



A Rockwell Automation Company

## Tolko Industries Ltd. Integrated Plant-Wide and Business Ethernet Network

### The Client:

Tolko Industries Ltd. and its partners Crown Investment Corp., Meadow Lake Tribal Council and North West Communities have formed a limited partnership. The newly formed company is called Meadow Lake OSB Limited

Partnership (MLOSBLP). The plant, designed to produce OSB at a rate of 600MMSF annually on a 3/8 inch basis, is located near Meadow Lake, Saskatchewan.

### The Requirement:

MLOSBLP selected HinZ as their electrical and control consulting partner. HinZ was responsible for providing the electrical/controls engineering services for the construction and commissioning of a Greenfield Orientated Strand Board plant. The new plant is designed to produce 600 million square feet of 3/8" OSB per year. The process consists of: two log ponds, two drum debarker lines, two stranders, two green bins, two hot oil energy systems, two drum dryers, two dry bins, one wax & resin system, two drum blenders, one OSB forming line, press & finishing line and one plant wide pneumatic dust system.

MLOSBLP required an integrated plant-wide and business Ethernet network that would:

- Provide a fully scalable and reliable network for the process control PLC to HMI data acquisition system
- Provide a high-speed backbone for automatic data acquisition of the vital process and test lab information
- Equip the business with a plant-wide network to integrate the financial, stores, woodlands and management functions
- Connect the company's business system to a wide area network for remote connectivity to the Tolko Vernon corporate offices
- Provide a diagnostic and management interface to the network for troubleshooting and monitoring

### The Design Solution:

Hinz provided a complete detailed design of the network, wiring layouts and cabinet requirements. The design phase included working with the client to select the overall network architecture, equipment selection and purchase, cabling design, installation standards and specifications. The equipment was purchased and the network was staged in the HinZ office prior to shipment and installation at site. The construction phase included the equipment installation, cabling supervision and testing, network commissioning and end-user training. The system configuration incorporated an individual, manageable Cisco network switch for each functional area of the plant, linked back to the main control room by dual gigabit Ethernet trunks over fiber-optic. VLAN technology was used to remove the necessity of separate hardware equipment for each network and allowed traffic for all functions to share the uplink bandwidth. The central control room was equipped with a redundant cluster of core Cisco network switches and embedded routers, together with a pair of gigabit switches to accommodate the HMI workstations, MIS servers and business servers. All network endpoints throughout the

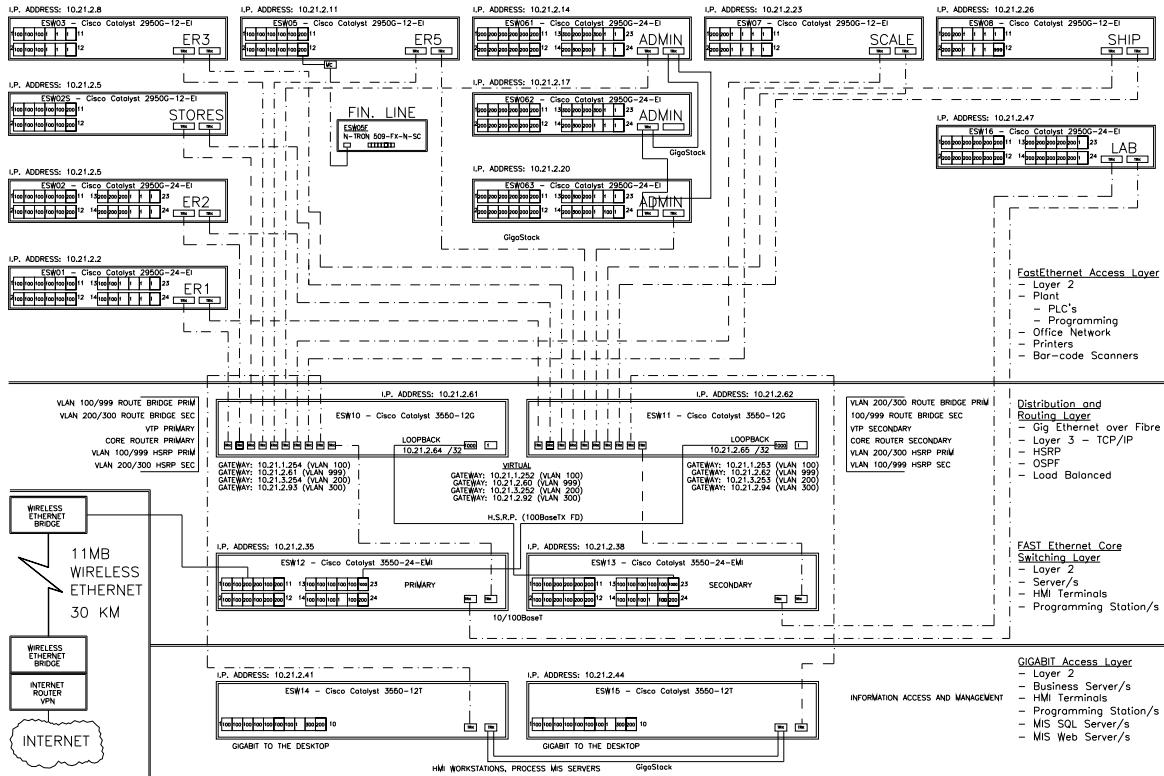
plant were equipped with dual, live RJ45 jack connections ensuring adequate connectivity. In total 120 x 2 network endpoints were provided for PLCs, workstations, servers, printers and programming test-points. The gigabit trunks were load balanced for optimization of both networks traffic, together with fail-over routing controlling software, ensuring optimal uptime.

The multimode fiber-optic cable backbone accommodates both the Ethernet and ControlNet networks. The plant has over 830 motors with a connected load of 23,000 HP. The incoming 230kV power was transformed to 25kV with a 15 MVA transformer. The 25kV was distributed to six 2.5 MVA 25kV / 600V transformers and one 10 MVA 25kV / 4160V transformer. The medium voltage MCC contained two 1500 HP RVAT starters and 11 FVNR starters. There were 28 low voltage MCCs with a total of 210 vertical sections. All the VFDs and motor starters with the MCCS were pre-wired and configured in the factory. This task reduced wiring errors and expedited the installation process.



A Rockwell Automation Company

# Tolko Industries Ltd. Integrated Plant-Wide and Business Ethernet Network



**VLAN ASSIGNMENTS:**

- - SPARE UNASSIGNED PORTS
- - PROCESS CONTROL NETWORK
- - OFFICE/ADMINISTRATION NETWORK
- - NETWORK MANAGEMENT NETWORK
- - SPECIAL ACCESS NETWORK
- - INTERSWITCH TRUNKS

**IP\_ADDRESS\_ASSIGNMENTS**

IP_ADDRESS_ASSIGNMENTS	SUBNET_MASKS	GATEWAY_ADDRESSES	OSPF
- 10.21.1.1 TO 254	- 255.255.255.0	- 10.21.1.252	
- 10.21.3.1 TO 254	- 255.255.255.0	- 10.21.3.252	
- 10.21.2.1 TO 63	- 255.255.255.192	- 10.21.2.60	
- 10.21.2.80 TO 95	- 255.255.255.240	- 10.21.2.92	

Auto-Cost feature (for GB Vs FAST-E recognition), seed reference = 100000  
Route Map to control static routes, static routes can be either Global or local  
Route map understands Tag values, Tag 10 will redistribute into OSPF and tag 20 will not  
e.g. ip route 10.128.2.1 255.255.255.0 tag 10 provides a valid global route  
HSRP is enabled  
OSPF has been set up to recognize Whole prefixes as opposed to ARP entries  
OSPF orp triggers use a network statement that look at the gateway address,  
whole network entries use a wildcard mask that matches bitfields  
e.g. network 10.12.2.0 0.0.0.255 area 0 = an area 0 route for a Class C  
Switches ESW10 and 11 Area 0 routers

## System Specifications:

- 11 Cisco Model 2950 Gigabit-Uplink Ethernet Switches
- 6 Cisco Model 3550 Gigabit Ethernet Switches with Routing Software
- 1 N-TRON Model 509 8 port Industrial Ethernet Switch
- 1 Cisco Aironet 802.11b Wireless Ethernet System, with encryption
- 8 Metrobility LANCAST Fiber-Optic to Ethernet Media Converters
- Cisco CMS Network Management Software
- 240 x CAT6 Gigabit tested copper cabling endpoints
- 62.5/125 Multimode Fiber-Optic Plant-Wide Backbone

For further information or to contact a Hinz office near you, please check our website at:

[www.hinz.com](http://www.hinz.com)