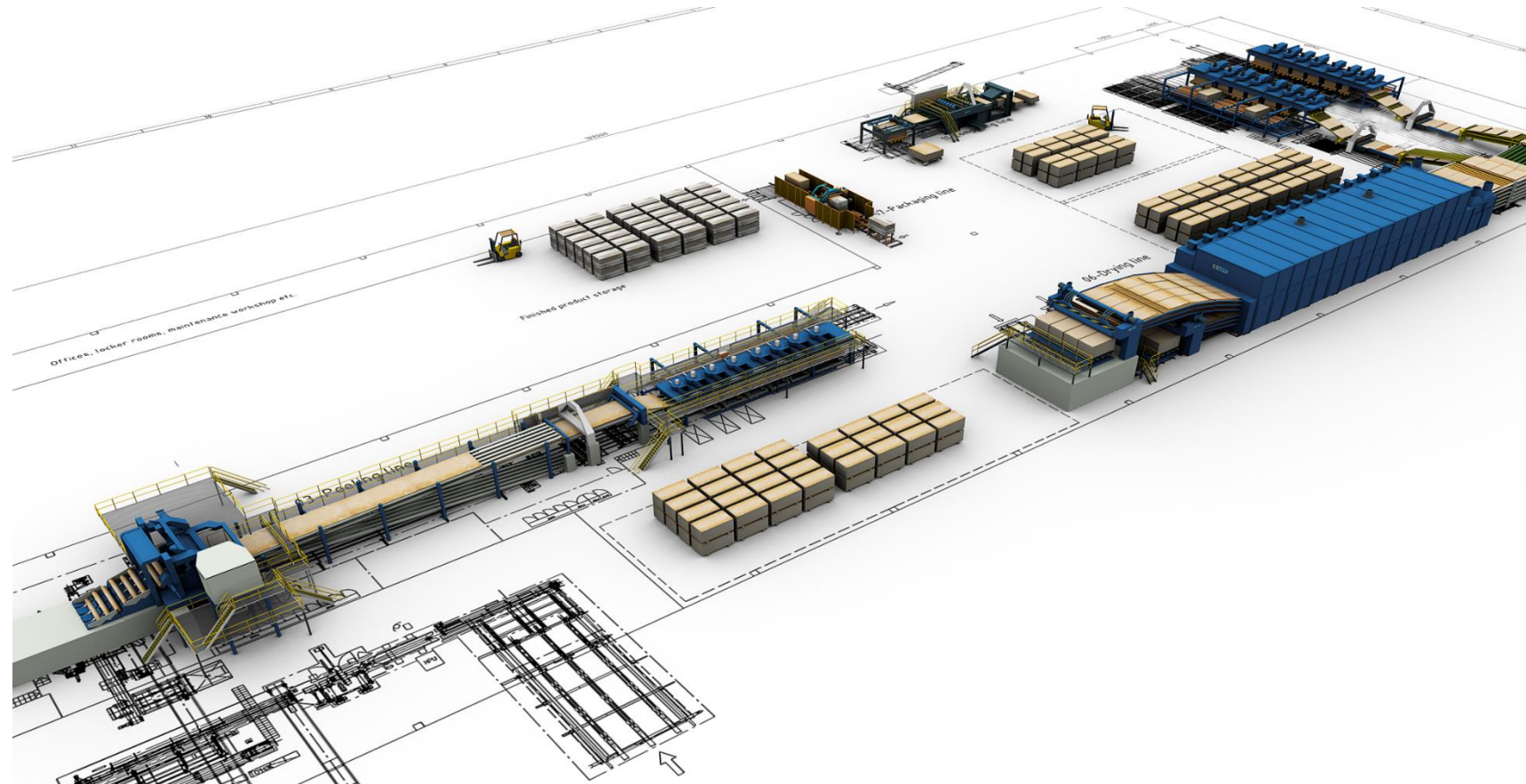


Mill performance improvements

7th Nov 2018

Sampo Jäntti

- Raute company review
- How to develop your existing mills
 - Raute's offering
 - Mill development concept



Raute is a technology and services company that serves the wood products industry globally.

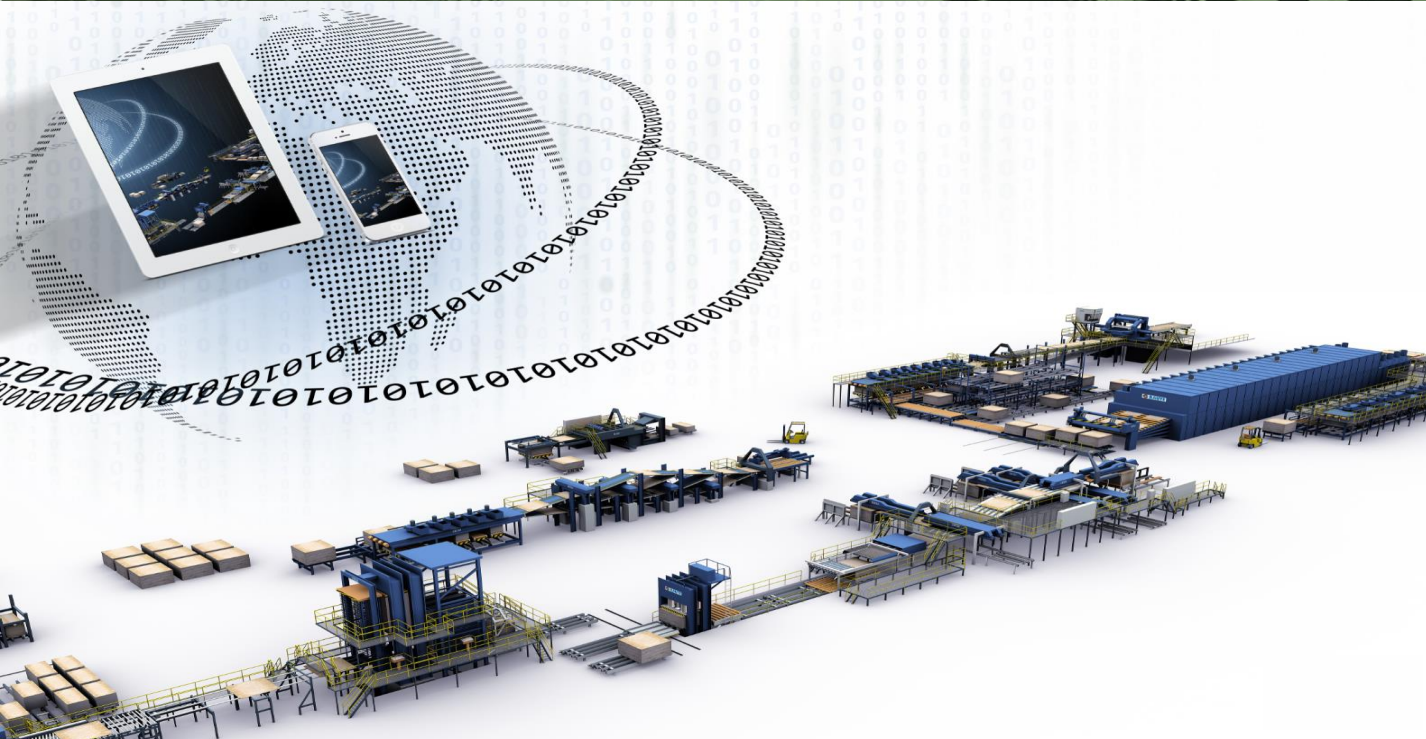
Raute's products and services:

Project deliveries:

- Mill-scale projects, individual production lines, machinery and equipment
- Automation, machine vision, measuring technology

Technology services:

- Mill wide improvements, Modernizations and mill performance services
- Maintenance and spare parts
- Production support services



Our offering for existing mills

Raute's experienced people

Machines and modernizations

Services

RAUTE EXPERT SERVICE TEAM

IS FAMILIAR WITH MORE THAN 300 MILLS OVER THE WORLD, PRODUCING OVER 30,000,000 M² OF VENEER OR WOOD BASED PANELS ANNUALLY.



Risto Allinen
Senior Plywood Specialist



Pekka Juustinenaho
Plywood Prod Expert



Antero Kuntonen
Specialist, Plywood



Shawn McGowan
Technology Manager



Marko Perttälä
Tech Mgr, new mills



Jussi Puranen
Tech Mgr, modernizations



Hannu Sinko
Head of LVL Technology



Kimmo Suomalainen
Head of PLW tech & Exp serv



Antti Termonen
Specialist, LVL



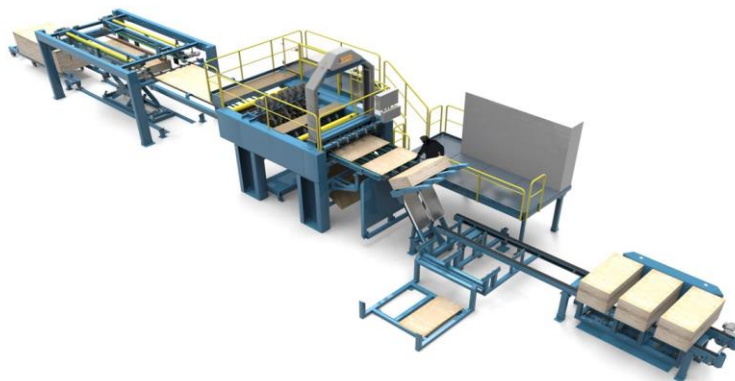
Roumiana Vassileva
Bus Dev Dir EWP



Marika Veikkola
Production Expert



Timo Väلتtälä
Head of Training serv



Comprehensive mill development concept

Raute's new mill development concept combine and utilize our best technologies and process knowhow.

- Safety improvements
 - Machine safety, operational safety, ergonomics
- Process improvements
 - Fine tuning, production efficiency improvement without investments
- Operational improvements
 - Better way to do things. Target to have world class operations.
- Production line modernizations
 - Improve your existing production line efficiency with Raute's latest technology
- Life time extensions
 - End of life technologies to be replaced with new solutions
 - Maintain Spare part availability
- New machines and production lines
 - New high efficiency machines to replace old ones
 - Mill expansions and end product changes



Mill development concept

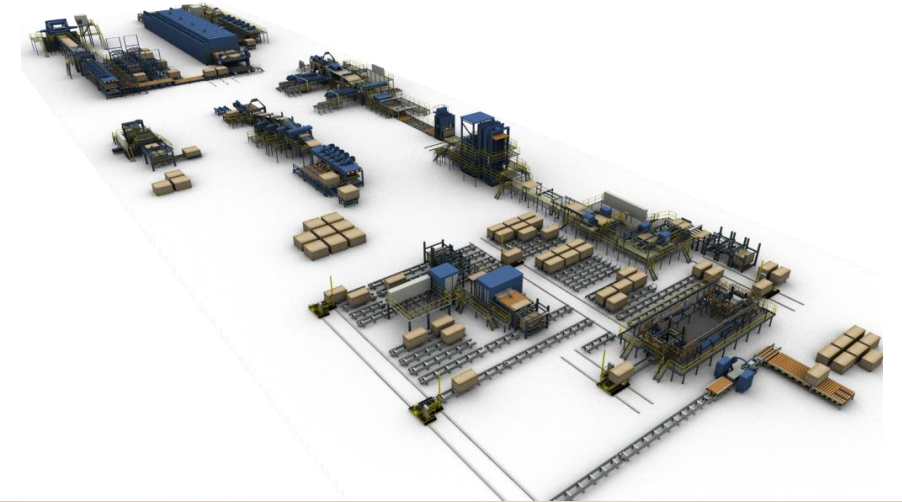
1. Background data collection and analysis

2. Mill audit

3. Planning and Reporting

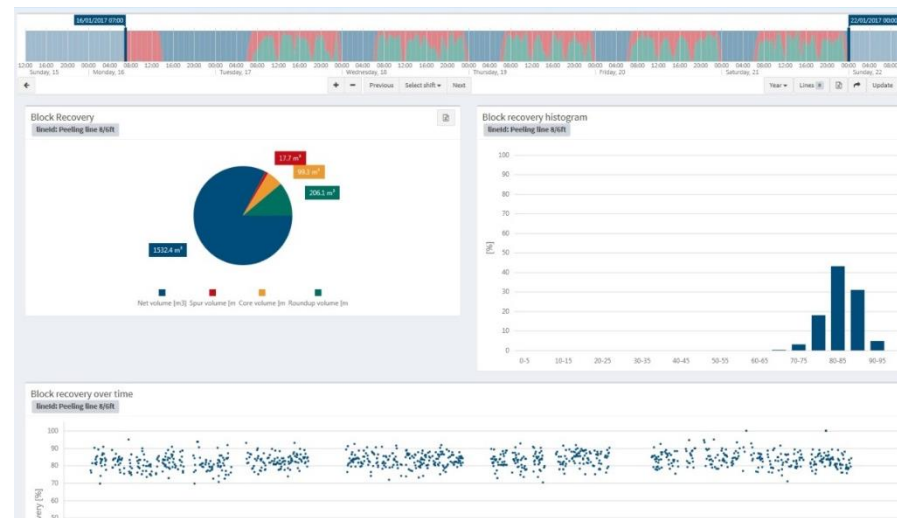
4. Mill development plan, Road map

5. Mill development execution step by step



Step 1. Initial data collection

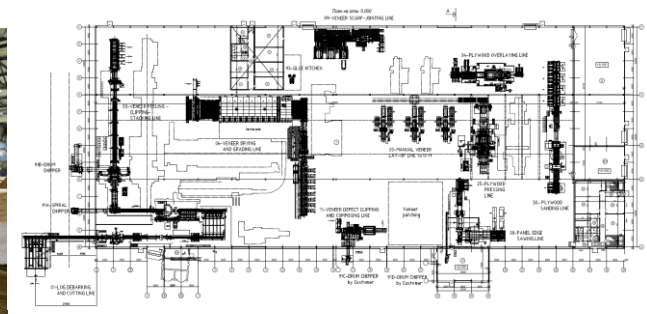
- As a starting point for mill development is create clear view what is existing performance at the mill. Our experts will analyze:
 - Raw material
 - Production data
 - Production lines and machines
 - Operations efficiency
 - Energy&glue consumption
 - Production cost structure



Process Phase	Recovery	Volume m³/a	Production hours/a	Production m³/h
Logs to mill site - bark	116%	125,750	7 752	16.2
Logs to cross cutting	100%	113,175	7 752	14.6
- saw dust - log ends				
Peeler blocks	96%	108,500	7 752	14.0
- round-up - cores - spur - clipping				
Green veneer	64%	72,900	7 752	9.4
- drying shrinkage - rejected veneers - compression				
Dry veneer	55%	62,700	7 752	8.1
- patching loss - composing loss - scarfing loss				
Dry veneer to lay-up	49%	55,400	7 752	7.1
Pressed plywood	48%	53,800	7 752	6.9
- trimming - sanding				
Trimmed plywood	41%	46,000	7 752	5.9
- rejects				
Packed plywood	40%	45,000	7 752	5.8
2.8 m3 / m3 from logs over bark 2.5 m3 / m3 from logs under bark				

We are able to carry out a proper mill audit with a systematic analysis of production lines and whole mill.

- Analysis of cycle times and down times of process steps
- Analysis of process and product quality
- Analysis of process flow
- Evaluation of processing equipment
- Safety observations

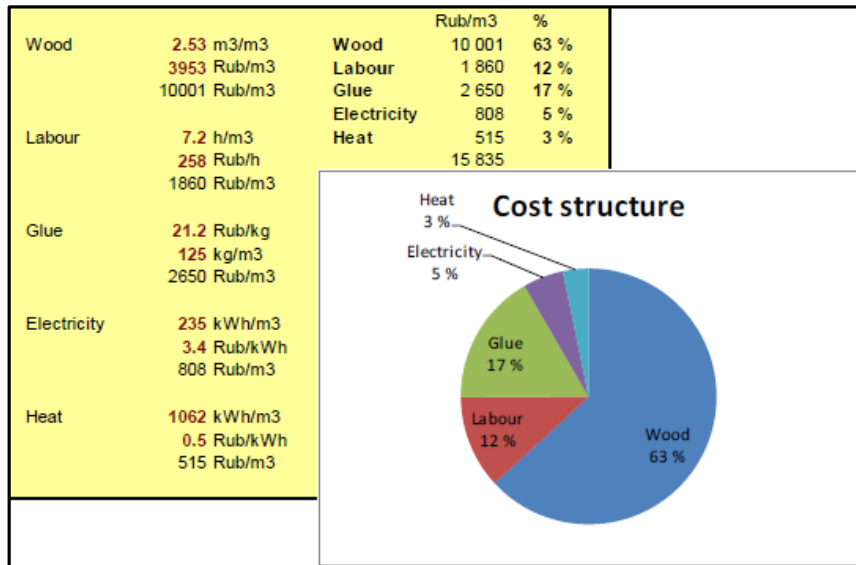


Step 3. Reporting

- Analysis of mills present performance
- Comparison and benchmarking for other mills performance
- Analysis of product range in relation to market
- Proposals to actions and investments
- Saving potential & profitability indicators
- Detailed mill development plan

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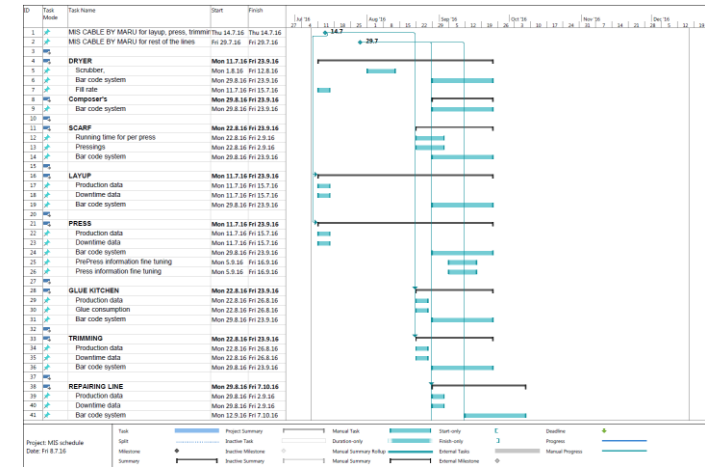
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Step 4. Mill development plan

Detailed plan how to improve your mill performance

- Phase 1. Immediate actions for operations and processes.
- Phase 2. Needed modernizations and investments step by step
- Phase 3. Ramp-up period and production data follow up



2017 following lines upgraded / installed, actions made:
 - Get a service contract to improve uptime of production lines

2018 following lines upgraded / installed, actions made:
 - Peeling line #1: New type air cylinders for stacker arms
 - Peeling line #1: Modify the first stack for half sheets (2 x 1/2 sheet)
 - Peeling line #2: VCO + PC for clipper
 - Peeling line #2: New type air cylinders for stacker arms
 - Peeling line #2: Modify the stacker for half sheets (2 x 1/2 sheet) + wide sheets
 - Install a biofuel steam boiler
 - Install a heat recovery scrubber for all dryers
 - Convert dryer heating to steam (4' and 5' dryers)
 - Upgrade 5' dryer with non-stop feeder, make-up air controls, automatic misting system, cooling air controls and jam detectors

2019 following lines upgraded / installed:
 - Peeling line #3: New driven, position controlled back-up roll (type SPC)
 - Peeling line #3: 50 mm spindles
 - Peeling line #3: New type air cylinders for stacker arms
 - Peeling line #3: Modify the first stack for half sheets (2 x 1/2 sheets)
 - Install a Raute Lite peeling line
 - Install a 4'5" x 8'13" face composer
 - Extend stacker of automatic veneer patching line
 - Install new 5' automatic veneer patching line
 - Modify one roller spreader for 5' x 13' size
 - Modify one pre-press to fit for 5' x 13'
 - Install a new 5' x 13' hot press
 - Install panel feeders to hot presses
 - Modify trim saw line to fit for 5' x 13'
 - Install 5' x 13' sanding line
 - Install a 5' x 13' overlaying press
 - Install a new 5' x 13' book saw
 - Install new wrapping packaging line

2020 following lines upgraded / installed:
 - Upgrade Hashimoto composer with VCO-F scanner
 - Upgrade 4' roller spreaders to LEG/CC lines
 - Upgrade panel grading with turner + panel feeder

Step 5. Mill development execution

- Project delivery execution
 - Project management
 - Installation supervision and start-up
 - Turn key projects
- Trainings
 - Classroom or hands on training
 - eLearning possibilities
- Production support services
 - Experienced plywood/LVL Specialists
 - Maintenance operations

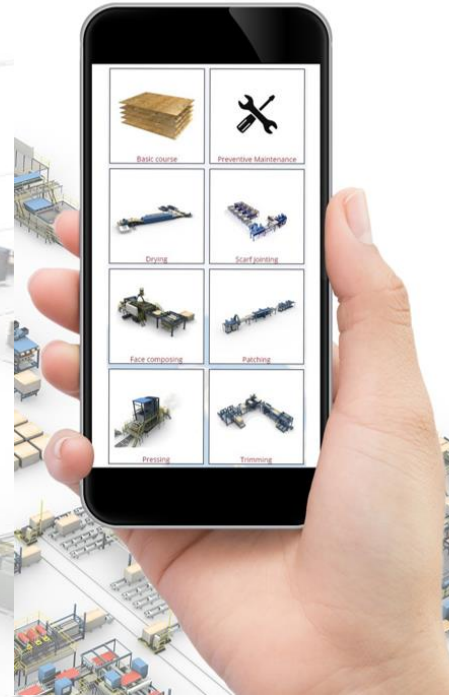
Raute deliveries 2017

- ✓ ~ 200 projects
- ✓ ~ 1100 service visits
- ✓ ~ 100 000 spare parts



How to measure mill performance

- Raute's new digital tools helps to understand what is really happening on the factory floor
 - ✓ Key information to profitable production
 - ✓ What changes are needed to make mill operations more efficient?
 - ✓ How to maintain continuous improvement?
 - ✓ How to improve quality?
- Provides information on equipment performance throughout the life time
 - ✓ Preventive maintenance
 - ✓ Process optimization
- Digitalize the service experience
 - ✓ All digital services from the same place
 - ✓ Online access to data
- Raute MillSights real-time data collection system saves and provides detailed reports on the data collected during different stages of production. The operation of individual machines can be further optimized, and any possible deviations can be addressed quicker and with greater accuracy.



Thank you



<http://www.raute.ru/>

<https://www.rautesmartmill.com/ru/>

<http://www.rauteservices.com/>

<https://www.youtube.com/user/RauteMachinery>