

Pan Pacific Forest Industries increases revenue by nearly US\$400,000 annually with automated wood chip conveyor system

Rockwell Automation MicroLogix solution helps turn wood chips into quick profit by enabling efficient ship loading.

Background

Pan Pacific Forest Industries Ltd. [Pan Pac] is a fully integrated forestry company owned by Oji Paper and Nippon Paper, the two largest pulp and paper producers in Japan. From its inception 30 years ago, Pan Pac's primary objective has been to provide its Japanese papermaking operations with wood fiber.

Located at Whirinaki, 30 kilometers north of Napier, New Zealand, Pan Pac has a permanent workforce of 300, with an additional 300 employees who assist in its forestry, harvesting and transportation operations. The forestry division alone oversees and manages more than 77,722 acres of trees, whose products are converted in a 50:50 ratio to saw-milled lumber and wood chips. The latter is milled into pulp for the manufacture of paper products.

Challenge

Early in the year 2000, Pan Pac identified a large area of forest becoming available for harvest, but was concerned with its ability to manage the volume of wood chips that would result from its production.

While its sawmill operations could process the milled lumber being extracted, its pulp



mill would not be able to handle the concurrent volume of chips. Rather than burn off these chips in its steam operations and lose an important raw material for its parent's paper operations, Pan Pac decided to ship the surplus for processing in Japan.

One significant obstacle stood in the way: The Port of Napier, its logical shipping source, did not have a system capable of conveying wood chips onto its ships.

Pan Pac needed to devise a system that would first stockpile chips at the port and then later load them. Efficiency and speed were two major components the control system needed to address.

Simply dumping a pile of wood chips the size of a small mountain into the hold of a ship would create more problems than it would solve. To that end, the system would need to distribute chips evenly throughout the bottom of the ship, operate quickly, in order to avoid penalties for exceeding loading limits, and be cost effective.

The system also would have to be fully mobile, enabling it to move with forklifts on both the wharf apron and along the port roads and into ship docking areas.

After considering several possible loading control solutions, the company selected Falcon Electrical to assist



with design and construction. In turn, Falcon Electrical selected Rockwell Automation for its system control products.

Solution

The main elements of the system solution include a truck drive over, receiver hopper and stacking conveyor system with a discharge capacity of 210 cubic meters per hour. The hopper is fitted with a 90 kW motor controlled chain conveyor, which feeds onto a radial stacking conveyor.

At the heart of this system are the Rockwell Automation MicroLogix 1500 and 1200 programmable logic controllers [PLC], which are totally automated and can be started from a remote control unit or from a PanelView touch screen located in the main control room. The control system is operated by three PLCs that monitor the entire operation through the use of DeviceNet.

DeviceNet is open ended so that control connections can be conveniently and

quickly made at either end of the conveyors.

Wood chips are reclaimed from the main stockpile via an inclined quad chain conveyor, with a peak design rate of 4000 cubic meters per hour. The conveyor includes a variable speed control that easily adjusts flow rates for trimming holds and other processing needs.

An elevating conveyor delivers the product to the wharf shuttle conveyor, which may be towed into the required position by a forklift. This conveyor's belt moves in both directions to enable product delivery to either end.

The ship loader is fully mobile and can also be towed into position by a single forklift. A wood chip slinger is located at the head end of the ship loader and may be lowered into the hold and swiveled in any direction. This enables the wood chips to be sprayed into the hold, while the surface of the material is appropriately trimmed or shaped to suit the requirements of the ship.

Results

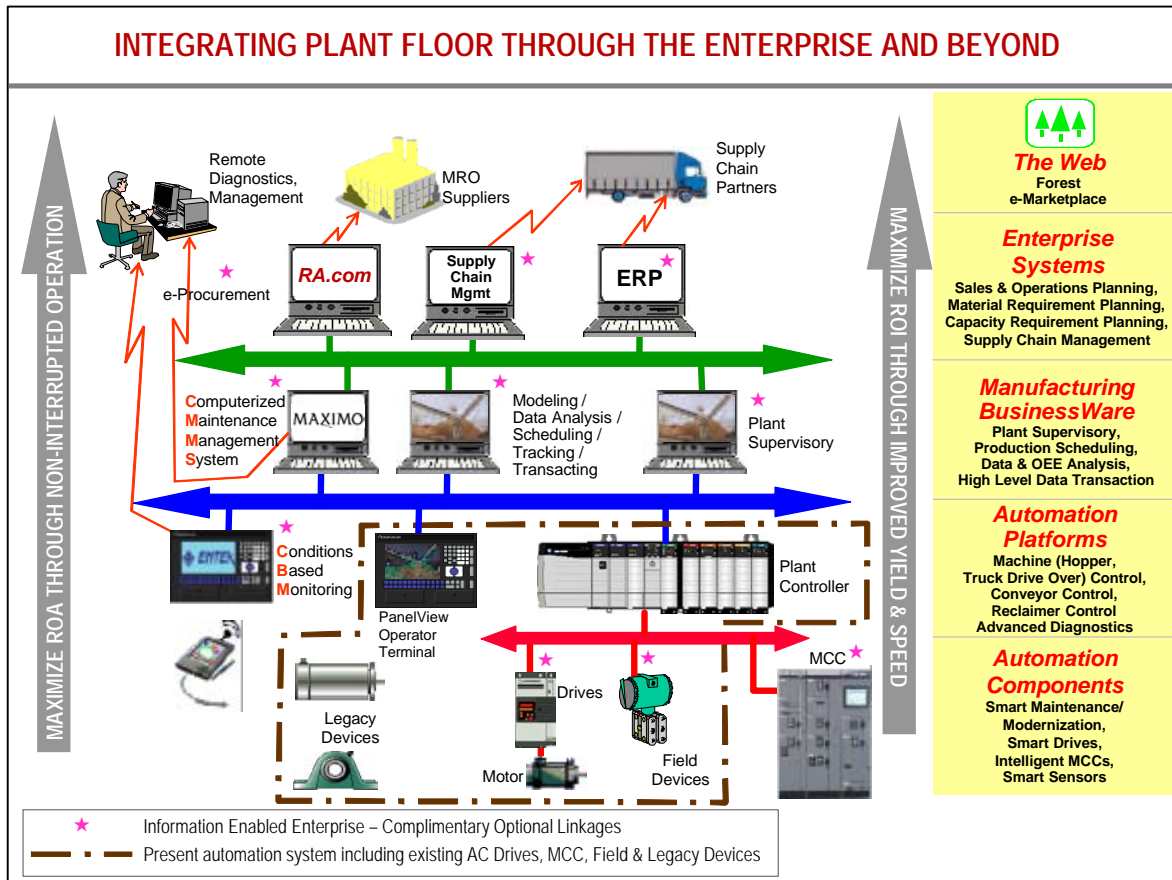
The Port of Napier conveyor system is the fastest, largest and most sophisticated unit of its kind in New Zealand. The fully mobile system is extremely versatile, offering great flexibility with very little compromise in terms of flow capacity and ship turn around time. With a maximum capacity of 750 tons per hour, the conveyor efficiently loads ship capacities of 34,000 to 43,000 ton loads well within the Port's 60 hour booked berth time.

As a result, Pan Pac is now able to turn around larger chip loads more quickly, and is realizing added revenues of nearly US\$400,000 annually.

"Rockwell Automation worked with us to deliver a control solution built to specification for a one of a kind conveyor," says Alan Haslett, managing director of Falcon Electrical Limited. "This type of problem solving — combining reliable, reputable Rockwell Automation products with technical expertise and customer service — is what adds value to the ultimate solution."

The architecture on the following page depicts Rockwell Automation's concept of an Information Enabled Enterprise. The area outlined with a brown dash line represents the present automation level under discussion in this document. The remaining portion illustrates a host of solutions that Rockwell Automation can provide today to integrate the plant floor to the enterprise and beyond.

INTEGRATING PLANT FLOOR THROUGH THE ENTERPRISE AND BEYOND



PLC®, MicroLogix™ and PanelView™ are trademarks of Rockwell Automation. DeviceNet is a trademark of the Open DeviceNet Vendor Association.

www.rockwellautomation.com

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36-BP 3A/B, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356-9077, Fax: (65) 6356-9011