

Motion control

Investor Day 2017

Presented by
Steve Oakes – Renishaw plc
Janez Novak – RLS d.o.o.



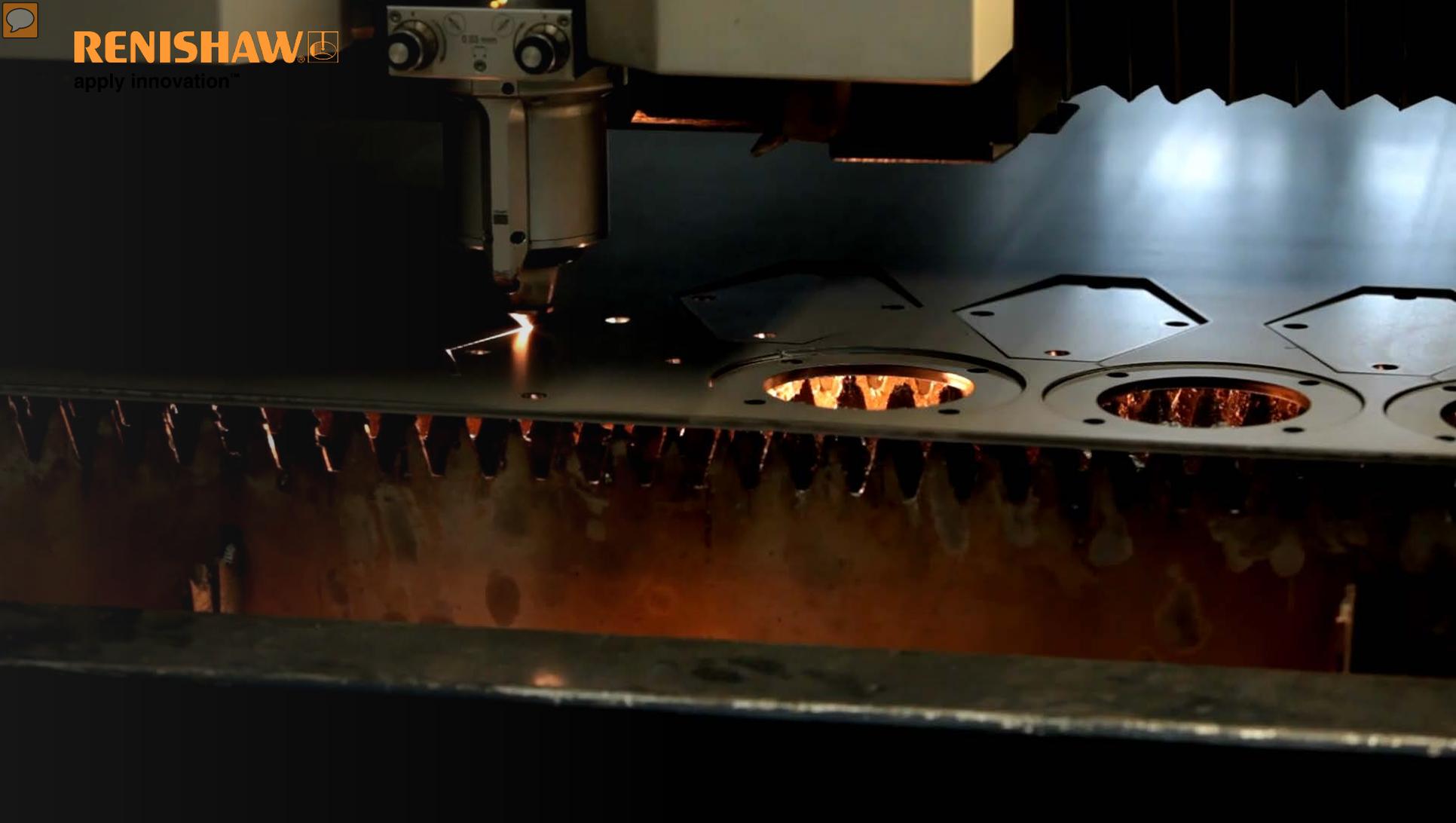


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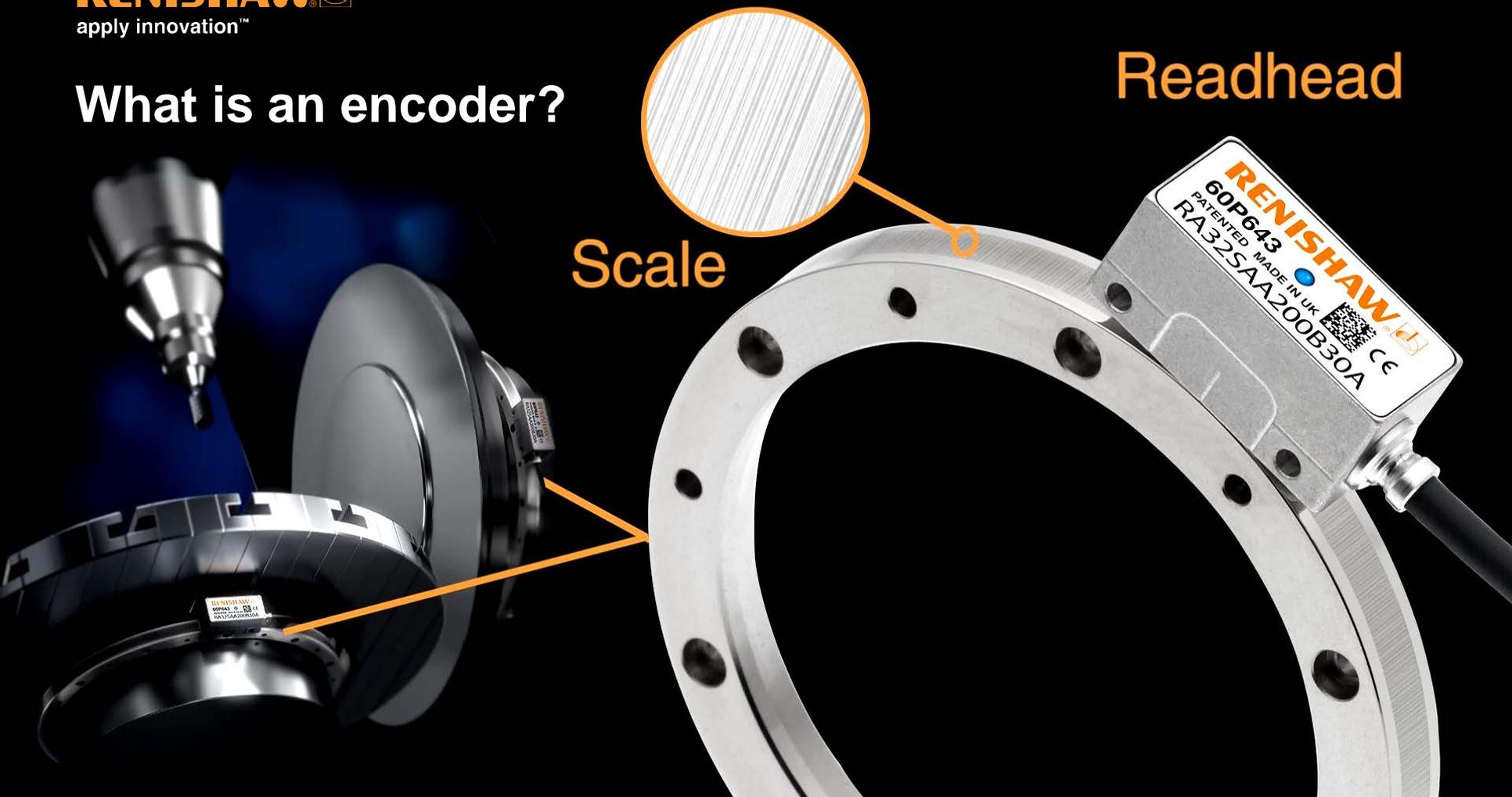


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What is an encoder?



Readhead

Scale

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60P643
PATENTED MADE IN UK
RA32SAA200B30A
CE



Optical



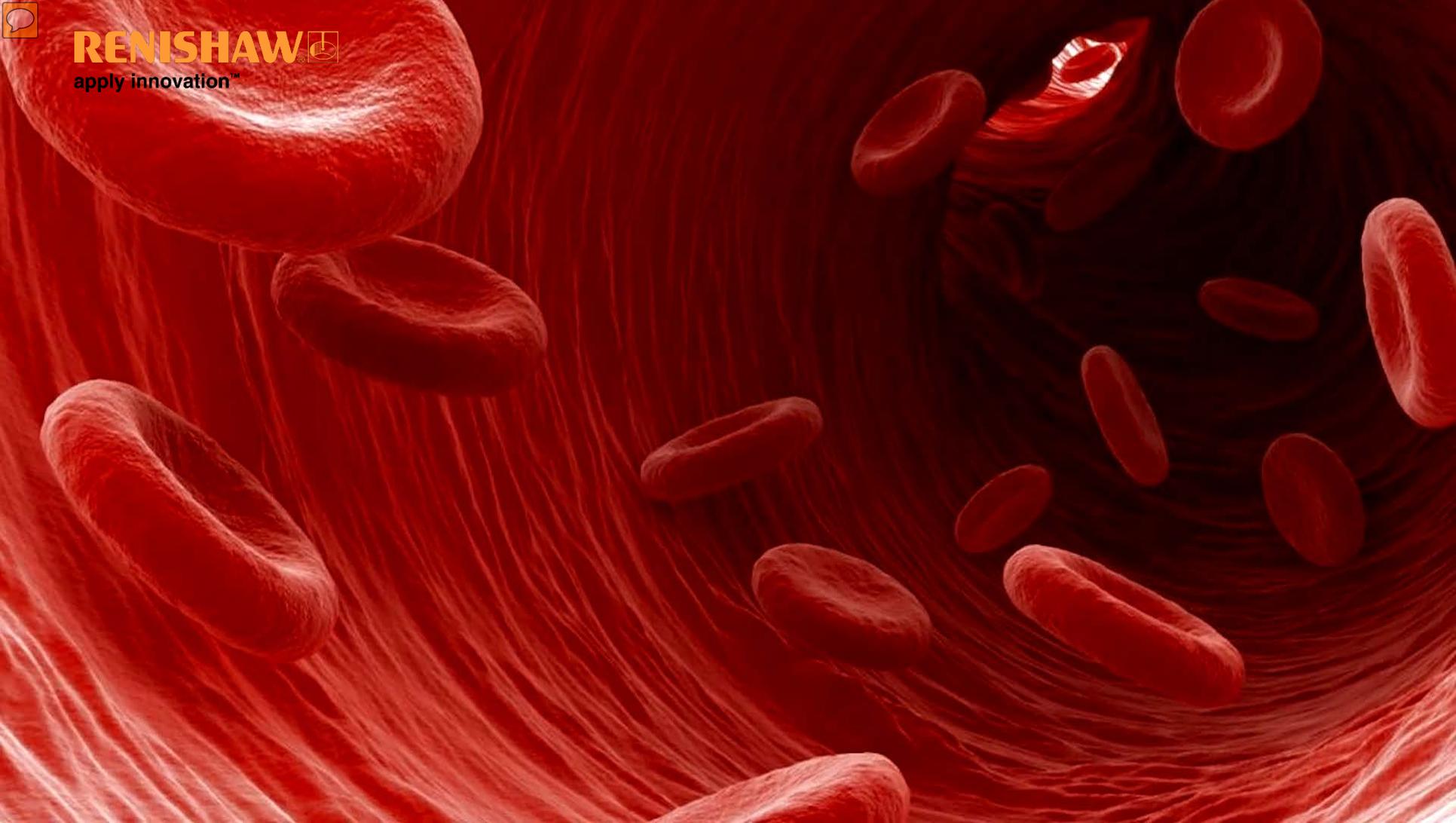
Magnetic



Laser



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1988

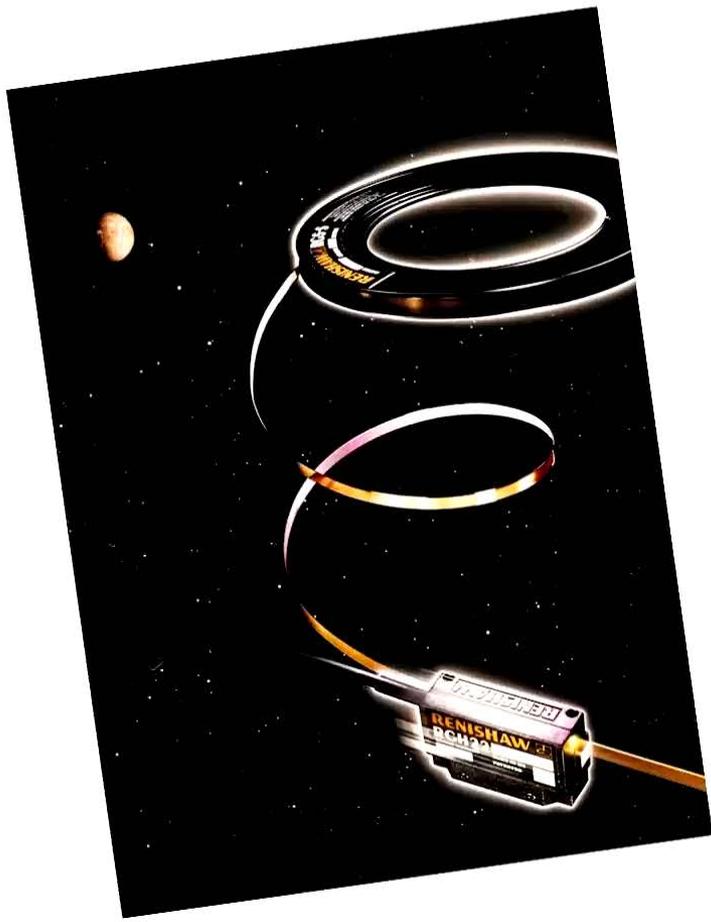






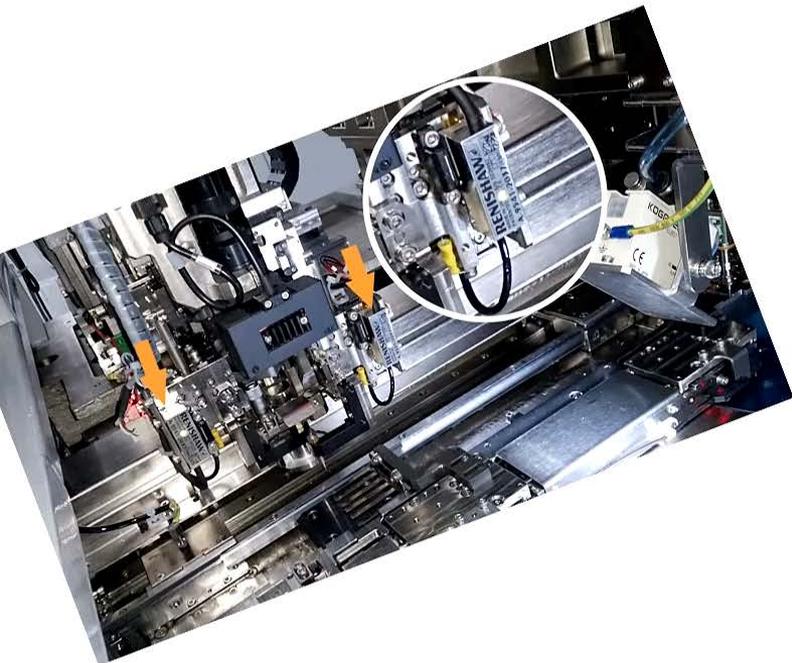
1991





1996





1998





1998



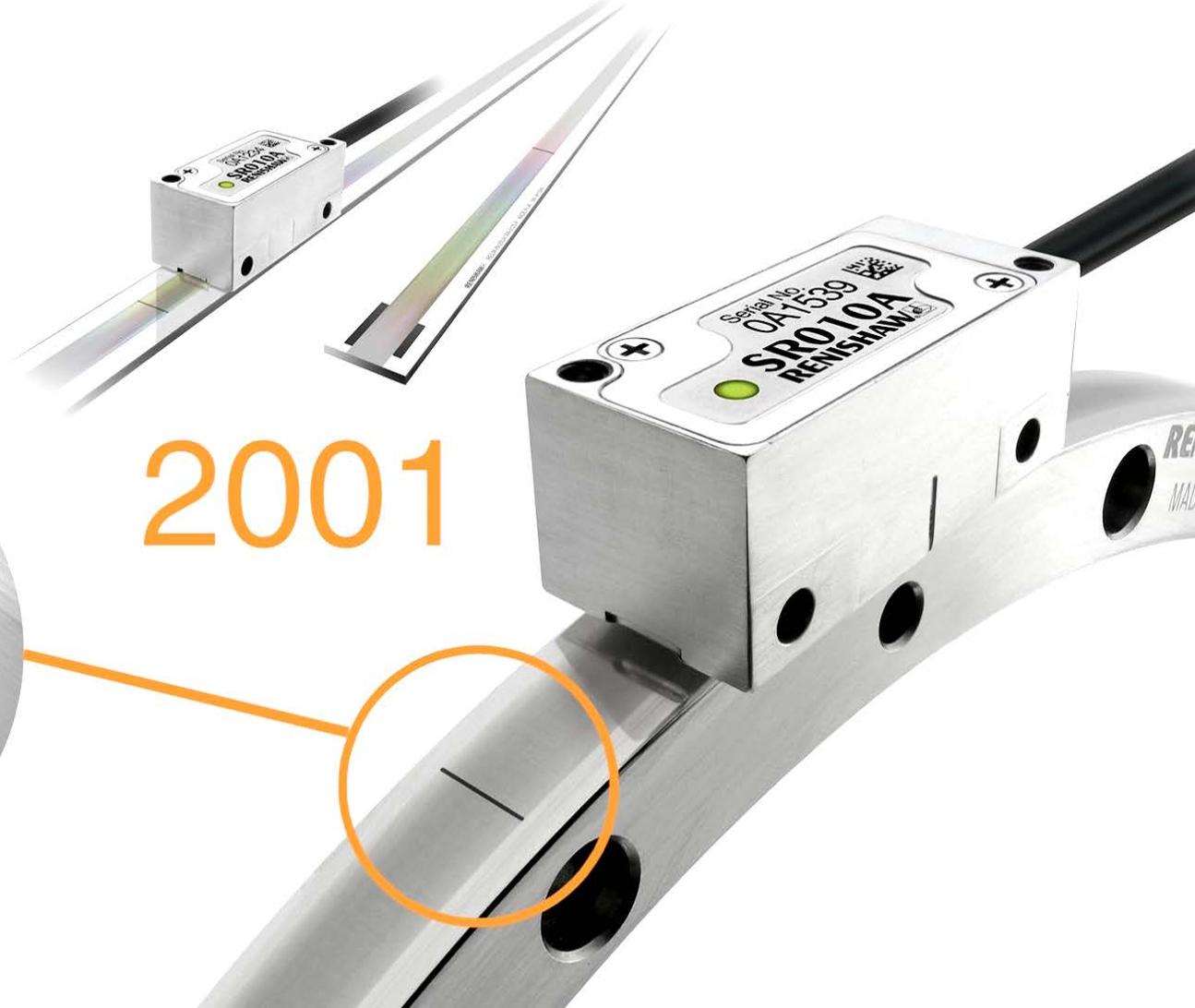
2000



 **RLS**®



2001

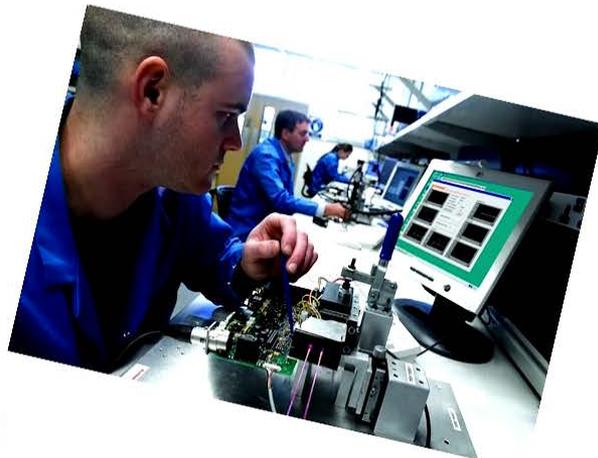


2001





2001



2005





2008





2010



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THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION

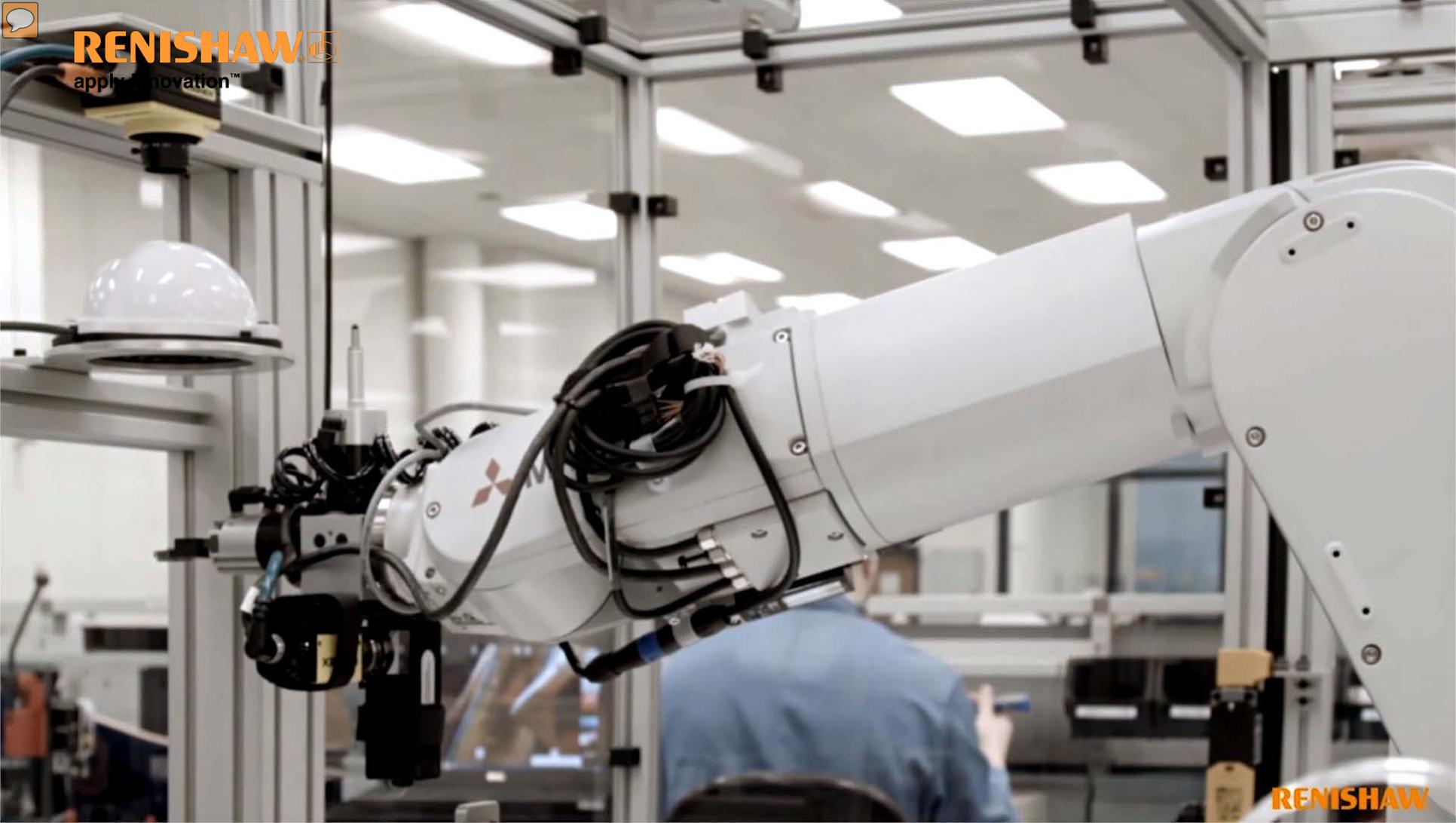


2014





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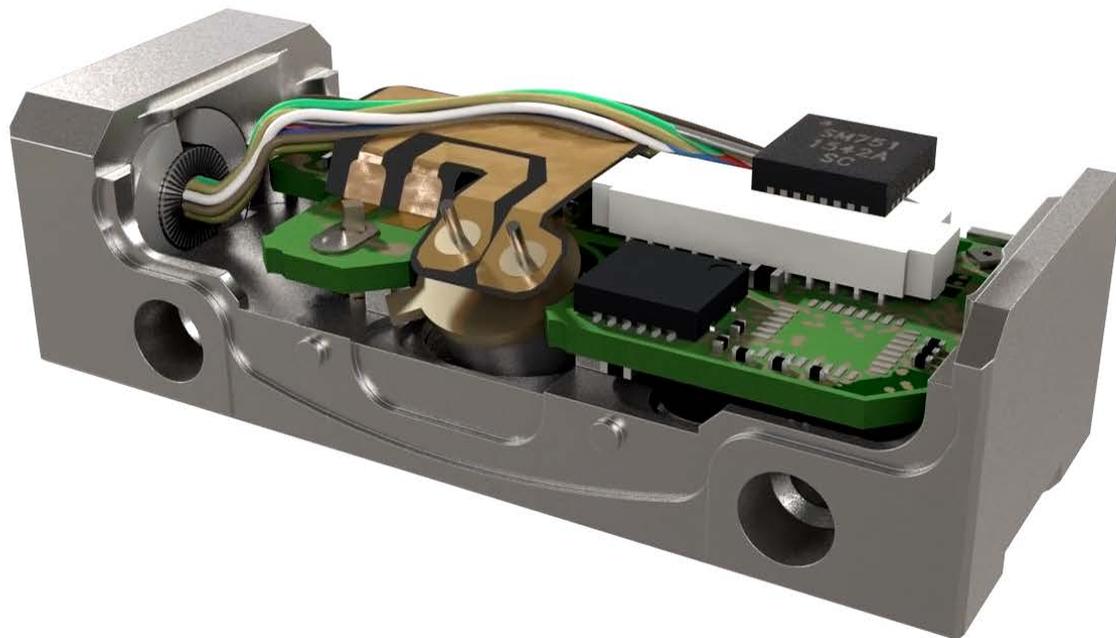


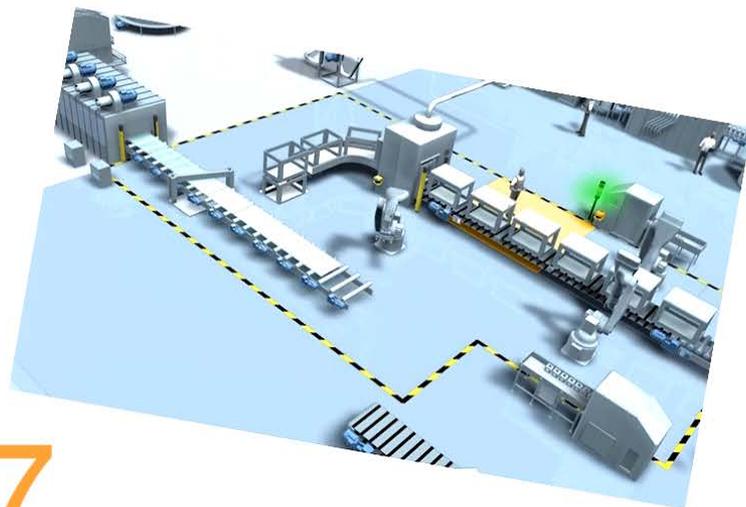
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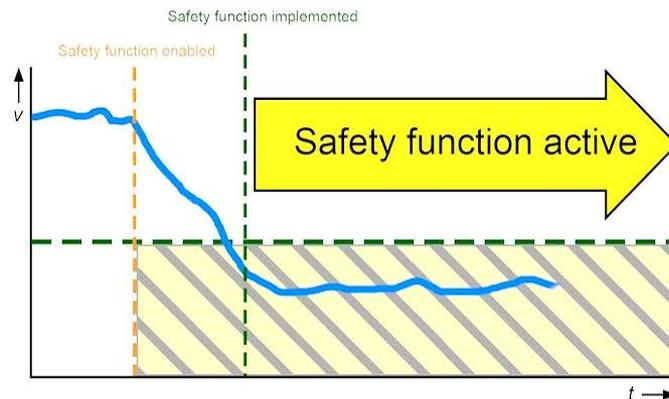
2016







2017





1988



1991



1996



1998



1998



2000



QRLS



2001



2001



2005



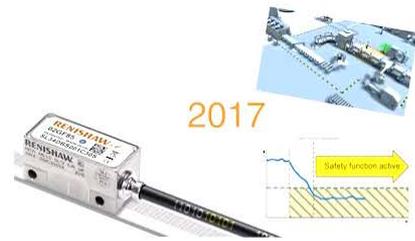
2008



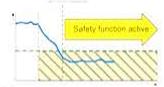
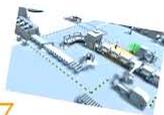
2014



2016

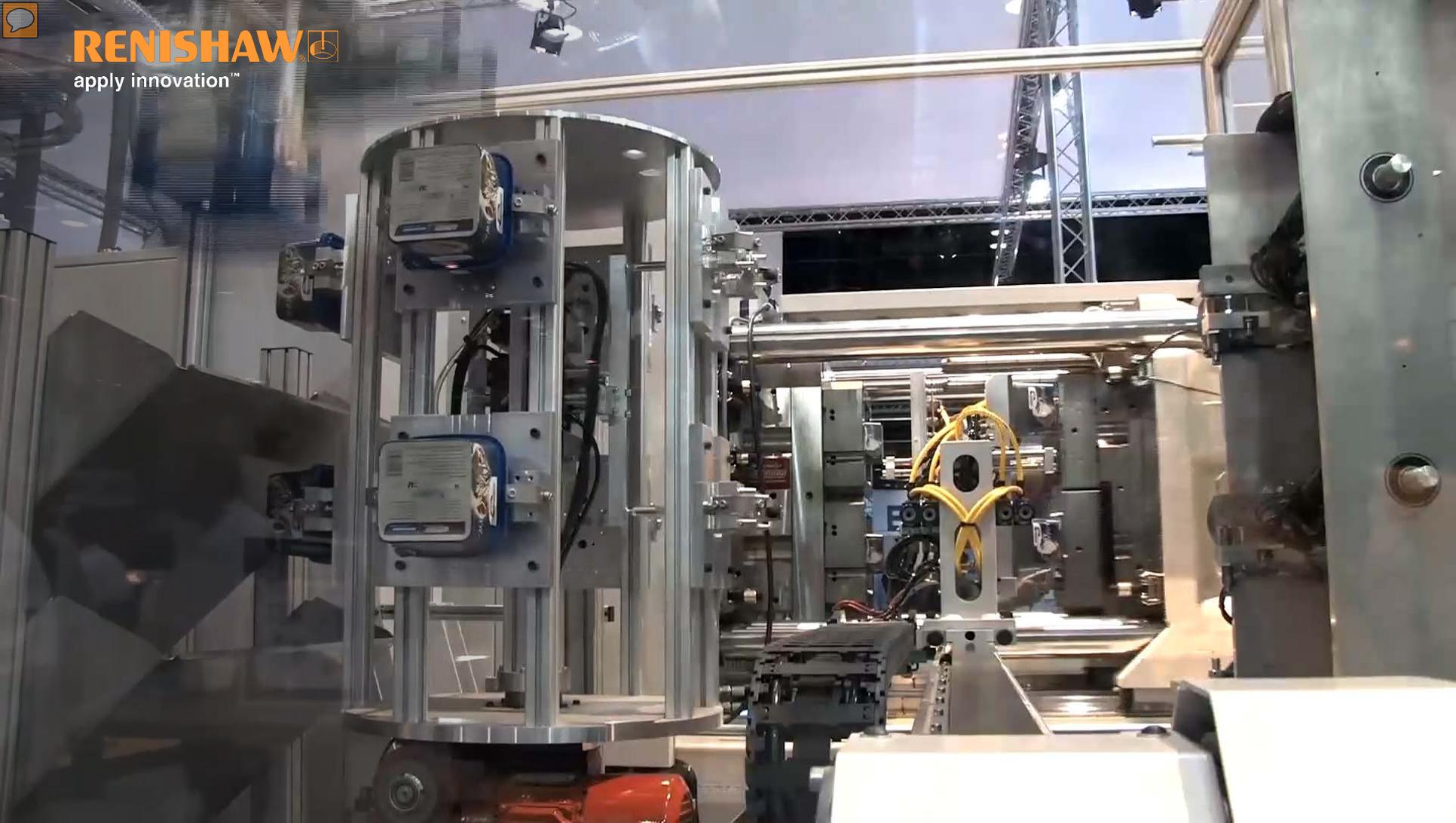


2017





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Race to innovate: digital position feedback for Land Rover BAR



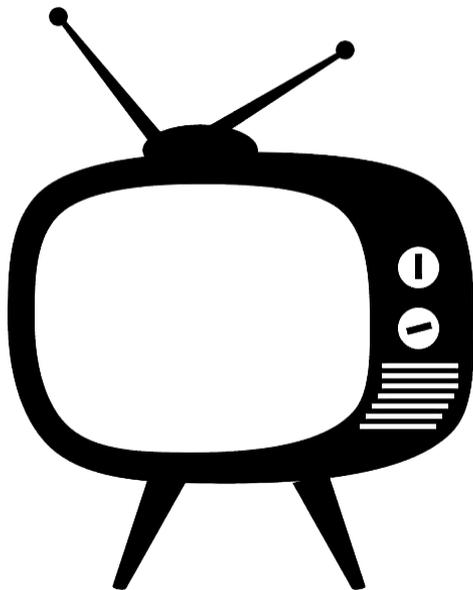
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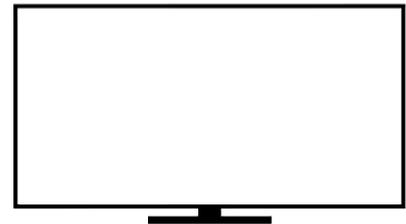
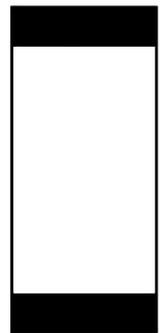
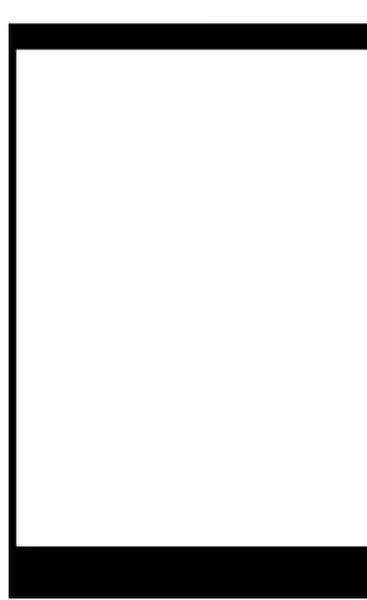
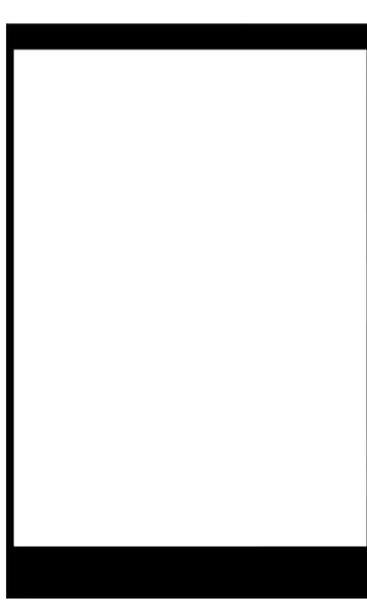
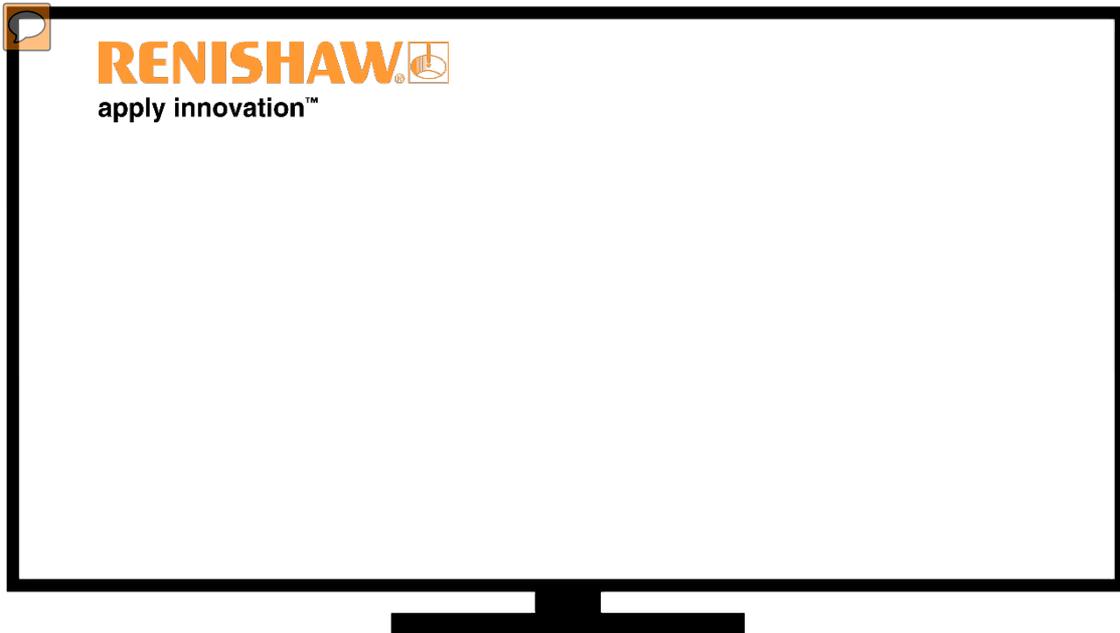
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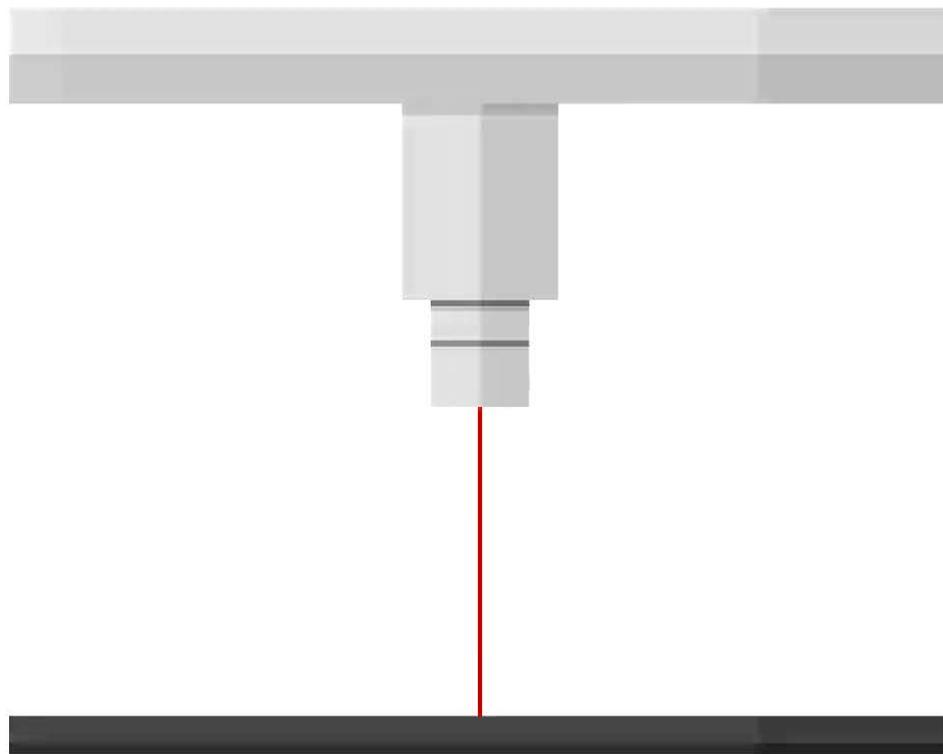


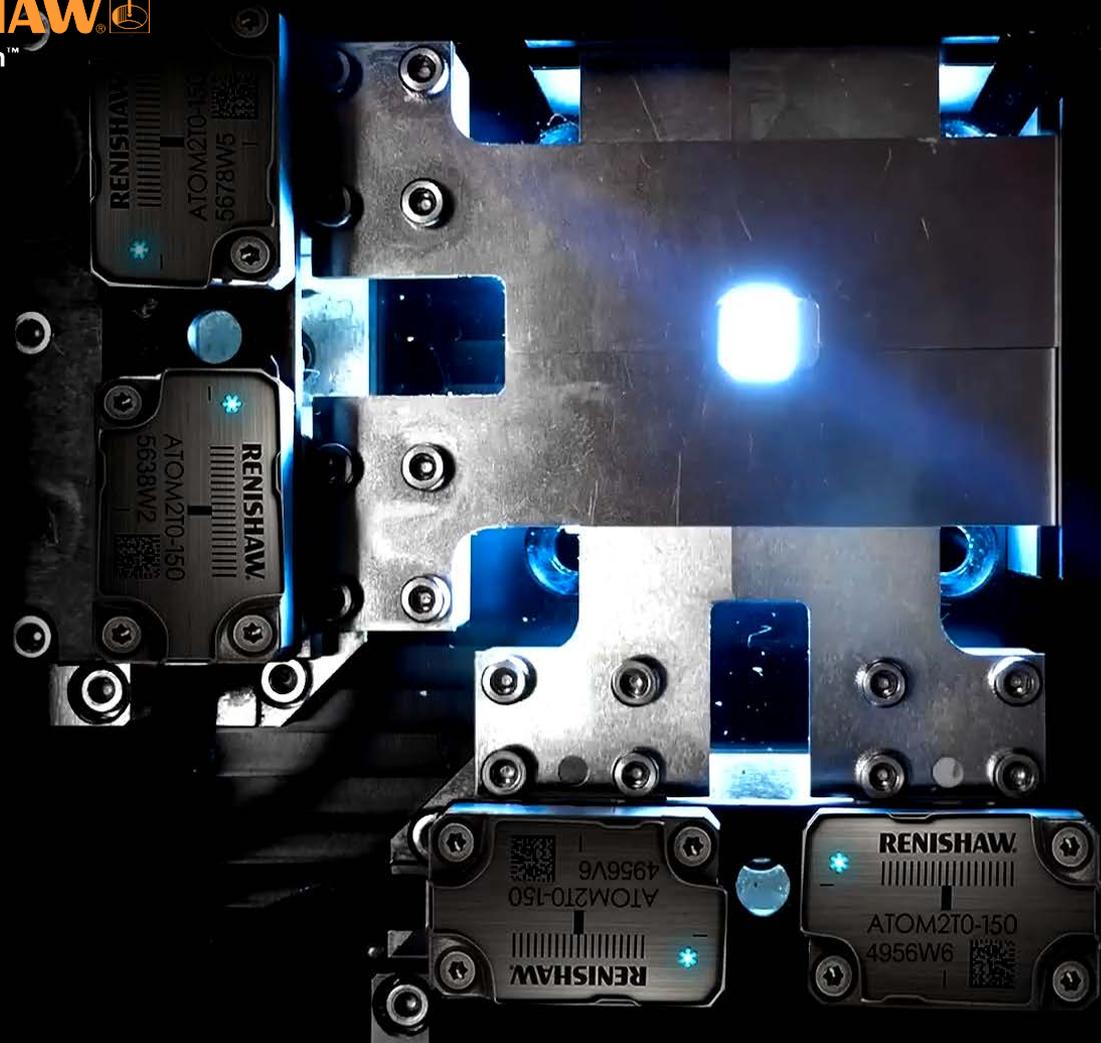


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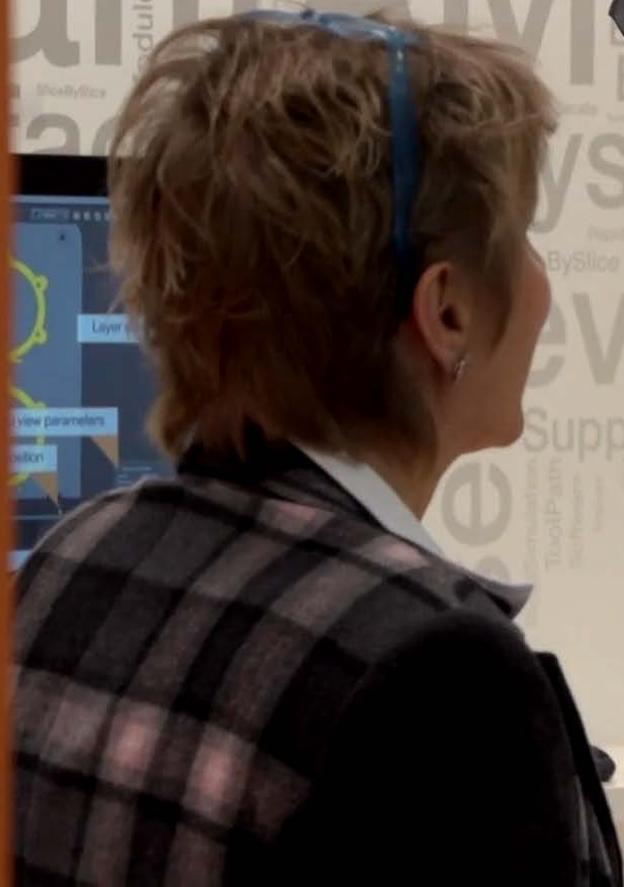








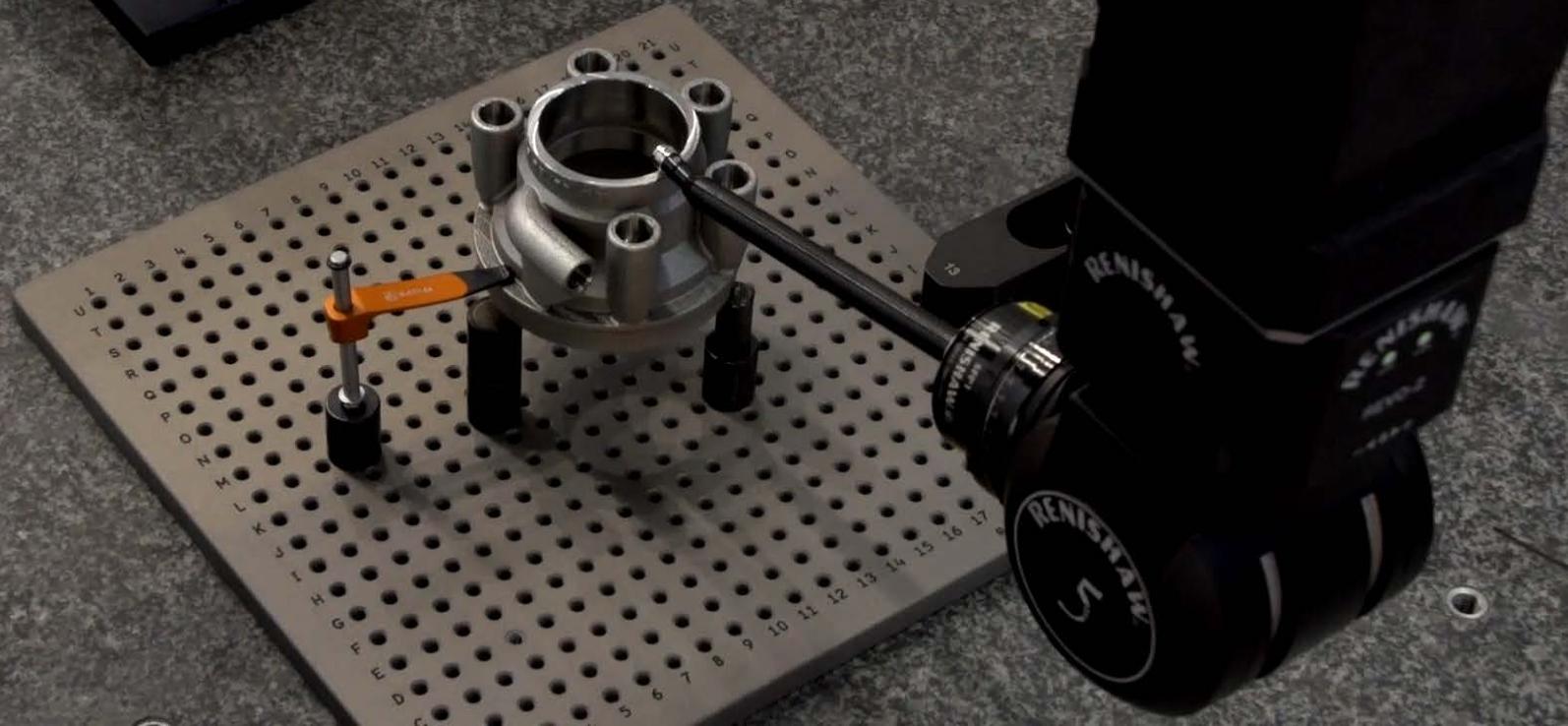
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AVOID EXPOSURE
INVISIBLE LASER RADIATION
IS EMITTED FROM THIS APERTURE

50X

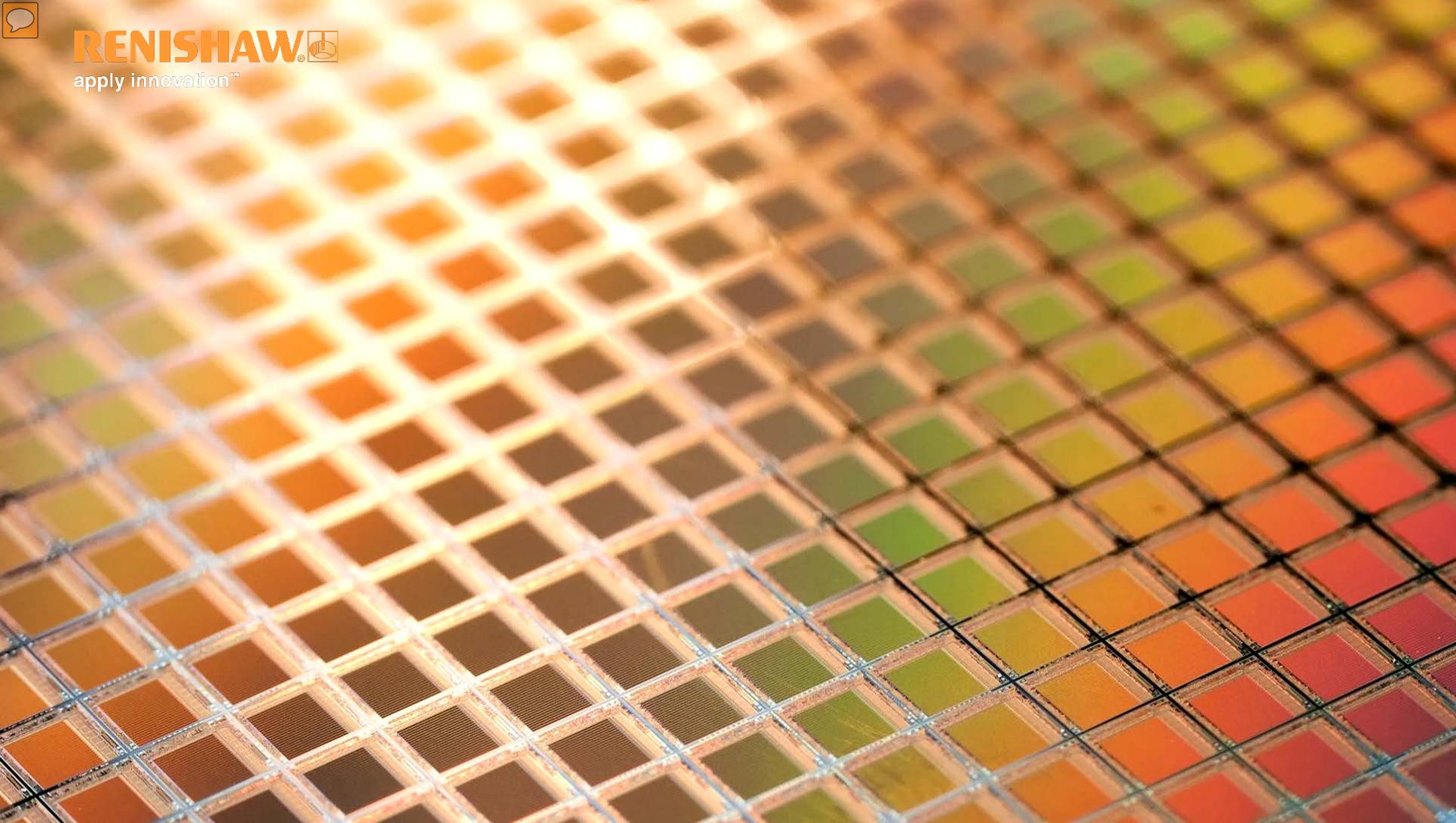
RENISHAW 

MS 20 ENCODED STAGE 100 nm



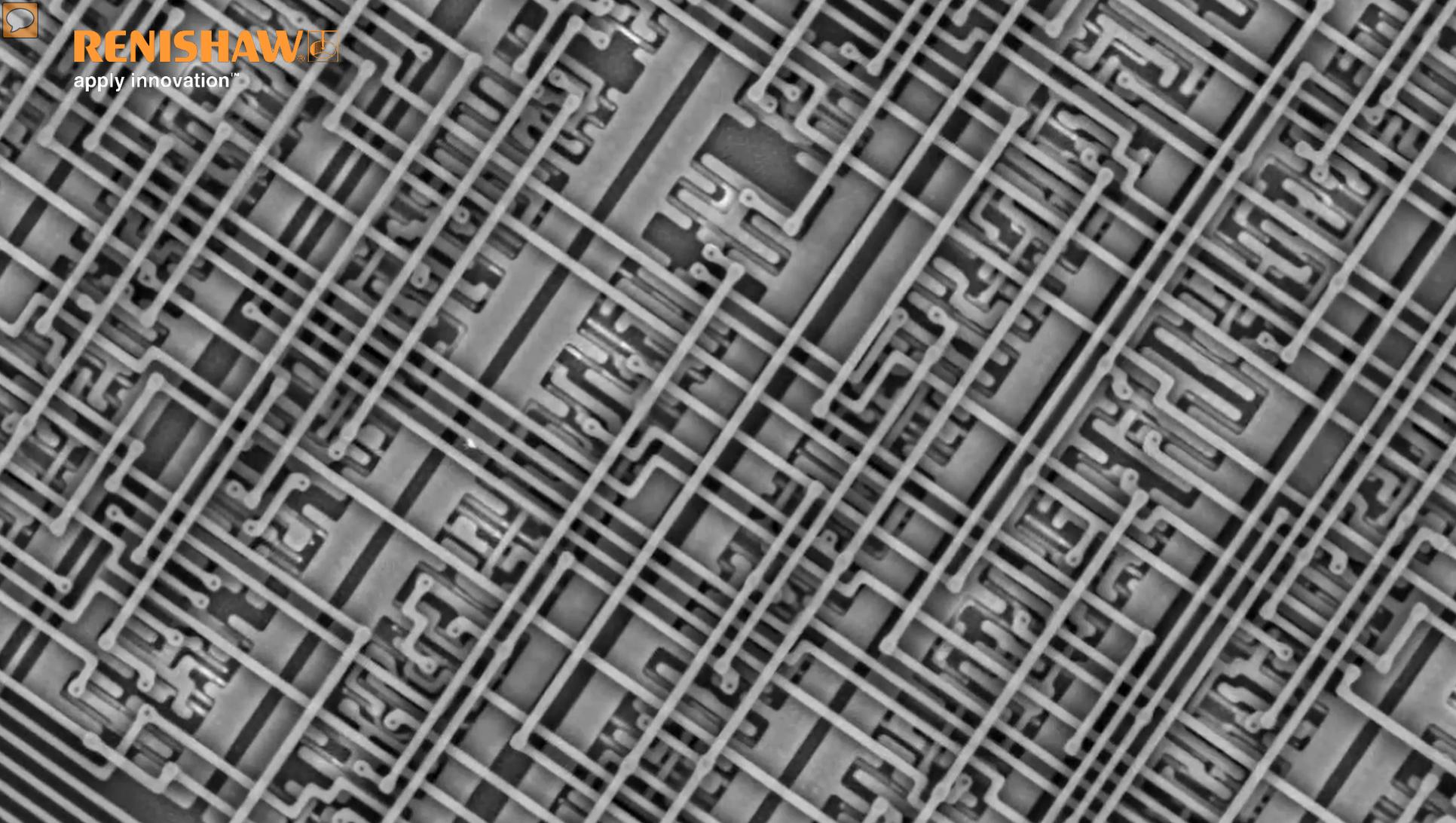
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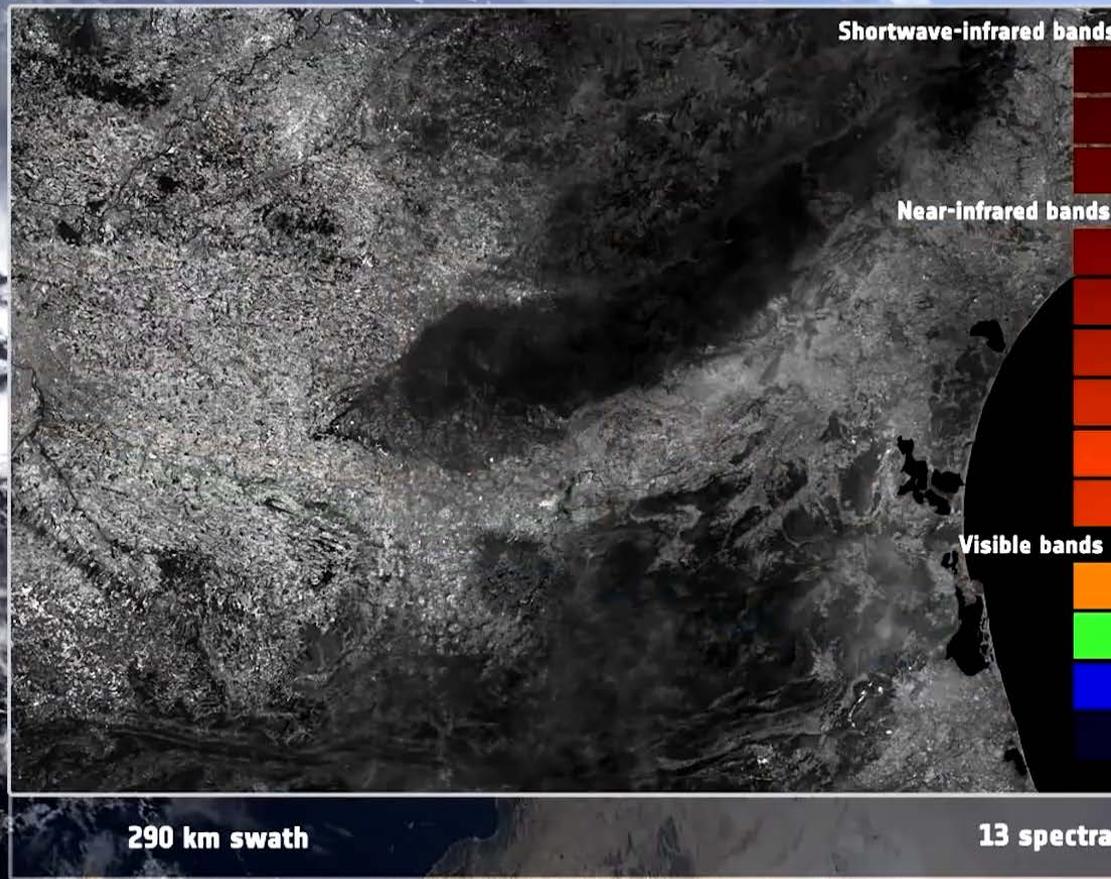
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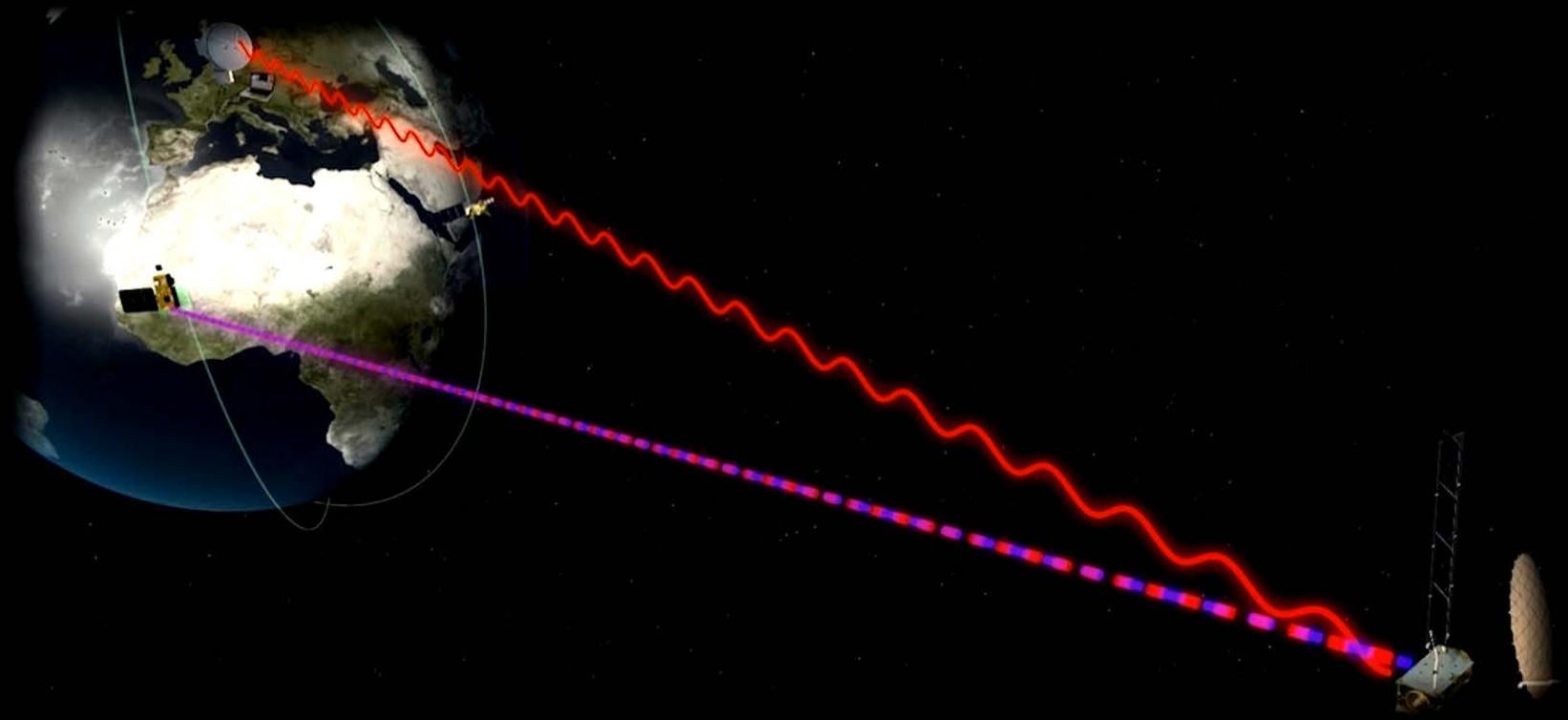
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About

Mission - To develop, manufacture and supply advanced motion sensing components.

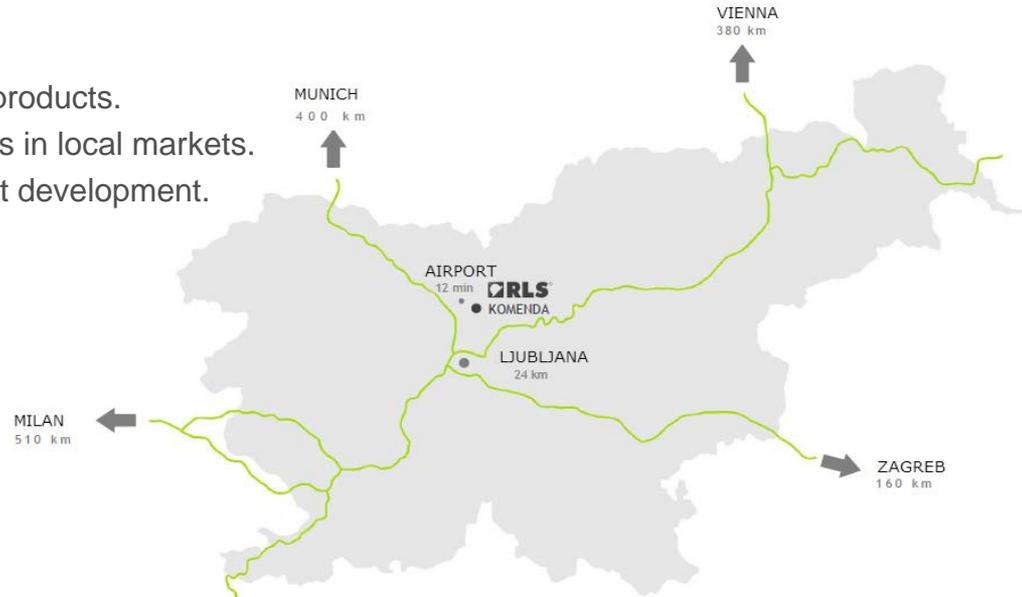
Vision - To become a recognised world leader for the supply of motion sensing components.

Relationship between RLS and Renishaw

- Renishaw offers worldwide support for RLS products.
- RLS distributes Renishaw metrology products in local markets.
- RLS and Renishaw cooperate in new product development.

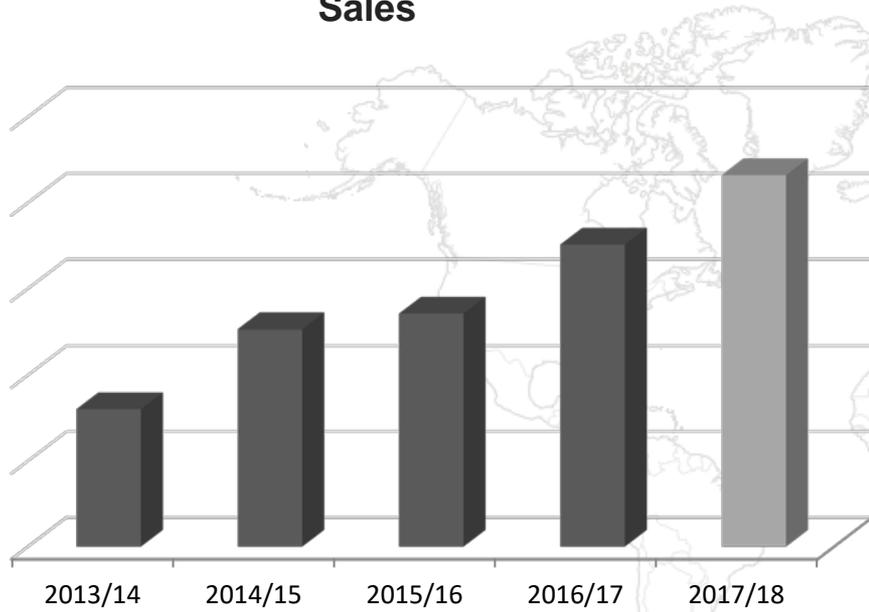
RLS shareholders since 2001:

- Janez Novak (50 %)
- Renishaw plc (50 %)

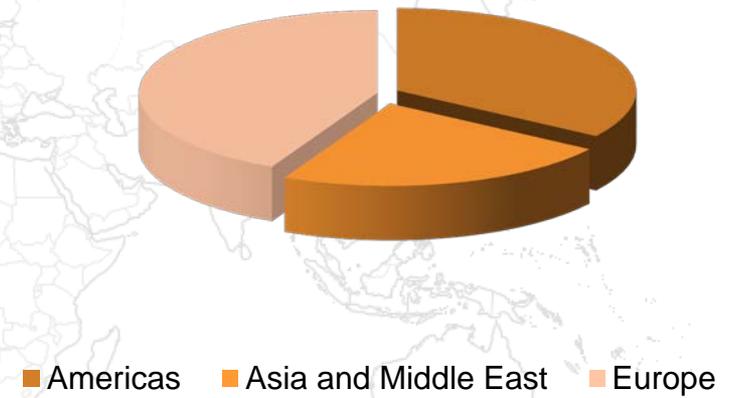


Business Update

Sales



Regional sales distribution



Number of RLS employees: 130

Building expansion plans

Construction set to begin in September 2017 and end by January 2019





Product range



OnAxis™



Linear/Ring



InAxis™

Product Applications

Medical



Transport



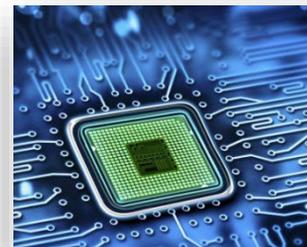
Machine tool



Motors



Semiconductor



Heavy-duty vehicles



Printing



Industry



Energy harvesting



Robotics



Example: AksIM for collaborative robots

Customer: Universal Robots, the global market leader in the field of collaborative robots.

Application: Measuring arm rotation in a robotic joint of a collaborative robot (cobot).

A cobot is a robot intended to physically interact with humans in a shared workspace without the need of any protective guards. Due to short payback period (195 days for UR), safety features and ease of use, collaborative robotics is expected to drive the automation market in the following years.

Benefits of using AksIM:

- High resolution absolute encoder
- Low profile, low weight
- Robustness:
 - Non-contact design (no bearings)
 - Immunity to dirt, dust and liquids
 - High shock and vibration resistance
- Competitive price
- Through hole design



Example: RM08 for robot grippers

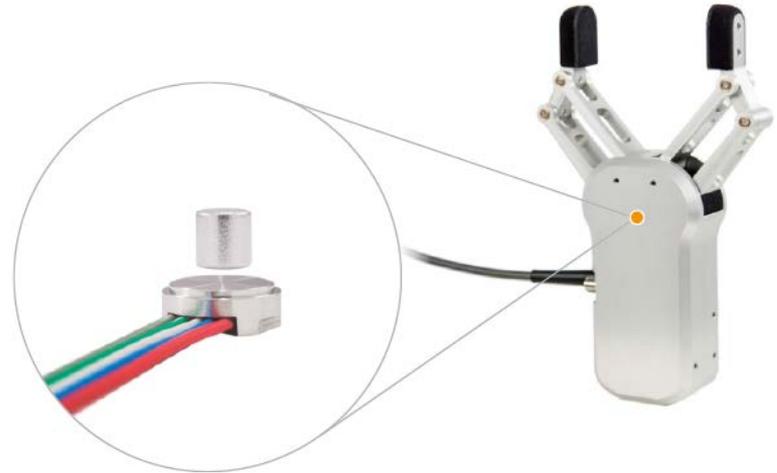
Customer: On Robot

Application: Robot gripper joint

Robot gripper is mounted at the end of the robot arm and provides hand-like capabilities such as handling various items.

Benefits of using RM08:

- Extremely small size (8 mm diameter)
- High resolution – 4096 detectable positions over 360°
- Robustness:
 - Non-contact design (no bearings)
 - Immunity to dirt, dust and liquids
 - High shock and vibration resistance



Thank you for your contribution to our mutual success

2011 Best employer in Slovenia award

2013 Slovenian Chamber of Commerce and Industry award for extraordinary economic and entrepreneurial achievements

2014 Best employer in Slovenia award

2015 Manager's challenge award
Gazela award for fastest growing company in Slovenia

2016 Gazela award for fastest growing company in Slovenia
Award for best exporter in Slovenia
Best employer in Slovenia award

