![A&E Automation & Electronics logo]

International System Integrators
Millwide Software, Optimization & Control Solutions

1 | GUTCHESS LUMBER CARRIAGE OPTIMIZER USA

THE PROJECT

For this project A&E provided an updated controls and optimization package to retrofit the customers' existing headrig.

The system utilized 6 x JoeScan JS25-X6B scanners allowing for a full log profile after 6" of travel. A&E head rig optimizer, LogView, provides both MOF and BOF solutions on a fully configurable operator interface.

On the controls side A&E was able to provide the customer with a cost-effective solution by reutilizing most of PLC system while upgrading to an 5069 CompactLogix PLC and new RMC 150 motion controller.

A&E EXPO STANDS 2022 - 2023

TIMBER PROCESSING & ENERGY EXPO 2022
Portland Exposition Center, Portland Oregan USA
28th - 30th September, 2022

SFPA EXPO - FOREST PRODUCTS SHOW

MACHINERY & EQUIPMENT EXPO
Nashville, Tennessee, USA
23rd - 25th August, 2023

HMA CONFERENCE & EXPO 2023
(Hardwood Manufacturers Association National Conference & Expo)
VENUE: TBD, TBD, USA

2 GILKEY LUMBER TRIMMER OPTIMIZER USA

THE PROJECT

For this project A&E was tasked with upgrading the existing optimizer platform to the NEW A&E Trimmer Optimizer.

For this upgrade we provided a turnkey system that included 18 x JS50wx Scanners.

A few features of the new optimizer included but not limited to:

i. **High Density 3D profiling**
ii. **Optimized cut in two logic**
iii. **Optimized decision for the best location to trim the board, consider wane, skip, and board ends**
iv. **Remanufacture decision for re-edge and resaw complete with penalties**
v. **Skip allowance**
vi. **Extended saw drop logic**
vii. **Compounding scalable wane rules**
viii. **Board fitting rules: Defined products for reman only or in combination only**
ix. **Configurable saw drop logic: always require two saws or allow ends to go untrimmed**
x. **Operator specified near/far end trims and cut in two**
xi. **Priority sizes by value or dimension**
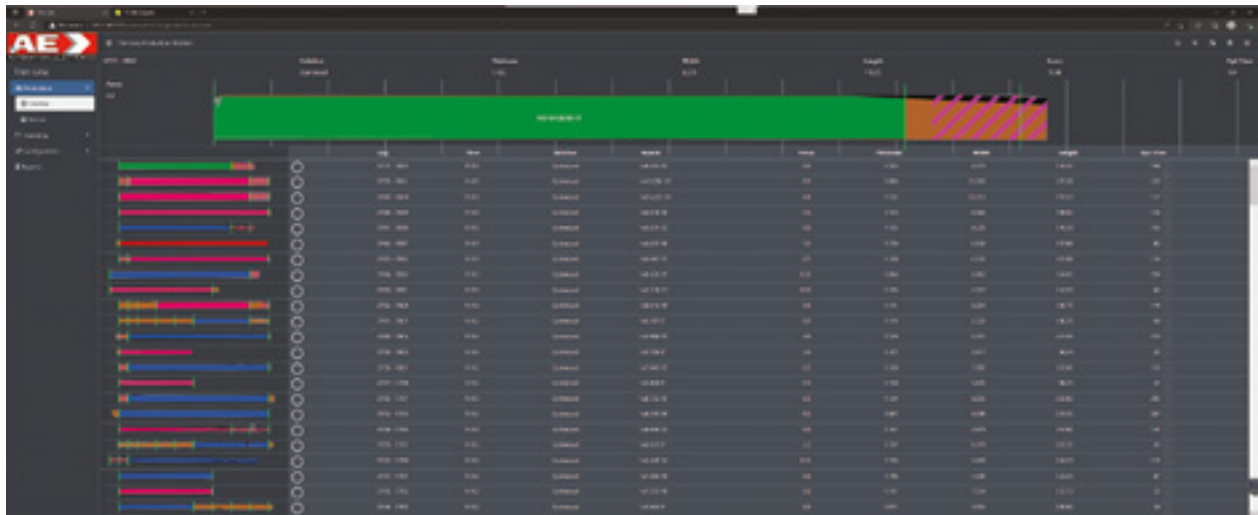
xii. **Complete tipple and board routing control**
xiii. **Double-loaded lug and skew detection**
xiv. **Waste block size management**
xv. **Archive of scan profiles**
xvi. **Comprehensive Production reports, shift, day, time span on SQL server**

xvii. **System diagnostics**
xviii. **Programmable Sizes, Kerfs & offsets**
xix. **Comprehensive alarms**
xx. **Board simulation**
xxi. **Downtime reports**

3 GILKEY LUMBER SORTER USA

THE PROJECT

For this project A&E provided a control system for a 60 Bin Sorter.

The control system utilized a ControlLogix PLC platform in unison with a Delta motion controller for the hydraulic fence. This system used AccuTally which is a culmination of years of research & development which have led it to become one of the most dependable and expansive tally software systems on the market. AccuTally is fully contained within the PLC system allowing for no interruptions due to computer updates/failures.

4 NORTH WEST HARDWOODS OPTIMIZED EDGERS USA

THE PROJECT

A&E was tasked with the upgrading the controls and optimization on two identical edgers at their Longview and Centralia location to be completed over two long weekends (one weekend for each system).

The system was a transverse optimized edger. For this system A&E worked with onsite engineers to develop a solution that modernized the control system while minimizing downtime. To accomplish this A&E supplied a prewired PLC and operator panel that made for a quick and seamless installation. In regard to optimization A&E, provided 12 x JS-50wx JoeScan heads which allowed for top and bottom scanning.
Both systems are capable of running 30+ bpm.

5 NEW CDK INSTALLATIONS USA

THE PROJECT

NEW CDK AND BURNER INSTALLS FOR KDS WINDSOR have been completed to West Fraser Fitzgerald and Jasper Lumber.
The NEW Dryspec system includes integrated CDK and Burner controls

The burner system was developed over several months to provide flexible control of all of the dampers and blowers. These can be individually configured in real-time to change how they are controlled to achieve stable temperature control. The system also includes a daily report which displays the kiln drybulb and wetbulb temperature, push distances, burner fuel usage and monthly burner stack open time.
The CDK system utilizes the same damper/blower controls for a seamless integration between controls systems.

6 RF TUNNELS USA

THE PROJECT

RF TUNNELS - Installed at Arkansas and Alabama
A&E provided a control backplane system consisting of a Allen Bradley 5069 Compact Logix and an HMI.

The Congruent Concept and Solutions built the **RF Tunnels** and the panel where the backplane would sit. The program was written to sequence on an **RF Circuit** that then heats up to ~250 degrees Fahrenheit and cures glue on finger joints.

This was a first for A&E and three tunnels have been commissioned.

Existing System Before The Upgrade:

Edger /Resaw Controls – The Edger controls were originally installed by A&E in Jan 1998 and comprised of an Allen Bradley PLC 5 Series Controller with QB linear positioning modules, the QB modules were also linked to the Resaw Servo hydraulics. The console comprised of AB PanelView 600 operator interface with AB Redipanel remote I/O Push button modules. A&E custom made hand controls and an early version A&E EdgerView visual operator PC /Camera based sawline display system.

This same PLC also used to control the Resaw via AB Flex I/O and the Resaw also has a Panelview 600 operator interface and an A&E custom hand control. The Resaw was commissioned in Feb 2002.


New System Upgrade:

The PLC5, QB linear modules, Panelview 600 and Redipanels were all redundant legacy products. These were upgraded to AB CompactLogix PLC with Delta Ethernet motion control modules to replace the QB Modules. The Flex I/O in the Resaw and Resaw MCC could remain the same, however we installed Ethernet interface modules in place to communicate to the existing Flex I/O. PanelView's were replaced with current version Ethernet operator interfaces on both Edger and Resaw.

A&E no longer manufacturer the old metal cast hand controls and changed to Suregrip.

The EdgerView system was upgraded to EdgerView II which is Windows 10 interfaced with a Gigabit Ethernet solid state Camera.

A&E Project Manager - Rainer Ansorge
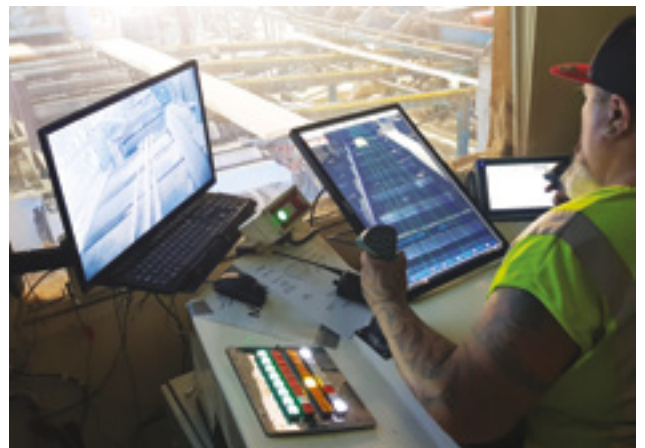
8 WESTCO LUMBER DEBARKER UPGRADE NEW ZEALAND

THE PROJECT
DEBARKER UPGRADE

Reason for upgrade - The original debarker PLC processor and I/O were discarded because it had obsolete components and was no longer supported by the manufacturer.

Westco Lumber Limited
Quality Wood Products

We extended the existing Headrig CompactLogix PLC with new Allen Bradley Point I/O Ethernet comms module. The existing cabinet could house the comms module and the replacement Point I/O modules.

The PLC code was be written in Studio 5000 and installed into the compactLogix PLC. A big benefit for this upgrade was the ability to support the new controls remotely for troubleshooting and future modifications.

A&E Project Manager - Rainer Ansorge

9 PORT OF NAPIER DEBARKER NEW ZEALAND

THE PROJECT - Port of Napier DEBARKER

MILLRIGHT
Sawmill Project & Process Specialists

A reconditioned debarker was sold to the port of Napier by Millright Construction Engineers, A&E were asked to supply the controls MCC and commissioning.

The Operator cabin which also houses the MCC & PLC room was delivered to our workshop, we carried out the installation and then shipped it to Napier.

The plant was commissioned in January 2022. *Contracted to Tony Heyblom at Millright*

• *A&E Engineers - Lance Mustard & Craig Sutton*

DRYSPEC 2000 which later became Dryspec3, is a software program that was originally written by SCION, with A&E providing PLC code.

Windsor
Engineering

Dryspec 2000 was completed in 2000, it was sold by Windsor Engineering as a part of a suite of Kiln Drying software products.

Over a twenty-year span some of the proprietary software code that was written combined with changes by Microsoft became difficult for our Software Engineers to interpret and support, making small changes and customization had become extremely difficult.

Last year Windsor asked us to re-write the program as a PLC based program with an Allen Bradley Factory Talk View SCADA. Historical information is stored on a SQL database, other than that the system is all PLC based. The new system is called Dryspec BDK (Batch Dry Kiln).

The size of the PLC program is quite large with approximately 1MB of PLC memory used per kiln, so on a site that has more than one kiln we are using Allen Bradley ControlLogix PLCs. To date we have installed two Dryspec BDK and a further six sawmills have placed orders.

Allen Bradley ControlLogix PLC using Allen Bradley CompactLogix remote rack, at McAlpine's Rangiora.

One of the main drivers for these mills to change, is that the PLC equipment running most of the kiln control systems in Australia and New Zealand is Allen Bradley's SLC, which is no longer in support and parts such as I/O cards and processors are very hard to find.

KEEP CONTROL OF INDIVIDUAL PACKETS

AUTOMATION & ELECTRONICS recently developed Packet Tracker as a new addition to Windsor CDK Kiln Management software.

Windsor Engineering

PACKING TRACKING

Tracking timber on its journey from a log to a finished product is a key commercial advantage for today's sawmills. Tracking individual packets of timber through your continuous drying kiln is an important element of this. Windsor's packet tracking system provides transparency and traceability at the level of individual packets so quality issues can quickly and easily be investigated and addressed. Further, the individual packet reports can be used to provide confidence in the drying process and document compliance with phytosanitary and other quality requirements.

As well as supporting manual data entry, Windsor will fully customize the interface layer to accommodate your existing packet scanning systems or support you to install a new one. This ensures tight integration with your site database and minimizes the chance of operator errors.
Process data and timestamps are collected as packets progress through the kiln and a report for the individual packet is generated detailing the dry and wet bulb temperature profile and moisture content readings. The report can be viewed by staff using a simple web browser, removing the need for them to use the DrySpec SCADA PC, leaving it free for operational users.

NEW ROBOTICS STACKER
TIMBER STACKER

Richmond Show Virginia TS Man Released their NEW Robotic Packet Stacker

**System comprises of
4 Robots
2 each side of a 30m Deck
with 50 Sorts.
Each Robot Stacks
6 Boards per minute
(Total 24 Boards per minute)**

TS Manufacturing

Welcome to: Mark Reid
JOB DESCRIPTION AT A&E: Software Engineer - Started May 2022
Previous Job History/Education:

Mark is originally from Rotorua. He studied for a Bachelor of Aviation at Massey University from 2002 - 2004. He then flew domestically for Air New Zealand for ten years, until he decided on a change of career path.

He attended Toi Oho Mai for a bachelor of Applied IT from 2016 - 2019 and then worked for a local horticulture company which also had products dealing with raw unprocessed timber.

He is currently working on optimizer software and EdgerView improvements

**Interests:** When not at work, Mark plays squash and enjoys hiking

Welcome to: Joel Collecutt
JOB DESCRIPTION AT A&E: Junior Software Engineer - Started April 2022
Previous Job History/Education:

Joel was born in Australia but has lived in Tauranga since he was six. He started his Bachelor of Science majoring in Applied Computing at Toi Oho Mai in 2019 and then moved to Waikato University for his final year in 2021. He enjoys problem solving challenges his role brings and is currently working on A&E's Packet Tracker software which is a component of Windsor Drytrack.

Interests: In his spare time Joel enjoys playing video games with friends and socializing.
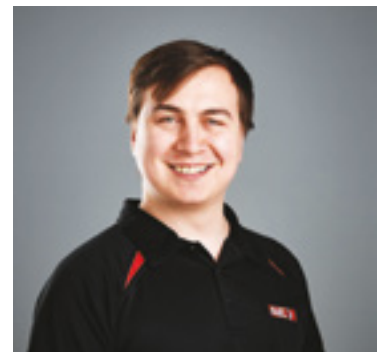
New A&E Staff USA - Not Pictured
• Brian Lee   • Robert Morris   • Samuel Winslow   • Ernesto Torres   • Clayton Gilstrap   • Terry Turner

AUTOMATION & ELECTRONICS
2022

AUTOMATION & ELECTRONICS
NEW ZEALAND TEAM - 2022