



Alma Manu's new printhouse
and automation

Personal career

- 29 years in printing industry
- Mainly in production
 - as an operator
 - press machine maintenance
 - production management
 - developing quality of materials, machinery and products
 - management of environmental impacts
 - several investments and research projects



New printing house in Tampere opening in spring 2013

- Ferag mailroom
 - 3 modules equipped
 - 3 bundlelines, inkjet addressing, trimming, stitching, palletizing, inserting
- two AGFA and Nela platemaking lines with automated plate sorting and capacity 500 plates per hour
- Colorman Autoprint Coldset press machine, 9-cylinder satellite
 - Automation
 - cut off and side lay, web edge, web tension, temperature controlled dampening, APL plate loading, reel handling, ink and water roller washing and blanket and satellite cylinder washers from Elettra
 - Q.I. Press Controls; IDS closed-loop colour and dampening control
 - Q.I. Press Controls; IQM reporting & analyzing tool
 - Arrow Maint Machine Track for maintenance and process development

How we approach automated applications; What kind of automation might be needed?

- Maintenance oriented automation
- Quality and efficiency oriented
- Automation for reporting and analyzing



Maintenance oriented automation

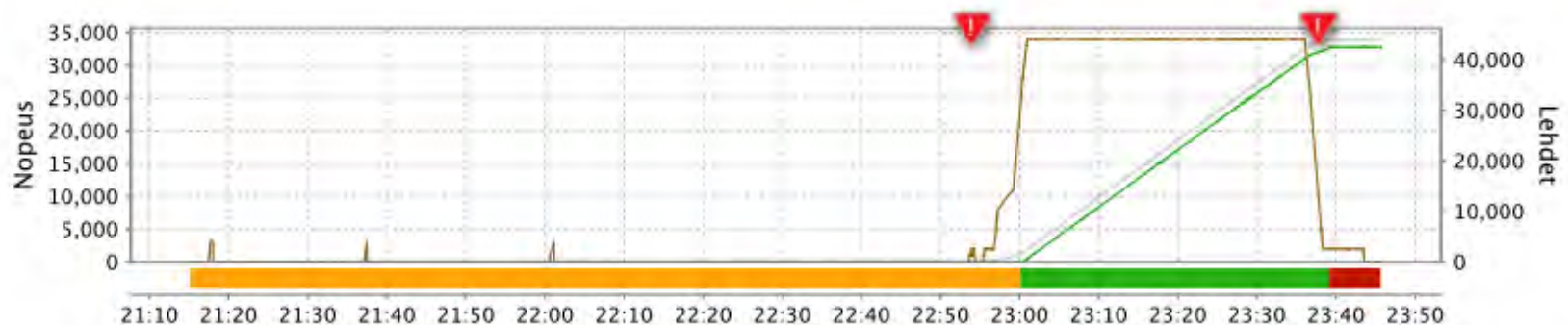
- Different kind of washers for blankets and cylinders, ink and water rollers, web guiding rollers etc.
- Reporting and analysing tools indicating operating hours, machine faults or error messages and their location
- Main purpose
 - keep printing conditions constantly at level good enough
 - usable between productions and during different production phases

Tuote: SATAKUNNANKSKAA1140917

Kone: Tait 01

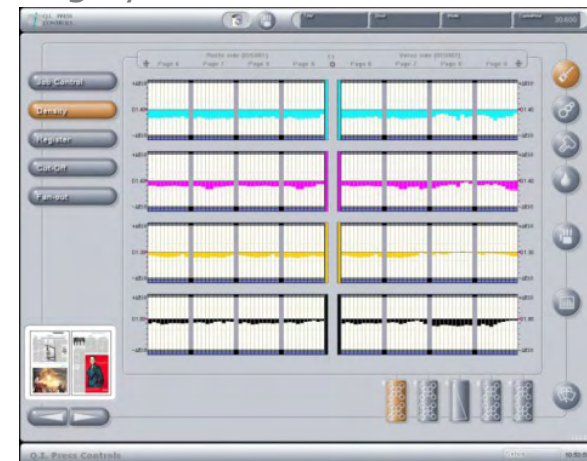
16.09.2014 21:15:11 - 16.09.2014 23:45:44

Diagrammi



Quality and efficiency oriented automation

- Automations for web control
 - side lay and cut off control
 - web edge control
 - web tension control
- Automations to control image quality
 - 4-colour register
 - systems compensating fan out
 - plate to plate misregister compensating systems
 - closed-loop ink adjustment
 - print defect observation
 - automated dampening control



Automation for reporting and analyzing



- Sensors of press machine and automation produce continuously a lot of data
- software logs data and convert it automatically to reports which highlight clearly the key factors of the process
- data is converted online during production to visual information



Preconditions for well functional automation

- Careful consideration of needs
 - What are quality demands and accuracy the automation can help to achieve
 - Think carefully how it fits to machine configuration
 - Needs for automatic quality measuring and reporting
 - ROI good enough
- User's knowledge of automated system
 - operational principal must be known well enough
 - skill of using measuring, reporting and analyzing data
 - correct working method
- Press machine conditions
 - Both press machine and devices of automation systems need constant maintained

Automation and press machine conditions

- Examples:
- Dirty or worn-out web leading elements

➡ unstable web tension

➡ cut off is constantly varying and automation can't correct cut off quality

- Dirty camera lens or shields

➡ misread of image

➡ wrong or lost measuring and adjustment error

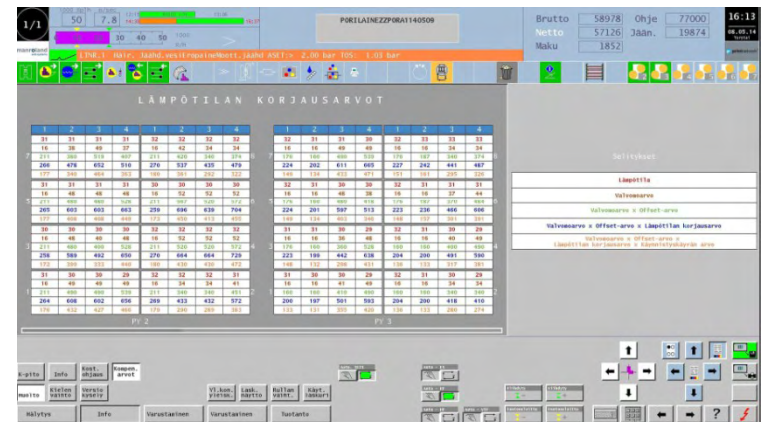
- Poor maintenance of wash automation devices

➡ production interruptions and worsening operational preconditions of automation

- The most of product quality maintaining and improvement work is done outside of production time = Maintenance

Proving of functionality of automation

- User need to have confidence in the automated solutions
- **Verify**
 - Results of automated functions are according to specifications
 - first by using manual measuring tools
 - system's own measuring results
- **Reliability**
 - No system malfunctions
- **Maintenance of automation tools**
 - Amount of maintenance needs remain in agreed level



Benefits of automation

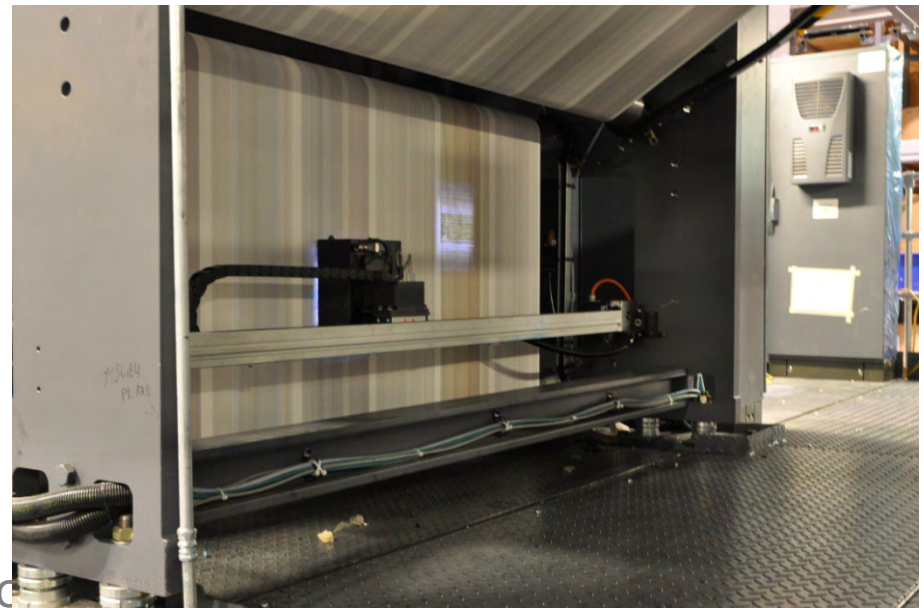
- Ergonomics
- Quality
- Production efficiency
- Environment



Benefits of automation

- Ergonomics

- observation of high accuracy quality factors by eye is tiring
 - automation reduced it significantly
- printer's work is changing to be more supervising and analyzing
- physically stressing work phases decrease
 - 50 000 plates per month is installed by APL robots
- operator's contact with washing solvents reduced



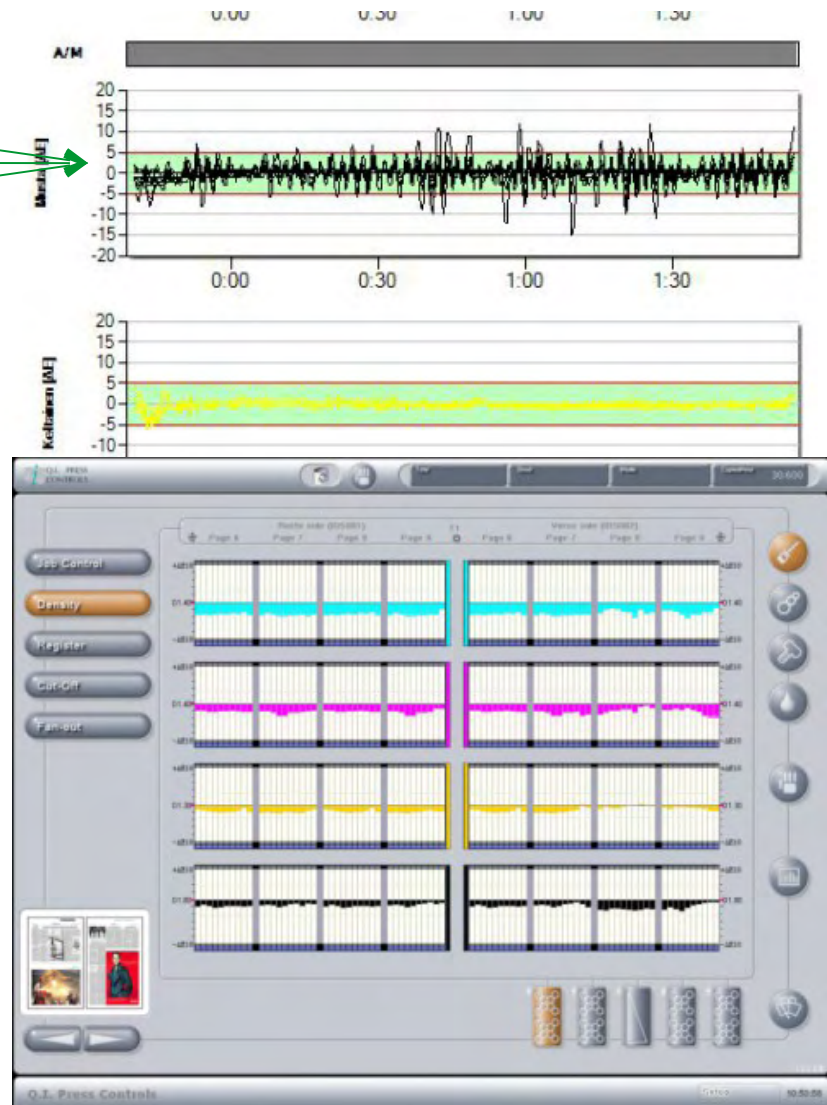
Benefits of automation, quality

- Less risks of human errors
- reaction time of adjustments is much faster
- analyzing of quality and process factors is much easier
- enables faster preventing and correction of quality defects
- same data of process and quality is available for all
- decisions of quality improvements can be based on objective facts



Analysing examples

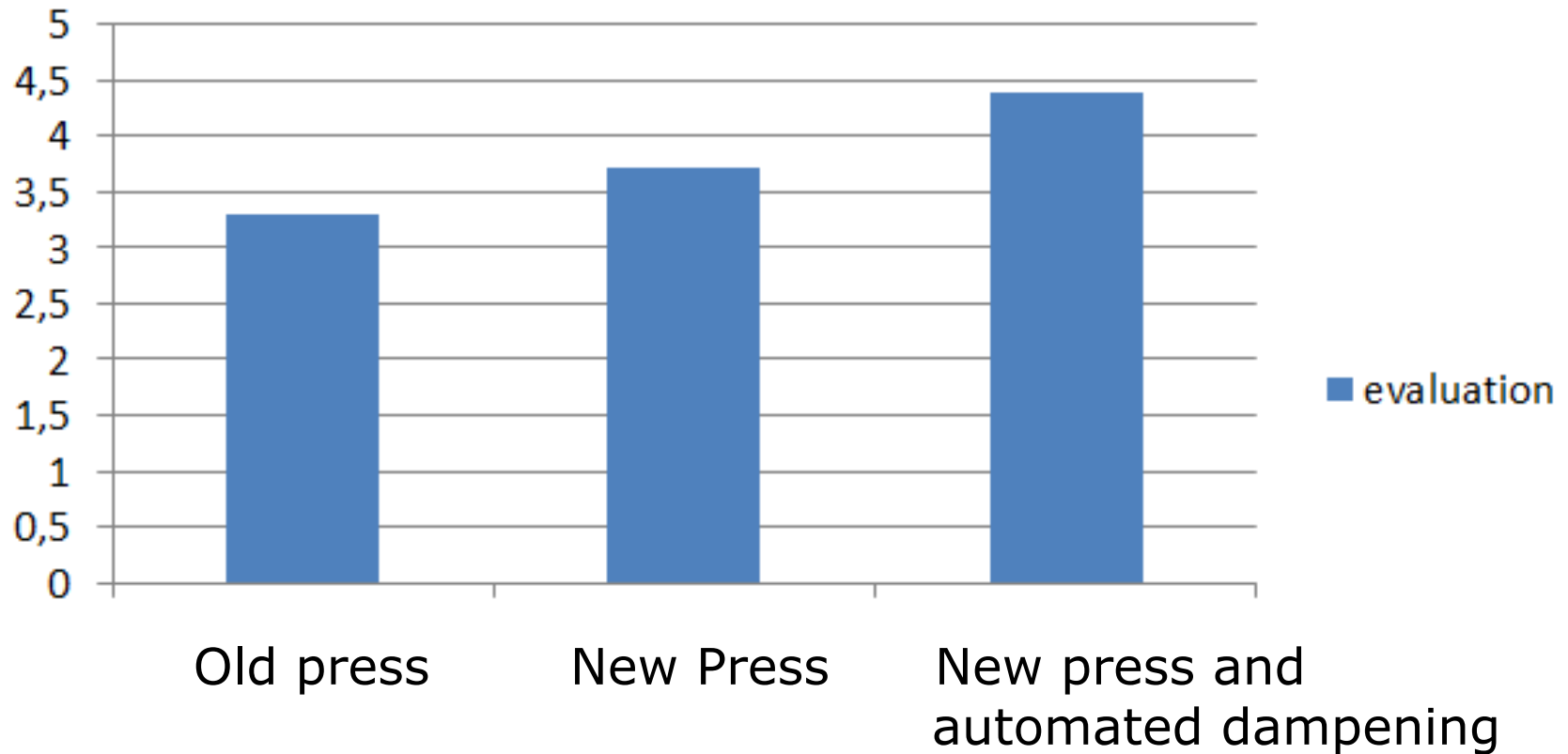
Check of roller settings?
Ink blade and ductor gap settings?
Poor ink-water emulsion?



Color quality in tolerance.
This case in start up indicates
perhaps too low ink curve in cyan.

Development in the quality of non image area

quality of non image area



Benefits of automation, production efficiency

- Production efficiency

- **reduction of manpower per product is possible**
- constantly monitored and controlled production

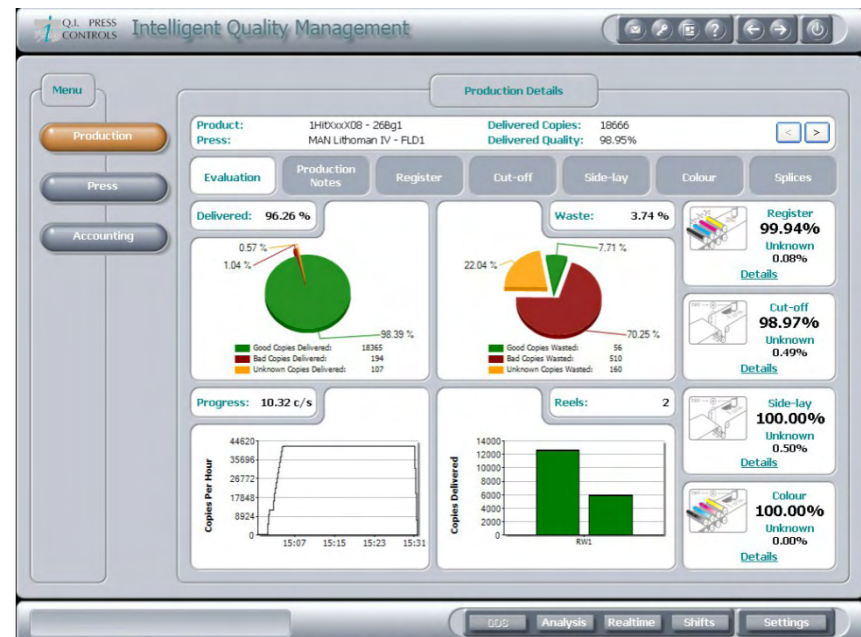
➡ less interruptions of production

➡ faster production

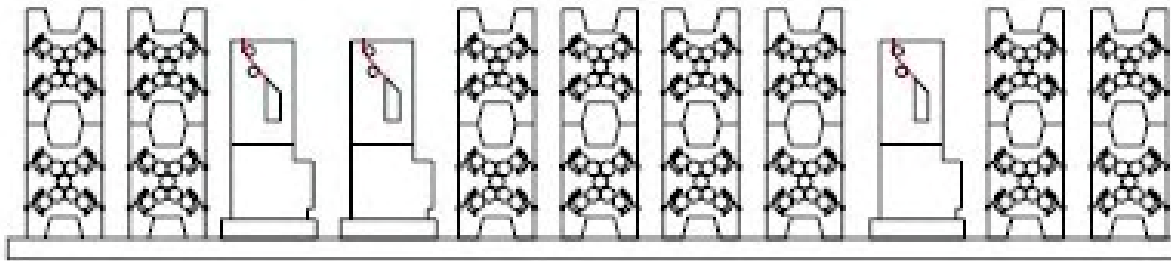
➡ less waste

➡ better material efficiency

➡ material test supervising and analysing is easier



Results high level of automation; just 1 operator per folder



Results high level of automation; Low waste numbers



Results high level of automation; standardized consistent quality



Benefits of automation, environment

- With washing automation it is possible use eco-friendlier washing solutions and reduce solvent consumption
- **less waste** → **less environmental impact**



Automation in printing makes it easier to
develop quality and production
efficiency

Thank you!

<https://www.youtube.com/watch?v=sUejl>