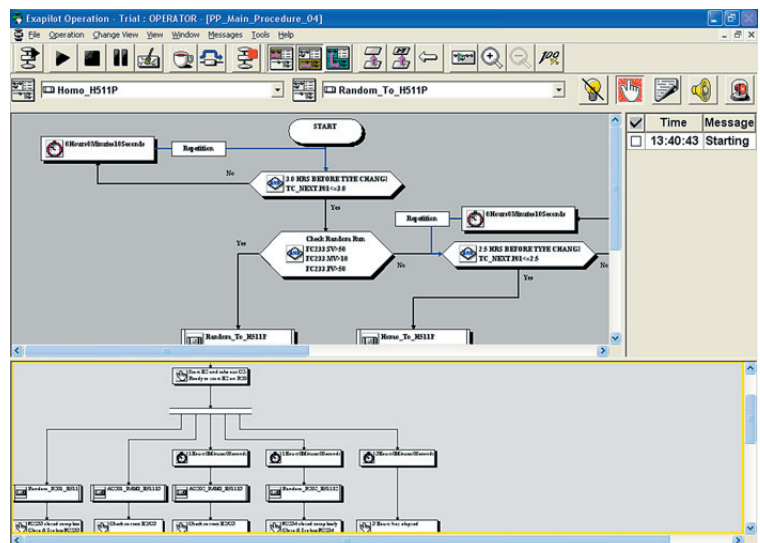
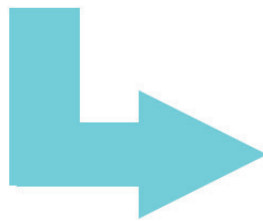
1. Maintain consistency in manufacturing operations and product quality
2. Reduce the amount of transition material
3. Provide training to new employees
4. Track and report on every step in a batch operation
5. Through optimization and standardization, reduce the number of procedures
6. Reduce costs

Prior to the introduction of Exapilot, the grade change procedure took 2.5 hours. The following shows how the basic elements of this procedure were configured in Exapilot.



Grade change procedure

Operational window



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The Benefits

No two individuals are the same. Although standard operating procedures for manual operations have been established, two operators will always do the same job differently. Although operators did their best, inconsistencies occurred during recipe and batch change operations. Also, as the reactor required a certain retention time, variability had to be eliminated.

By using Yokogawa's Exapilot, Safripol was able to eliminate product variation and maintain consistency in its operations. By eliminating "off spec" products during transitions, the company was able to drastically reduce its operating costs.

Safripol also uses Exapilot to teach new employees how to carry out grade changes. They can practice the procedure without affecting the plant. Exapilot also makes it possible to analyze the procedure and identify any flaws before it is actually used. Exapilot also has a function that keeps a step-by-step record of every action taken, allowing the entire procedure from start to end to be tracked.

Customer Satisfaction

Here are some comments from the operators:

"Exapilot takes care of the grade change so that I have more time to concentrate on other plant related issues."

"It ensures consistency in grade changes."

"It eliminates the kinds of inconsistencies that you have with new operators."

"It provides an opportunity to test run procedures/sequences to get a feel for the effects they may have on the process before making permanent changes to the logic."

"Valuable operations knowledge is not lost when older employees retire."

An engineering manager also had the following comments about Exapilot:

"It's an electronic tool that combines the knowledge of a process engineer and a highly experienced operator in an interactive, electronic procedure that communicates with the DCS and does exactly what the procedure requires, every time and without any deviations."

"It reads from the DCS, compares variables with specific values, and, if conditions are satisfied, carries on and writes values or actions to the DCS, without any required action from the operator, but if required conditions are not met, the procedure does not continue."

"It really takes the difficult to repeat tasks out of the hands of the operator, so that the individual can concentrate on the rest of the plant."

"This is your ultimate operator – highly skilled, it's never late or sick or needs special leave or even goes on strike, and reacts the same way every day of the year."

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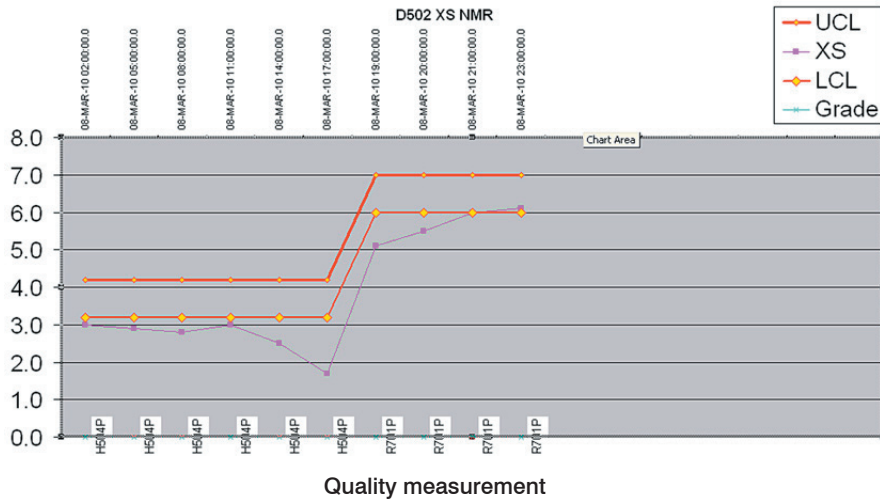
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NMR measurement of xylene soluble content in final product: Without Exapilot

Difficult to coordinate two contradicting process settings during grade change (C2 increase vs Donor increase) – Poor consistency



NMR measurement of xylene soluble content in final product: With Exapilot

Excellent coordination and repeatability

