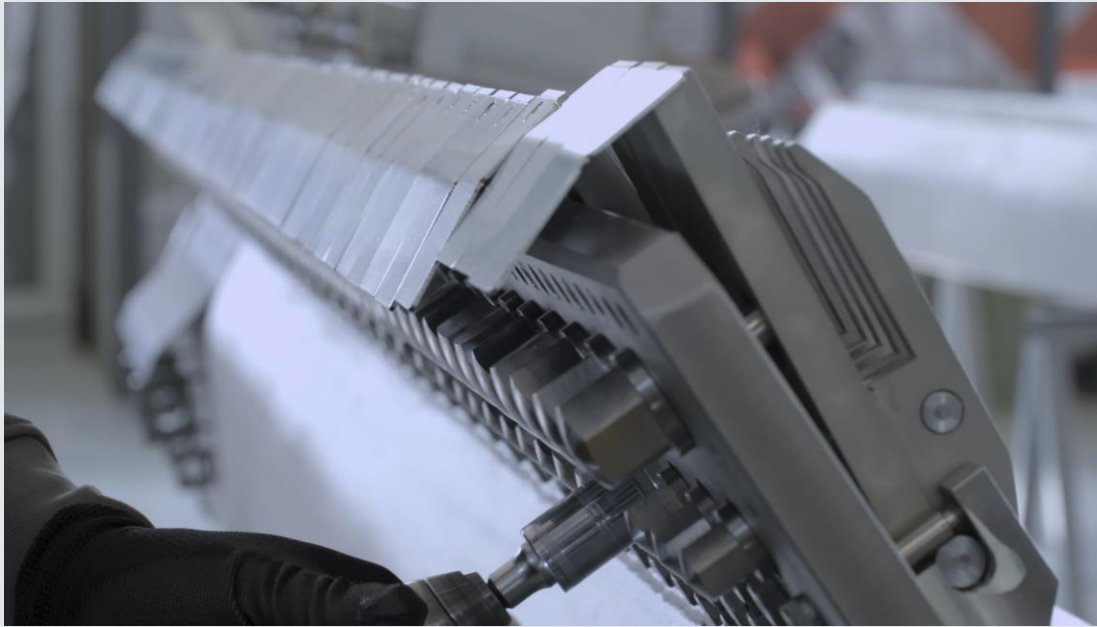




ORADOC

PERFECT DOCTORING SYSTEMS



OraLock™: the most flexible among rigid doctors

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Agenda

- ✓ Introduction
- ✓ Oradoc and Wiva group brief presentation
- ✓ News on acquisition of MTK company
- ✓ **OraLock™**
 - ✓ Why we've looked for **OraLock™** (SWOT analysis)
 - ✓ R&D product description (Target, Concept and features)
 - ✓ OraLock video
- ✓ Case study in Sofidel plant with results
- ✓ Q&A

ORADOC is member of **WIVA** a network that involves two other companies, **CRC** and **ISE**.



Oradoc - Company Profile

- ✓ 30+ years on the Tissue, Paper and Board markets
- ✓ Headquarters in Tissue Valley - Lucca, Italy (120+ Tissue paper machines)
- ✓ 20.000+ doctoring systems installed worldwide
- ✓ 1.000+ flexible creping doctors worldwide

Oradoc - Company Profile

- ✓ Doctoring Solutions
- ✓ Measuring Systems
- ✓ Services
 - Technical Services
 - Doctor overhaul
 - Rebuilding and upgrades

ORADOC acquires **MTK** and consolidates its leadership in the paper industry

MTK, located in Lucca, is specialized in the design, construction and supply of **drainage systems** and **vacuum systems** and its products and services are conceived for paper mills and machine and plant manufacturers on the national and international paper markets.

The acquisition operation is inscribed within the development plans of **ORADOC** and it goes along with the strategic programs of the other WIVA Network affiliated companies.

Products

- ✓ Dewatering systems
- ✓ Vacuum systems
- ✓ Ceramic and plastic materials

Services

- ✓ Inspection, overhaul & grinding of drainage elements
- ✓ Alignment of drainage elements
- ✓ Performance test on vacuum pumps

For more info: [Click here](#)

Tissue papermakers' doctoring needs

- ✓ High speed machines
- ✓ Top-level OEE performance
- ✓ High paper quality
- ✓ Production flexibility (paper grades, crepe ratio, etc.)
- ✓ Best-in-class cost per case
 - Asset protection and optimization
 - Investment ROI

These needs cannot be achieved without a stable, flexible and optimized creping process.

The doctor holder is an integral part of the creping process.

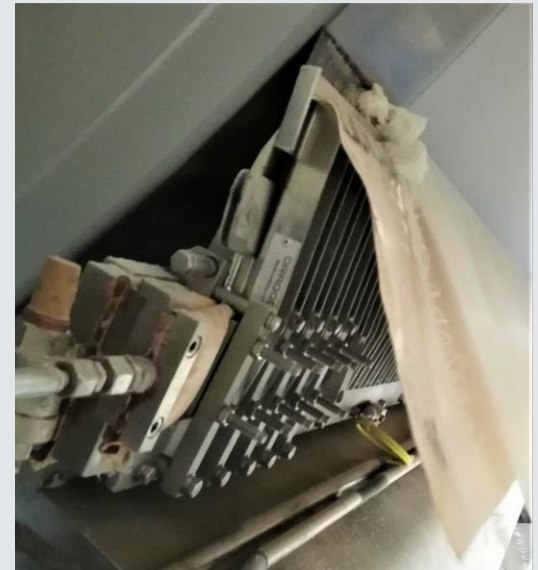
Yankee creping doctor solutions

Technical concepts

Rigid blade holder



Flexible blade holder



Rigid Creping Doctor - SWOT analysis

STRENGTHS

- Robust design
- Reliable design
- Cartridge design

WEAKNESSES

- Difficult and no accurate profiling
- Time consuming profiling
- Often operate at higher blade load
- Non uniform blade load
- Skilled technicians needed for profiling

OPPORTUNITIES

- Excellent and easy blade profiling
- Optimize blade load
- A blade holder that doesn't require operator's expertise
- Better profiling = reduces risk Chatter Marks and reduced quality variation in MD and CD

THREATS

- New concept Yankee cylinders
- Enhanced tissue machine flexibility
- Higher speed/lower moisture creping operations

OraLock™ new creping doctor – Targets

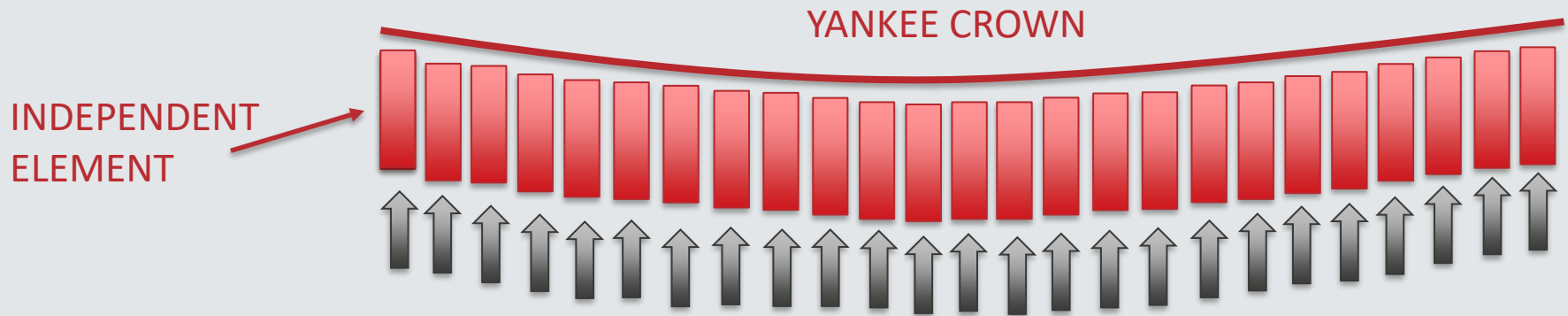
✓ Oradoc experience achieved with "self-profiling" flexible blade holders

✓ Robust and reliable design rigid blade holder with cartridge

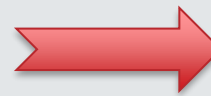
OraLock™ - new blade holder design



OraLock™ new creping doctor – Concept



- ✓ Flexible concept during profiling set up procedure
- ✓ Rigid behavior during operation



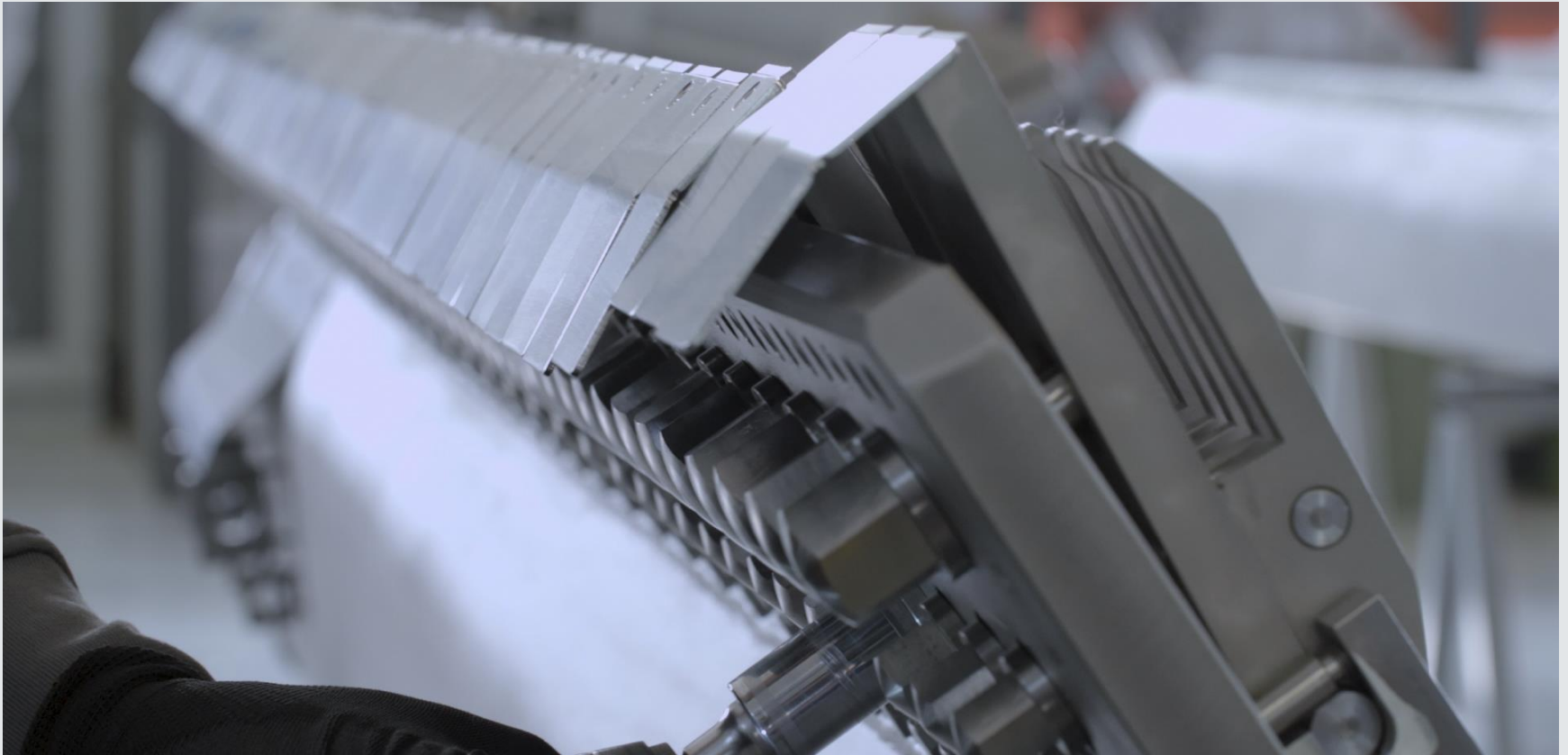
Easy and quick self
profiling procedure

- ✓ More than 3 years of R&D activities
- ✓ More than 2.500 hours of R&D engineers
- ✓ More than 250 hours in paper mill plant
- ✓ 1 year of pilot installation in Sofidel plant



OraLock™
the new rigid creping doctor

OraLock™ new creping doctor – Advantages



OraLock: detail (on side part) of movable blade holder elements for profiling

SWOT comparison: Rigid vs OraLock® designs

STRENGTHS - Rigid

- Robust design ✓
- Reliable design ✓
- Cartridge design ✓

STRENGTHS - OraLock®

OPPORTUNITIES - Rigid

- Accurate and easy blade profiling
- Uniform blade load
- Better profiling = reduces risk for Chatter Marks,
- Reduced quality variation in MD and CD

OPPORTUNITIES - OraLock®

- Blade life
- Quality
- Asset protection
- Reduced costs

OraLock™ video

for more info: [click here](#)

OraLock™ Case Study – Pilot installation

- ✓ Location: Lucca, Italy
- ✓ Plant: Via Lazzareschi (former Delicarta)
- ✓ OraLock™ startup: April 2019
- ✓ Tissue machine: PM2 (crescent former)
- ✓ Speed: 1890 m/min
- ✓ Tissue grade: Premium Toilet



OraLock™ Case Study – Pilot installation



OraLock during installation



OraLock after installation

OraLock™ Case Study Results

Validation process with statistical tools

- ✓ Selection of 5 grades for the project
- ✓ Sampling period every hour upon 6 months
- ✓ Identified five KPI
- ✓ DOE (with stick-out, backing blades)

OraLock™ - Case Study Results

KPI

#	Parameter	Ref. Value	With OraLock	Increase %
1	Blade change time (s)	252	202	- 18%
2	Blade lifetime (h)	5,2	6	+ 12%
3	Crepe Efficiency (*ETA)	104,6%	109,0%	+ 4,3 %
4	Coating	13,7	13,2	- 3,6%
5	«Hand feeling»	+	++	

$$*ETA = \frac{Elongation}{Crepe\ ratio} \% \text{ with } Crepe\ ratio = \frac{V_{tan\ Yankee} - V_{pope}}{V_{tan\ Yankee}}$$

OraLock™ - Case Study Results

OEE: +1,4 %

Production increase: +372 tpy

Profit increase 110 – 130,000 USD
(evaluated on US average margin)

OraLock™ - Conclusions

✓ Goals achieved

Quick and fast profiling



Operators expertise not required



Optimized blade load



✓ Unexpected positive results

✓ Consistency of results after 2 year



Thank you for your attention!



PERFECT DOCTORING SYSTEMS

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Q&A