

RESOURCES

FIBRE COMPOSITES

SURFACES

ECOLOGICAL RELEVANCE

“Making the most of the available resource - A joint effort of industry and research takes recycled paper identification and sorting to the next level in efficiency and selectivity”

FPT-Conference Warsaw; 27.9.2011 Johannes Kappen, PTS

A future perspective: Integrated Paper Production Sites

The European Paper industry

... is an expert biomass user

... is a recycling champion

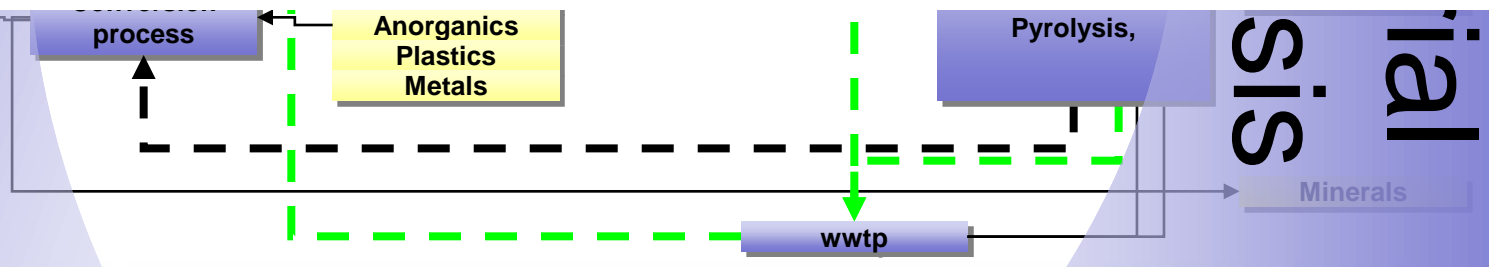
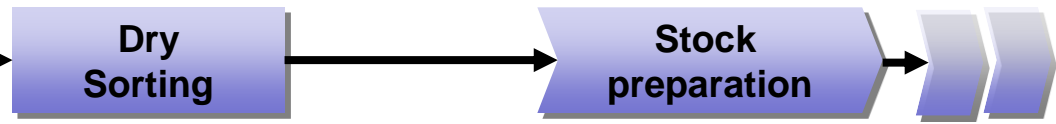
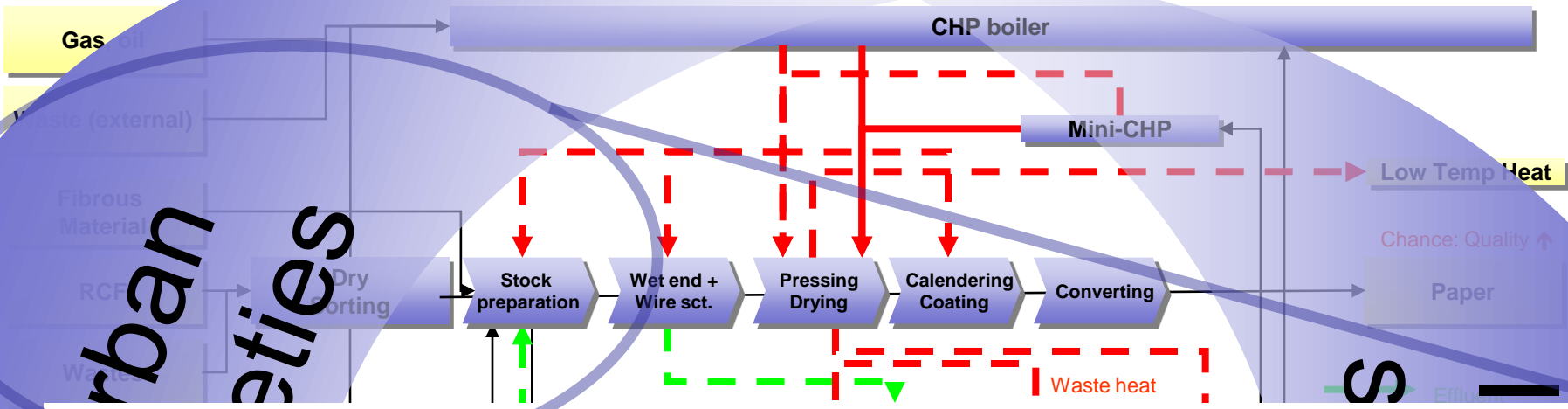
... is producing high quality bio based products since long time

... an therefore a natural and important player in a future bio based economy

Paper industry can offer:

- The ability to source and handle complex and varying (waste) raw material streams**
- Efficient processing of high amounts of recycled lignocelulosic biomass**
- Organic and non organic residues and high amount of waste heat to be used elsewhere**
- Infrastructure apt for common use (power plant/boiler, effluent treatment plant, logistics (collection/distribution))**

Integrated Paper production sites – a future mill perspective



Available resources: A fundamental gap to overcome

High variability
and deteriorating
quality of RP
but...

...ever stricter
paper quality
requirements!

How to further increase the recycling rate
without further increasing the marginal
cost of recycling?

Sophisticated
controls for DIP-
plants available
but...

...no early stage
quality related
data input
measurable!



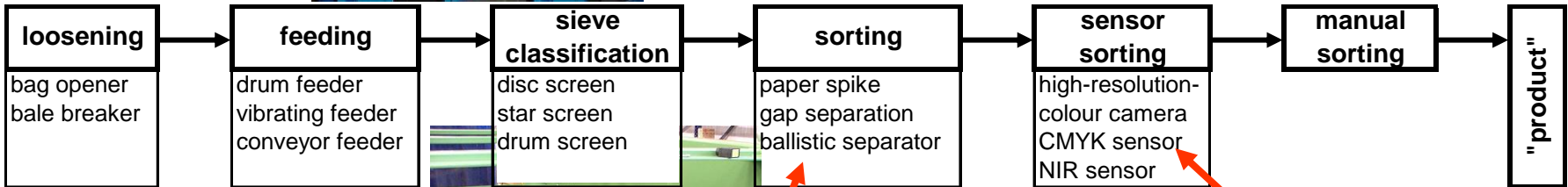
Dry
Sorting

*improve
efficiency
of dry paper
sorting*

Stock
preparation



Development of more intelligent RP dry sorting



New separators:

- blowing nozzles
- robots
- improved spikes

MULTISPECTRAL LINE SCAN CAMERAS
BASED ON HYPER SPECTRAL IMAGING

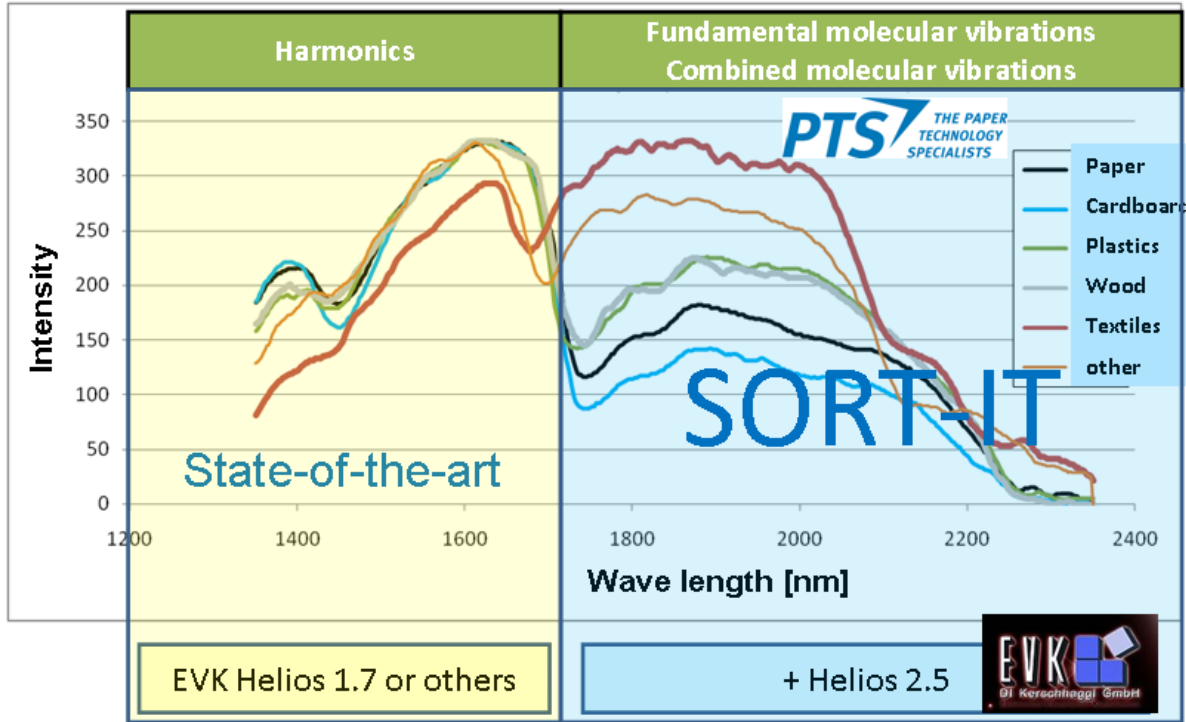
New sensors:

- extended NIR
- CMYK
- others...

EVK
DI Kerschegg GmbH

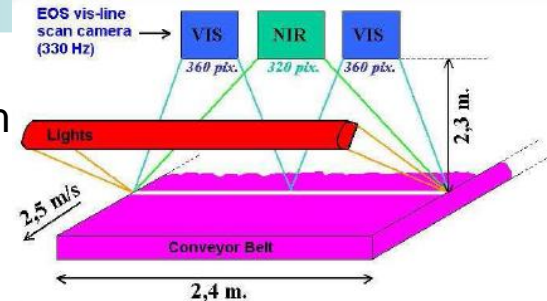


Why extending the wavelength range is so important?



UNISORT SORT-IT

- Better detection by the extension of the NIR wave length spectrum
- Combination of VIS and NIS based sensor information



Achieved results



The following materials and paper grades can be detected with high accuracy:

Recovered paper for deinking	Paper detrimental to production	Non-fibre components
<ul style="list-style-type: none"> • Newspapers • Magazines • Booklets & flyers • Office paper • Catalogues 	<ul style="list-style-type: none"> • Corrugated board (brown, coated paper, coated) • Folding box (brown, grey, coated) • Packaging paper (brown, grey) • Paper with plastic (plastic coating or otherwise attached) • Flexo newspapers 	<ul style="list-style-type: none"> • Plastics • Textiles (man-made, natural fibres) • Wood • Organic wastes

Comparison of compositions of recovered paper and current literature:

	Recovered paper composition output of the SORT IT sorting plant [%]	Average composition of deinkable recovered paper (study by Weinert, Putz, 2010) [%]
Deinkable recovered paper	96.5	93.5
Packaging – paperboard	3	6
Non-paper	0.5	0.5



Dry
Sorting

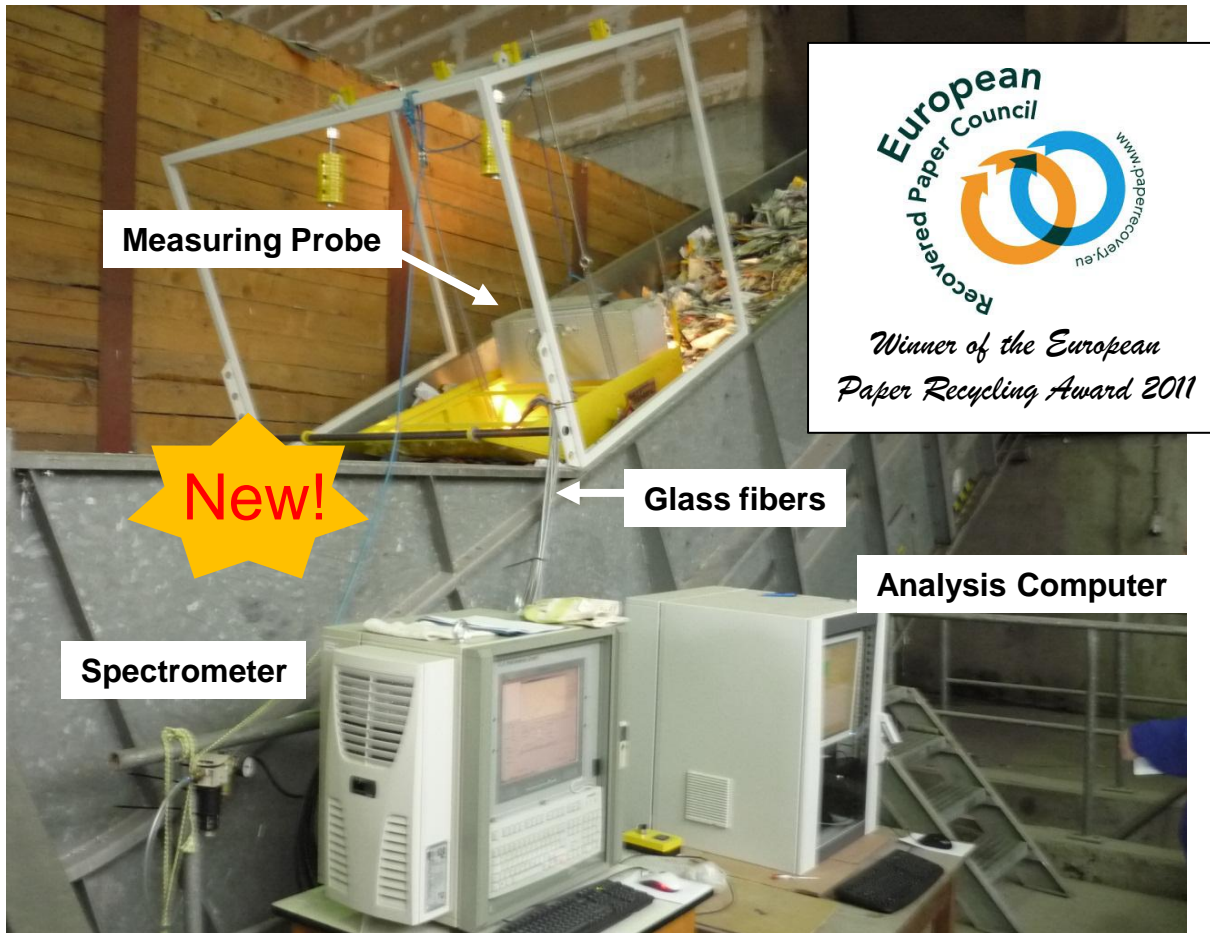
Stock
preparation



*Reliable detection
of critical
RP components*

Online Monitoring of Recovered Paper

NIR Measuring System on RP Conveyor Belt in a Paper Mill



Objectives & Targets

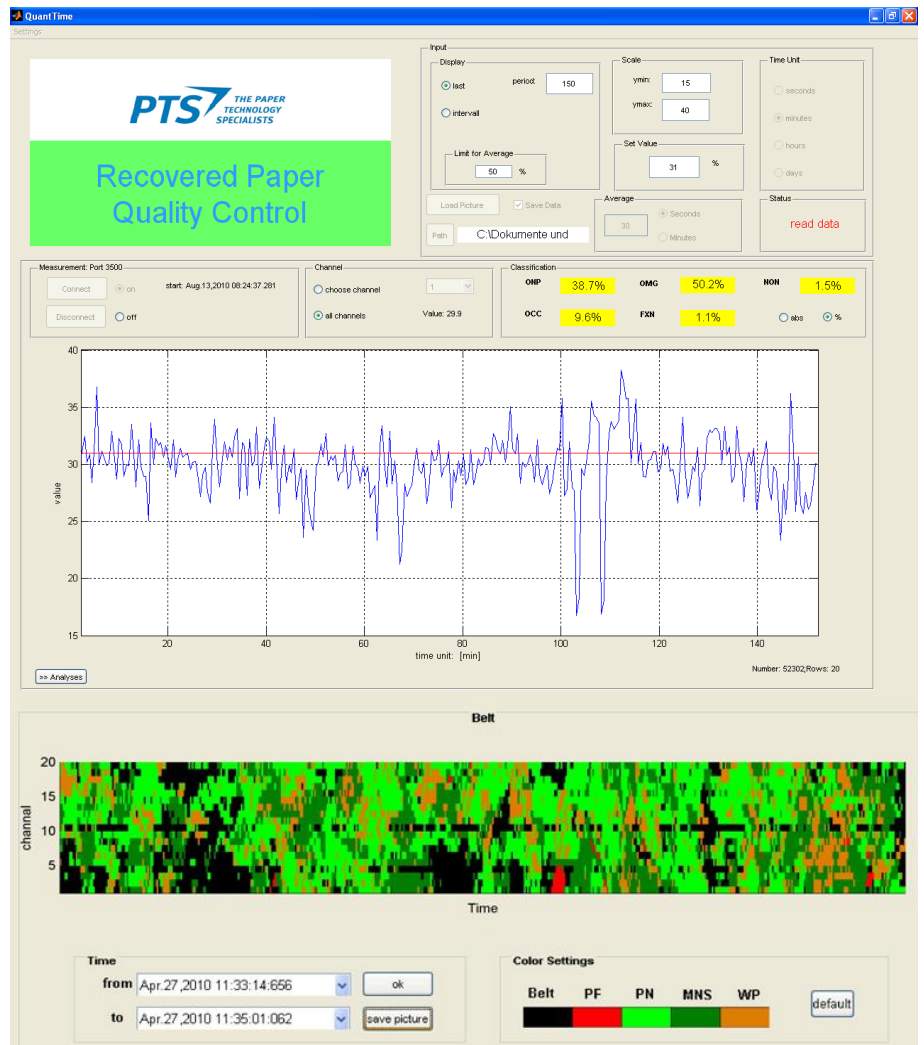
Process Analysis

Process Monitoring

Process Control

Process Efficiency

Analysis of RP Composition and Online Display of Measurement Data



Determined Parameters of Recovered Paper

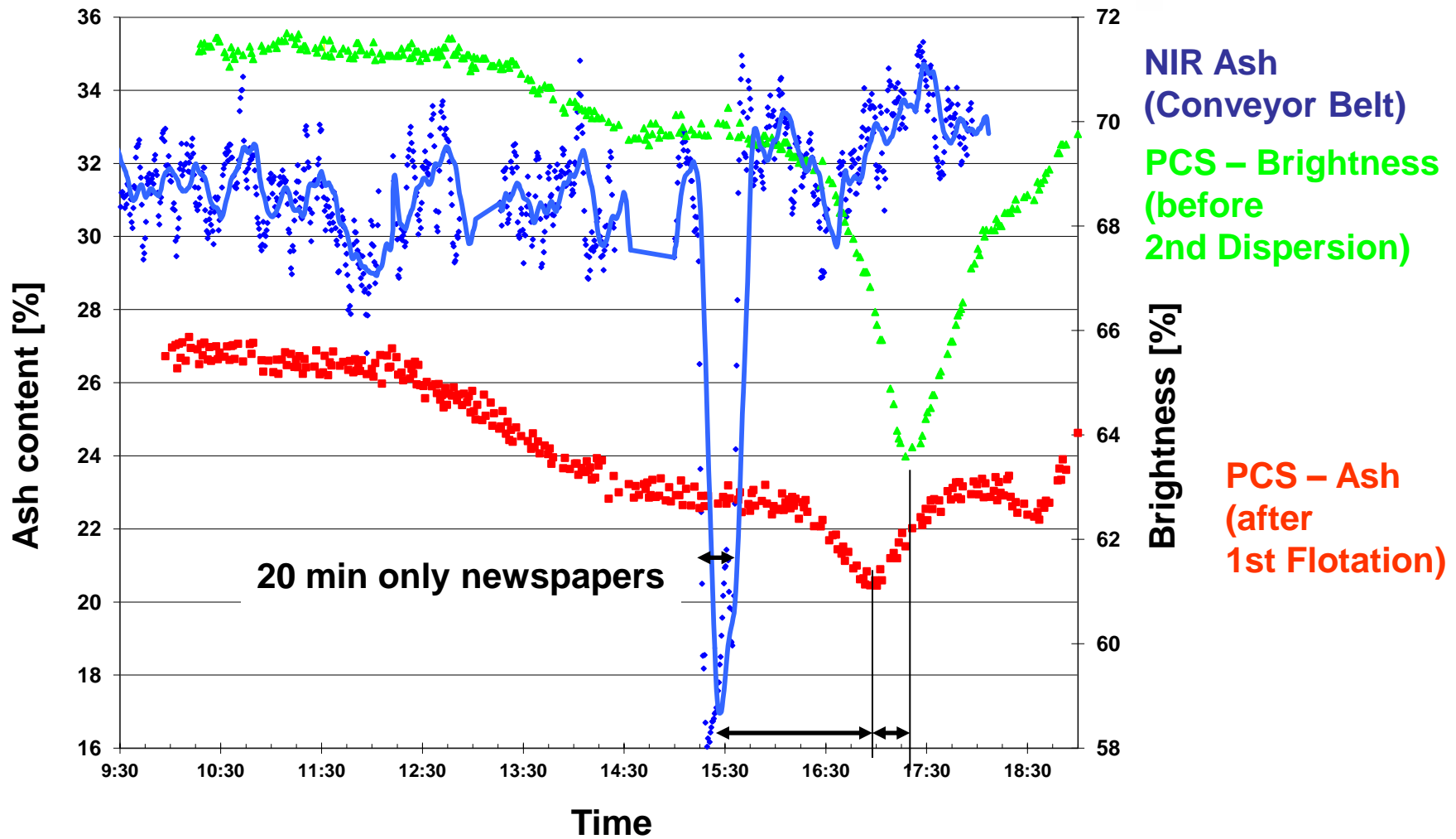


- Deinking paper content
- Ratio newspaper (ONP) / magazines (OMG)
- Content of unwanted paper and board (OCC)
- Content of flexo printed newspapers
- Plastics content
- Ash content
- Moisture

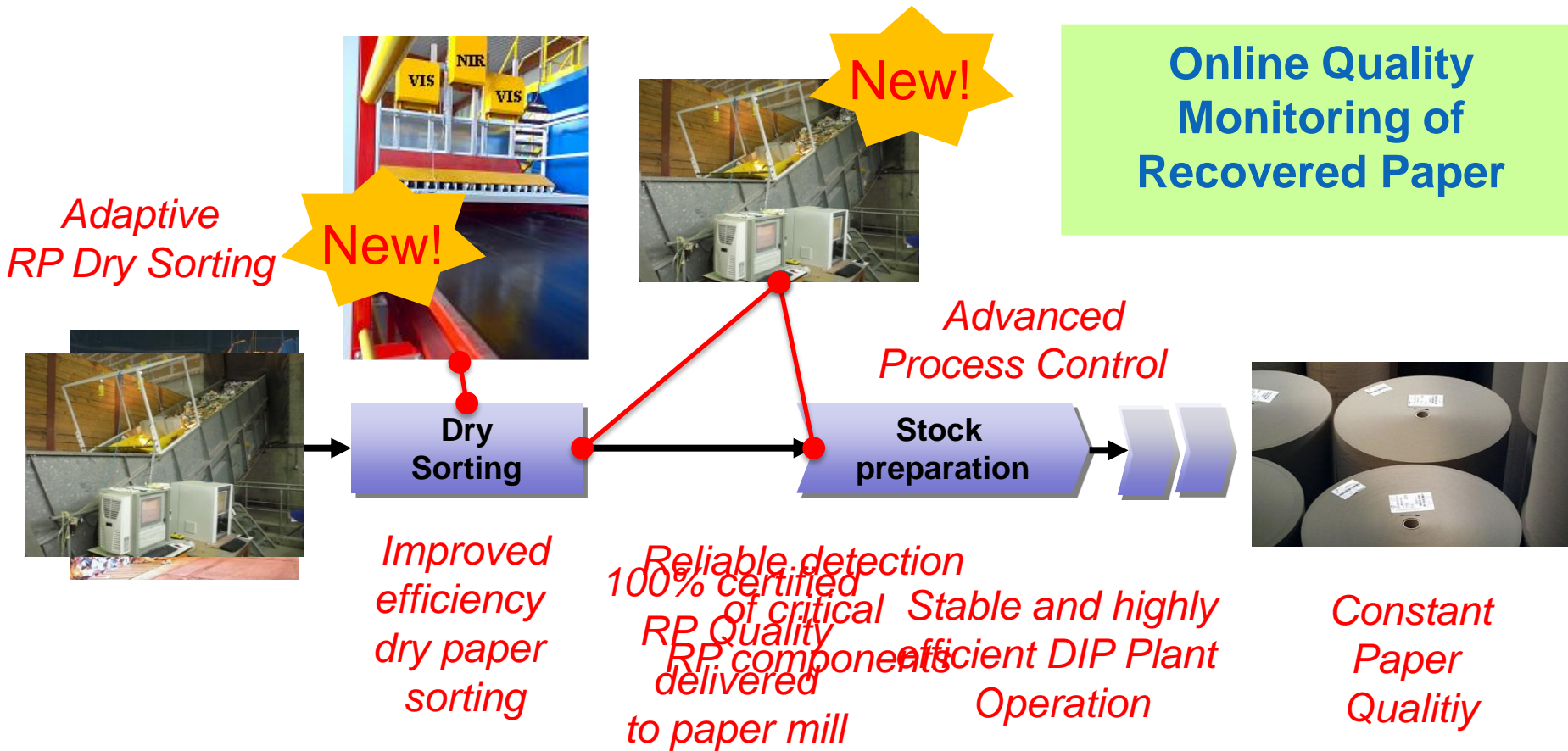
Online Visualisation of RP Composition on Conveyor Belt Surface



Mill trial



Conclusion and Outlook



The Team & Acknowledgement



" Paperwork "

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