Exploring new X-Ray applications for Industry 4.0

Detlef Steck, President IXS
Vasa: A flagship sunk in 1628
Galaxy Note 7: A flagship sunk in 2016

- >100 customer phones caught fire
- Global recall of several million devices
- Production halted
- Reputation & brand damaged
Recent examples highlight that quality & safety have highest importance for our customers.

What our customers need for their products:

- Cost optimization & production yield
- Fast, innovative functionality and resource optimized design
- Predictable quality & safety
Our customers increasingly use X-ray & CT to ensure their product meets demanding needs.

- **Electronics**
  - Top 3 YXLON

- **Power train**
  - Top 3 YXLON

- **Car Body**
  - Top 3 YXLON

- **Electro-mechanical**
  - #1 YXLON

- **Tires**
  - #1 YXLON

- **Plastic components**

- **Aluminum wheels**
  - #1 YXLON
Improvements in imaging technology allow to extend customer applications

- #1 in Foundries, Aerospace
- Best image

Market size

- Operator
- 2D Assisted
- 2D Manual
- 2D Digital
- Film/CR

X-ray Imaging Technology

Comet Group Investor Day 2016
Improvements in imaging technology allow to extend customer applications

- Top 3 in most industries
- Best image
- Powerful algorithms

YXLON

3D Metrology

2D Assisted

3D Assisted

2D Manual

3D Manual

X-ray Imaging Technology

Market size

Film/CR 2D Digital 3D CT

Operator

Comet Group Investor Day 2016
Improvements in imaging technology allow to extend customer applications.
Industry 4.0: Inline & Automated X-ray inspection provide new levels of safety, quality and yield
Industry 4.0: X-ray to control batch size one manufacturing of integrated lightweight products

- 3D Process Control
- 3D Inline & Automated
- 3D Metrology
- 3D Assisted
- 3D Manual
- 2D Process Control
- 2D Inline & Automated
- 2D Assisted
- 2D Manual
- 2D Digital
- Film/CR
- X-ray Imaging Technology

Market size
>500M-CHF additional market opportunity

Operator

Hardware

Software

Industry 4.0 manufacturing system

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Industry 4.0: we are already exploiting opportunities in 2D X-Ray …
... and in 3D: from data to information, with steadily increasing opportunities

- Adaptive process control ➔ uptime, quality, yield
- Predictability of performance ➔ safety & availability, predictive maintenance
- Defect Detection ➔ Lifetime Prediction

3D Process Control

3D Inline & Automated ➔ Batch size 1 customization

Automated design verification ➔ yield, resource efficiency

Adaptive process control ➔ uptime, quality, yield

Predictability of performance ➔ safety & availability, predictive maintenance

Automated design verification ➔ Batch size 1 customization

Automated design adjustments ➔ yield, resource efficiency
We enable our customers to create a connected world of safe and resource-optimized products

What our customers need for their products
- Cost optimization & production yield
- Fast, innovative functionality and resource optimized design
- Predictable quality & safety
Questions & Answers