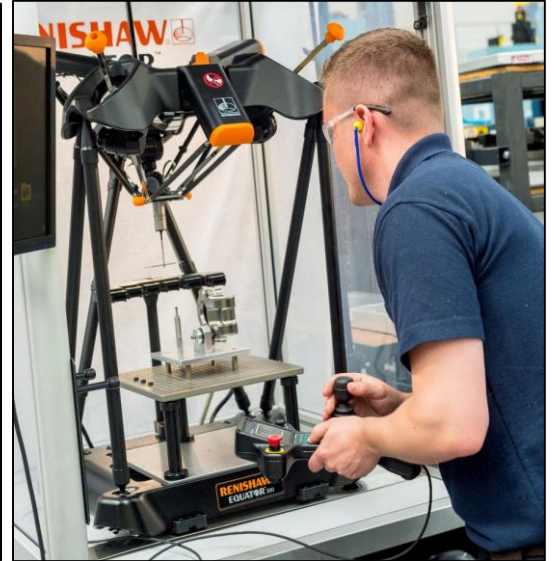
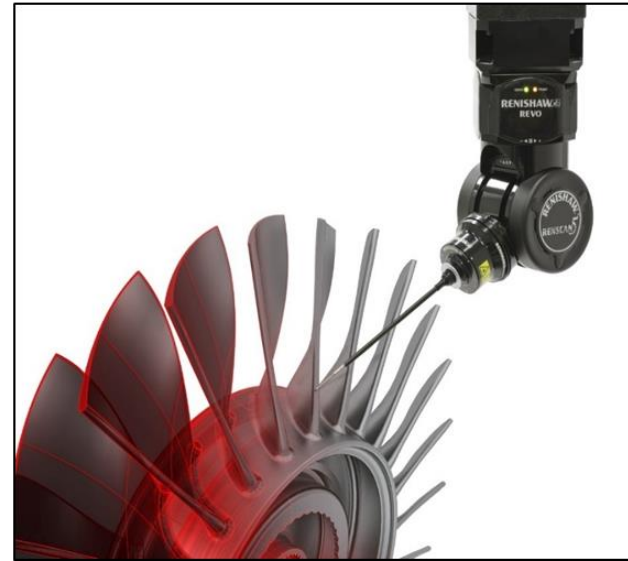
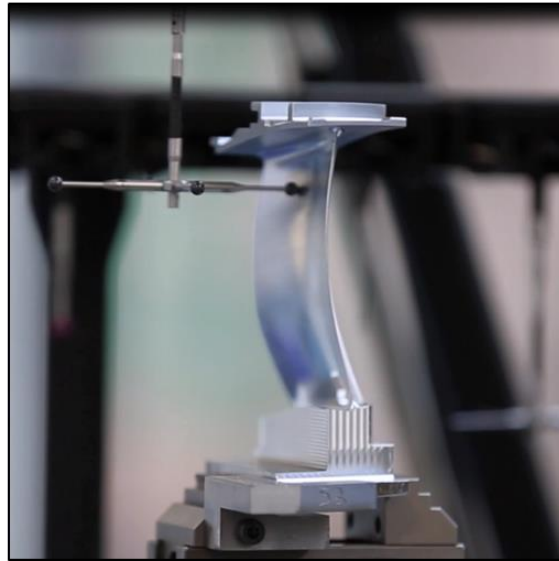
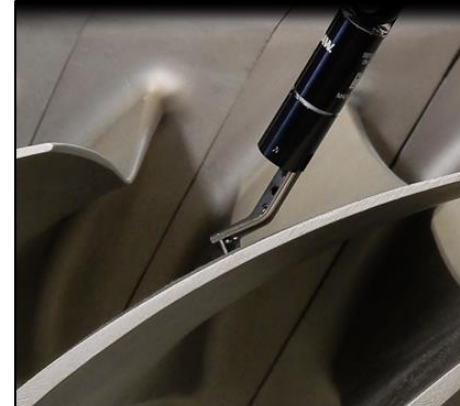


Industrial Metrology update



Update from the 2017 investor day

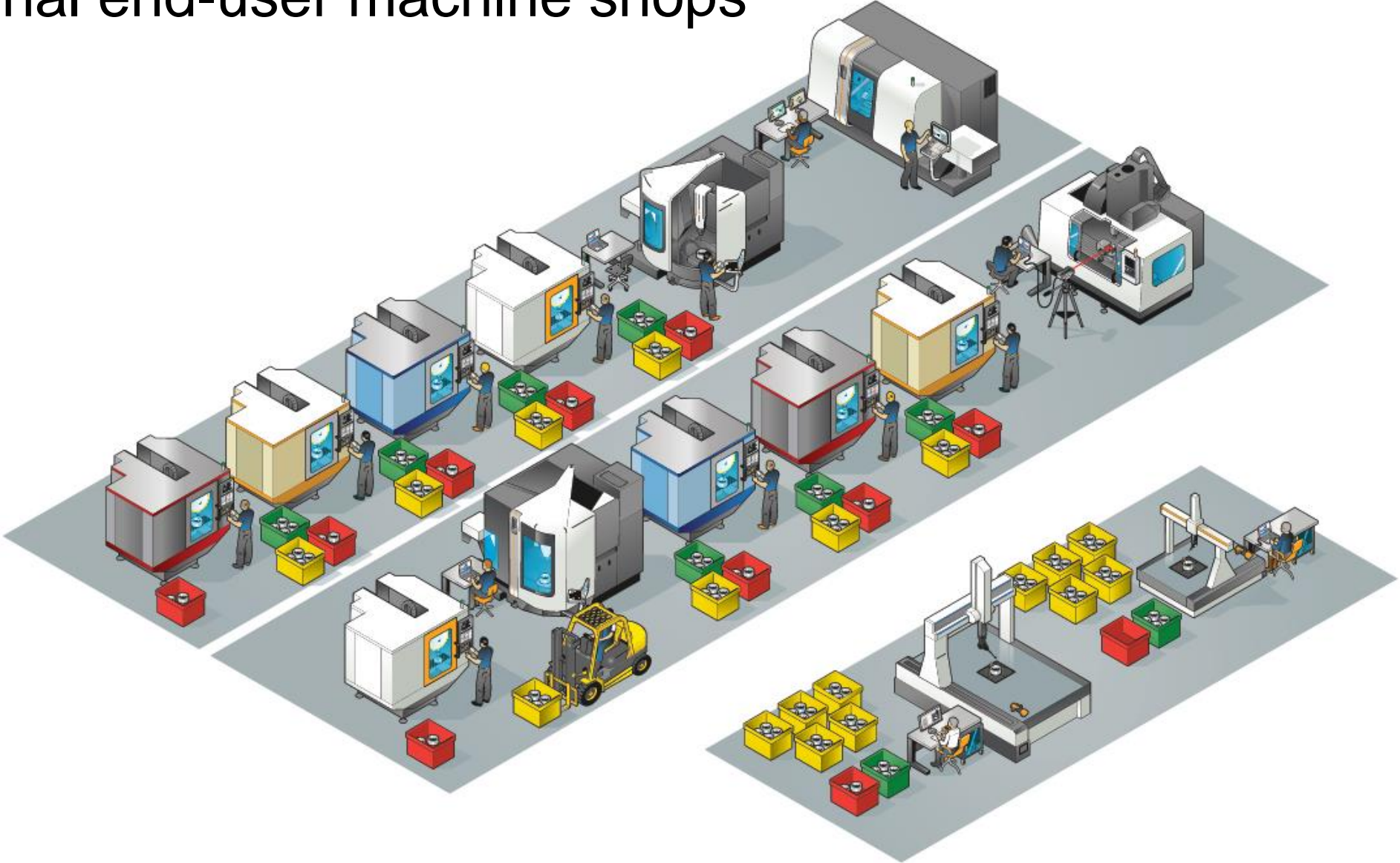
Our OEM route to market is still very important to our Industrial Metrology business both for co-ordinate measuring machine and machine tool lines.

However we are now actively on a journey to develop our direct route to market to complement the OEM route

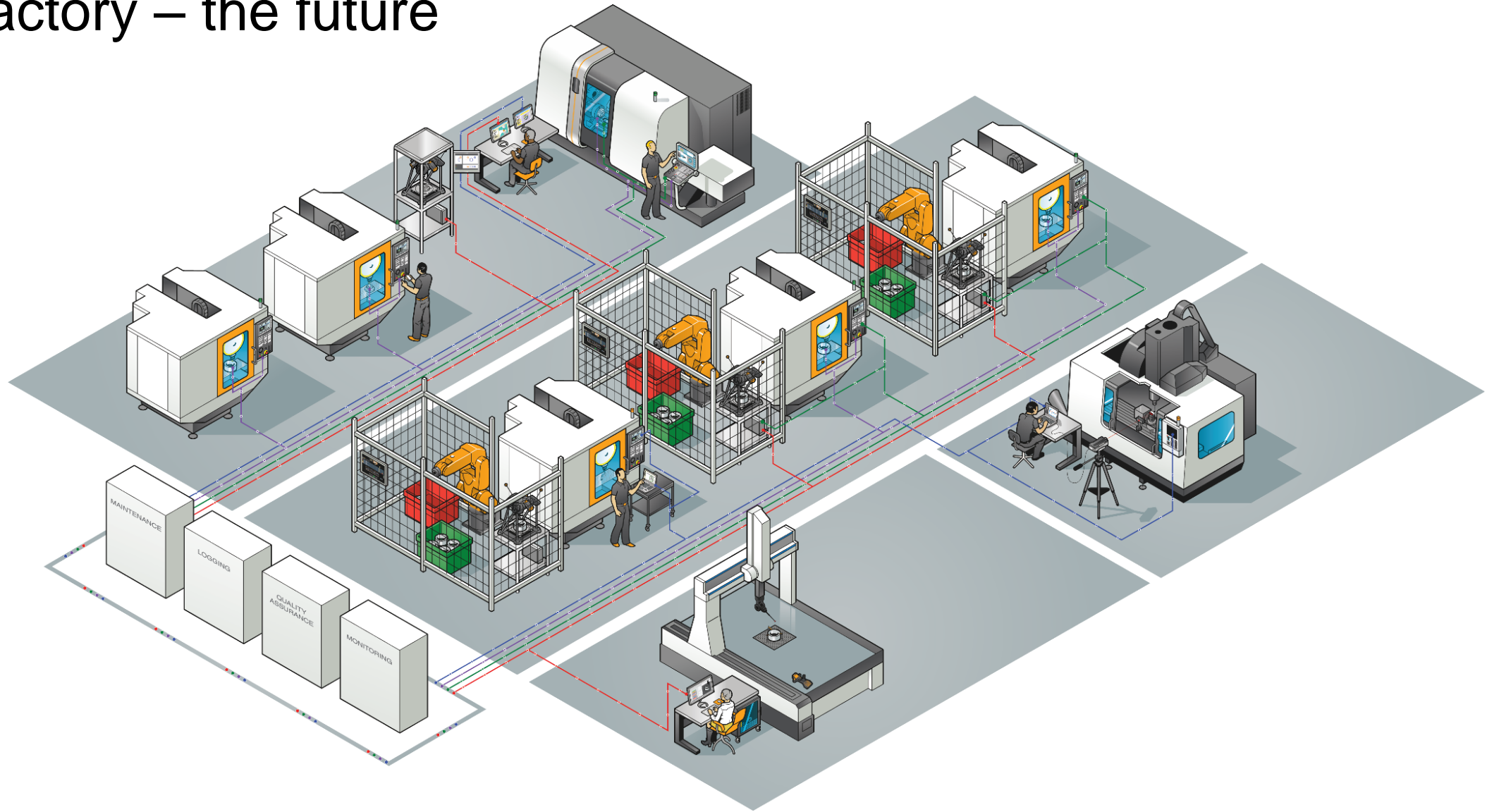
- Our ever more sophisticated and turn-key offerings require direct support in the end-user market
- Building long term relationships with large end-user strategic accounts allow us to cross sell and identify further opportunities and challenges



Traditional end-user machine shops



Smart factory – the future



Smart factory – our experience

- Minimise manufacturing costs
- Automation is key
- Continually introduce new product parts / design variants
- Our success as a manufacturer is highly dependent on the integration of our technology in our factories
- It is this experience that we share/leverage with our customers globally



Moving the metrology solution to the shop floor

Intelligent Process Control (IPC)

- Connecting Equator™ gauging systems to CNC machines to automate process control
- One Equator can 'talk' to many machines
- Or where on-machine measurements are impractical



Moving the metrology solution to the shop floor

Closed loop manufacturing

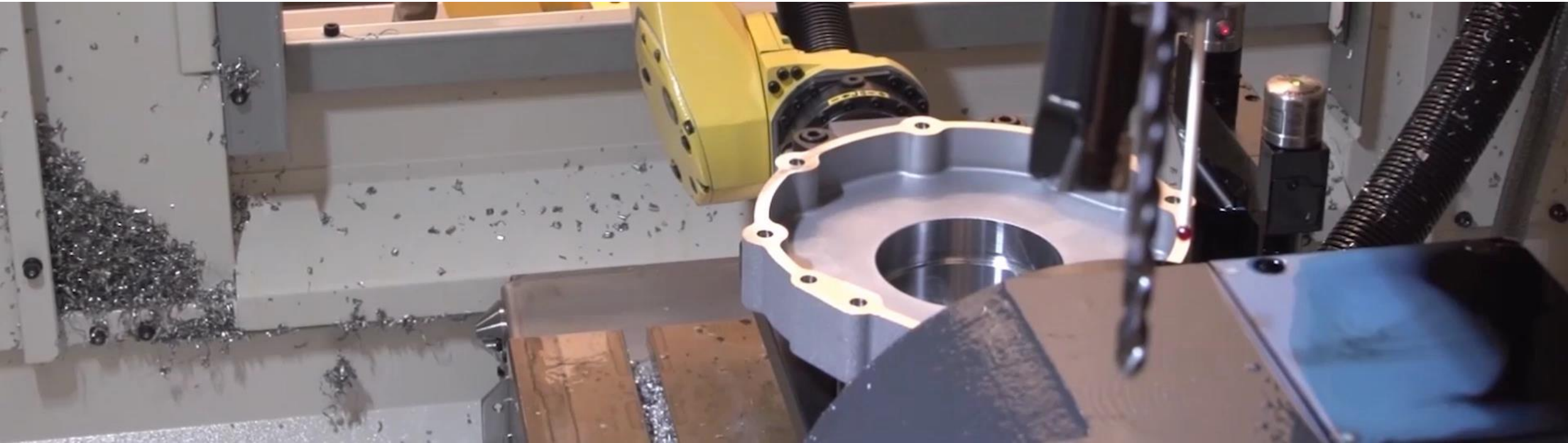
- Automation of...
 - part set-up
 - periodic checks and measurements of finished parts
 - decision making and tool offset feedback using IPC
 - error checking



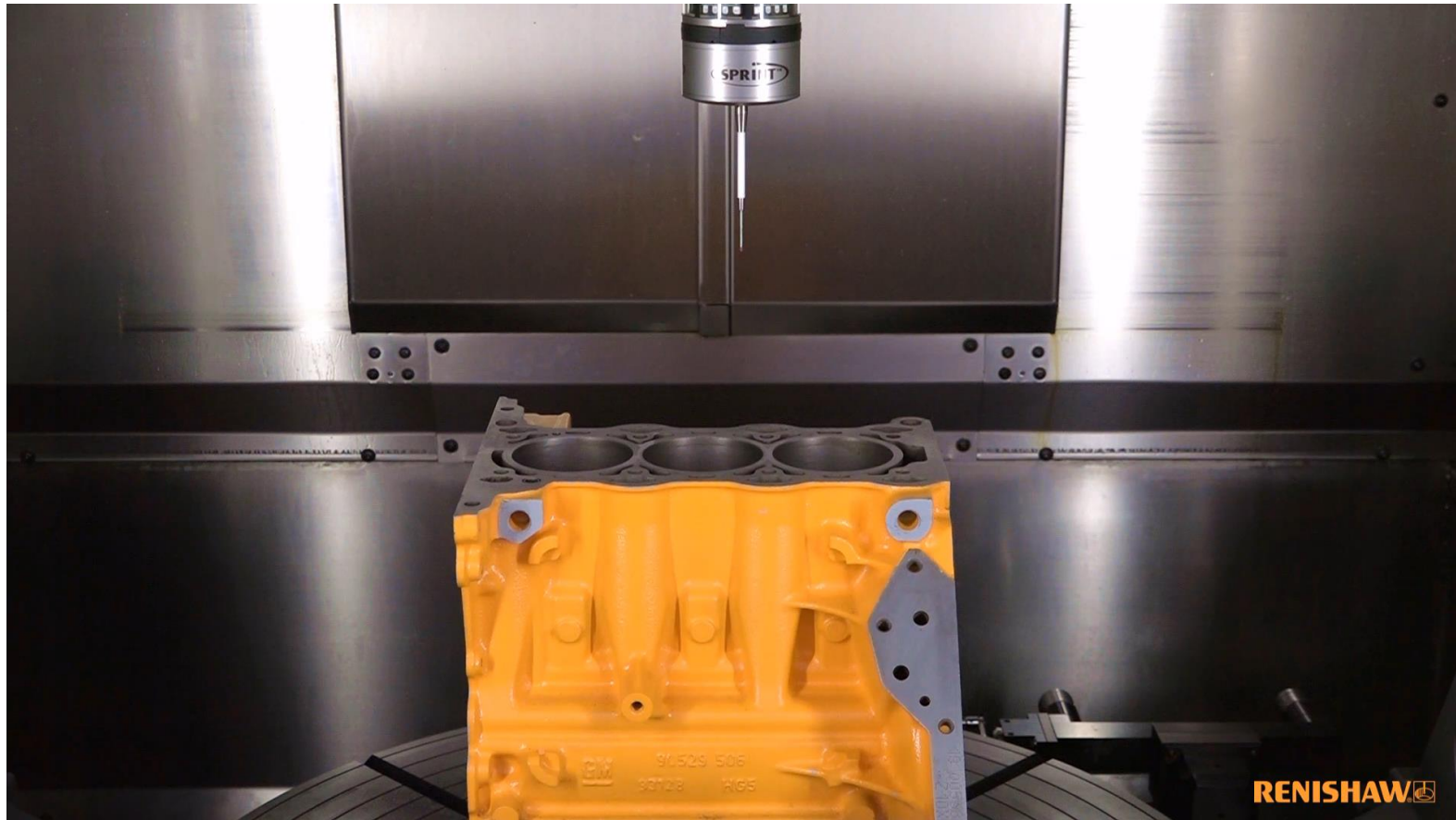
Moving the metrology solution to the shop floor

Closed loop manufacturing

- Automation of...
 - part set-up
 - periodic checks and measurements of finished parts
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Moving the metrology solution to the shop floor



SPRINT™ for automotive:

SupaScan V3

Faster job set-up

Form measurement on machine

Surface condition monitoring on machine

Moving the metrology solution to the shop floor

Ease of use:

Machine tool probing software

- Intuitive software and applications
- Measurements programmed by shop floor operators
- Integration with CNC controllers increases use and preference



Renishaw machine tool apps
make probing simple

RENISHAW
apply innovation™

Maintenance

- Clean probe and stylus
- Clean hub/base
- Check and clean pocket
- Calibration

Measurement Cycles

- Bore
- Boss
- Pocket
- Web
- X minus

For more information visit, www.renishaw.com/machinetoolapps

RENISHAW
apply innovation™

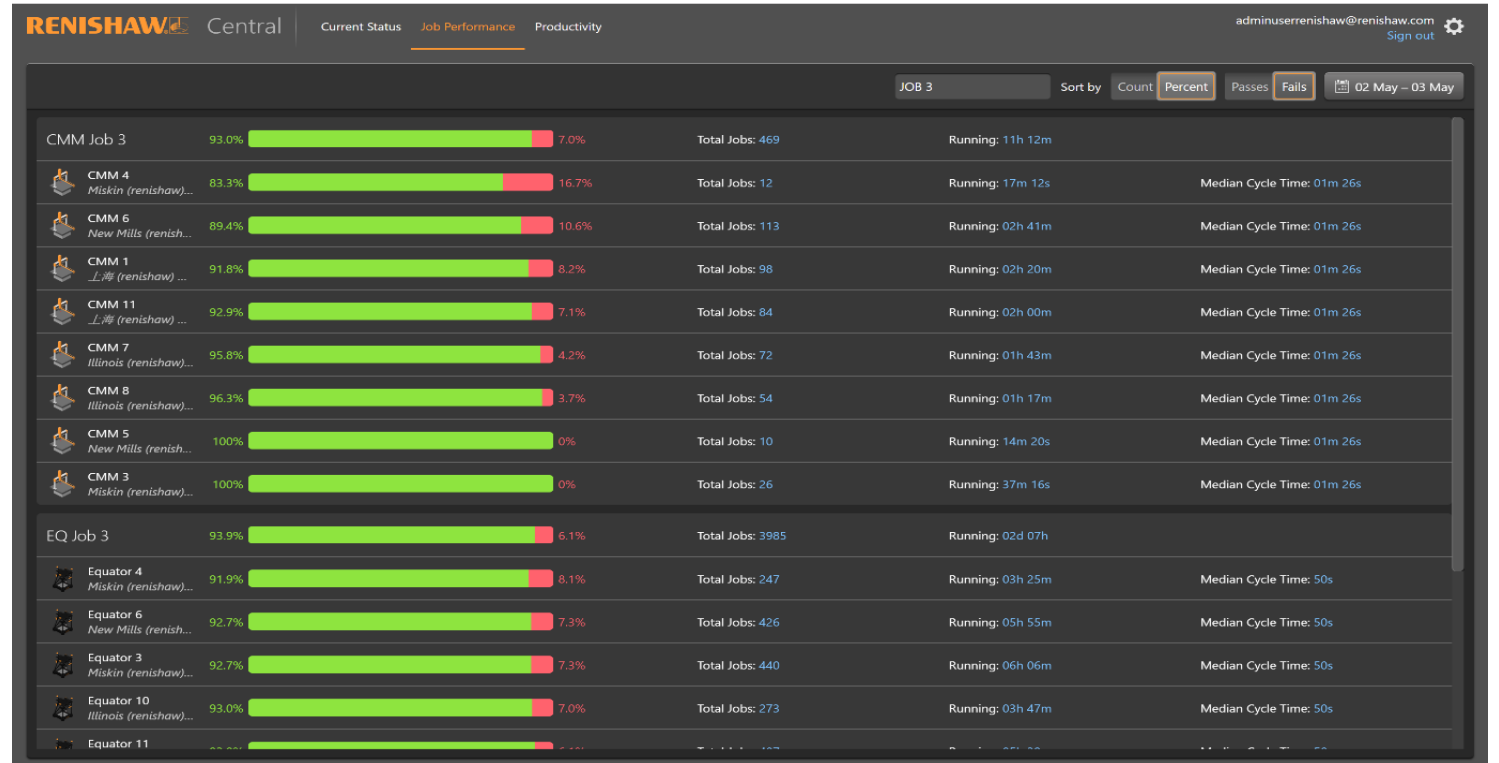


Moving the metrology solution to the shop floor

Ease of use

Metrology software

- Intuitive software and applications
- More measurements programmed by shop floor operators
- Industry 4.0
 - Data collection and analysis
 - IPC



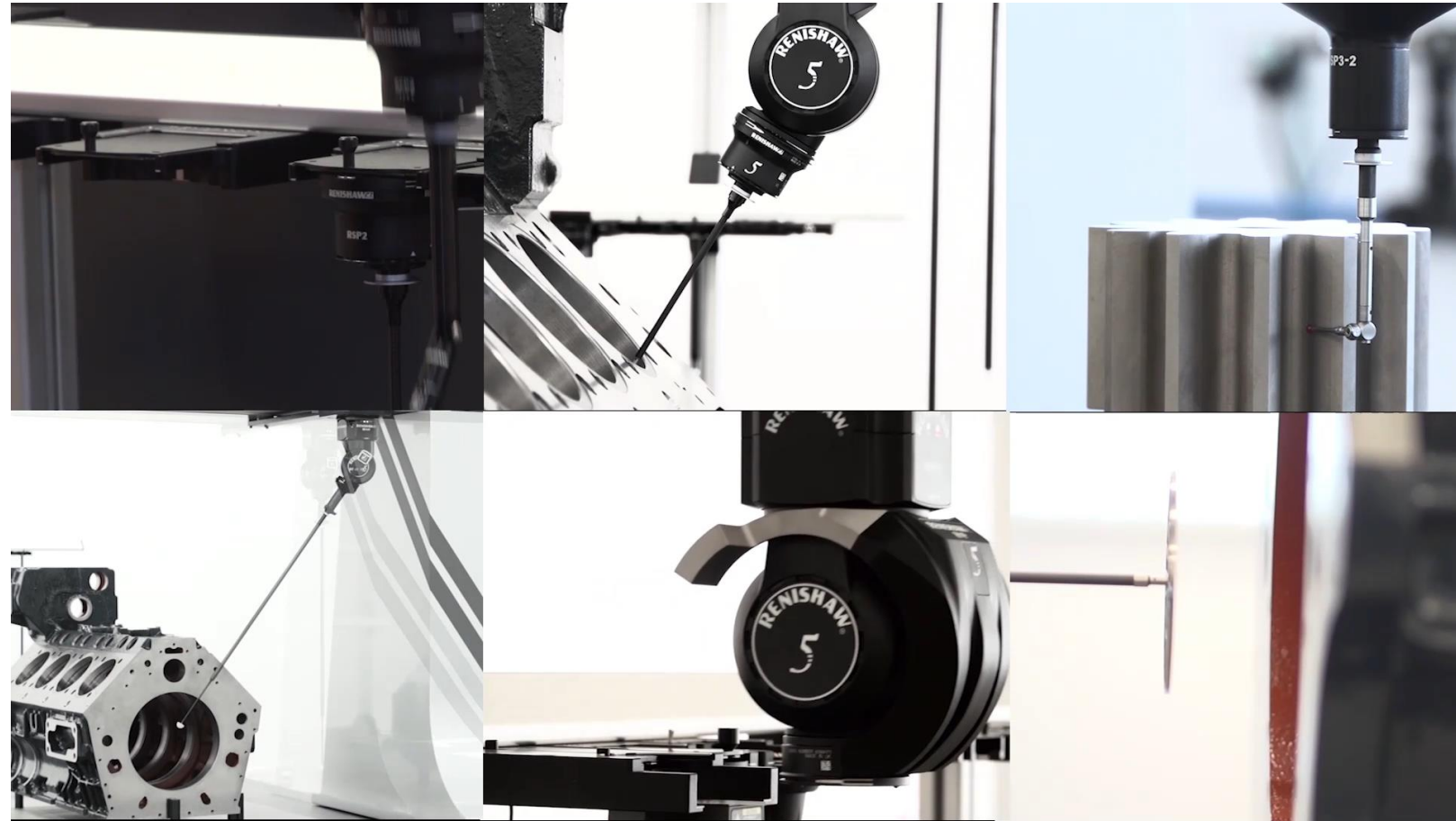
Moving the metrology solution to the shop floor

Ease of use

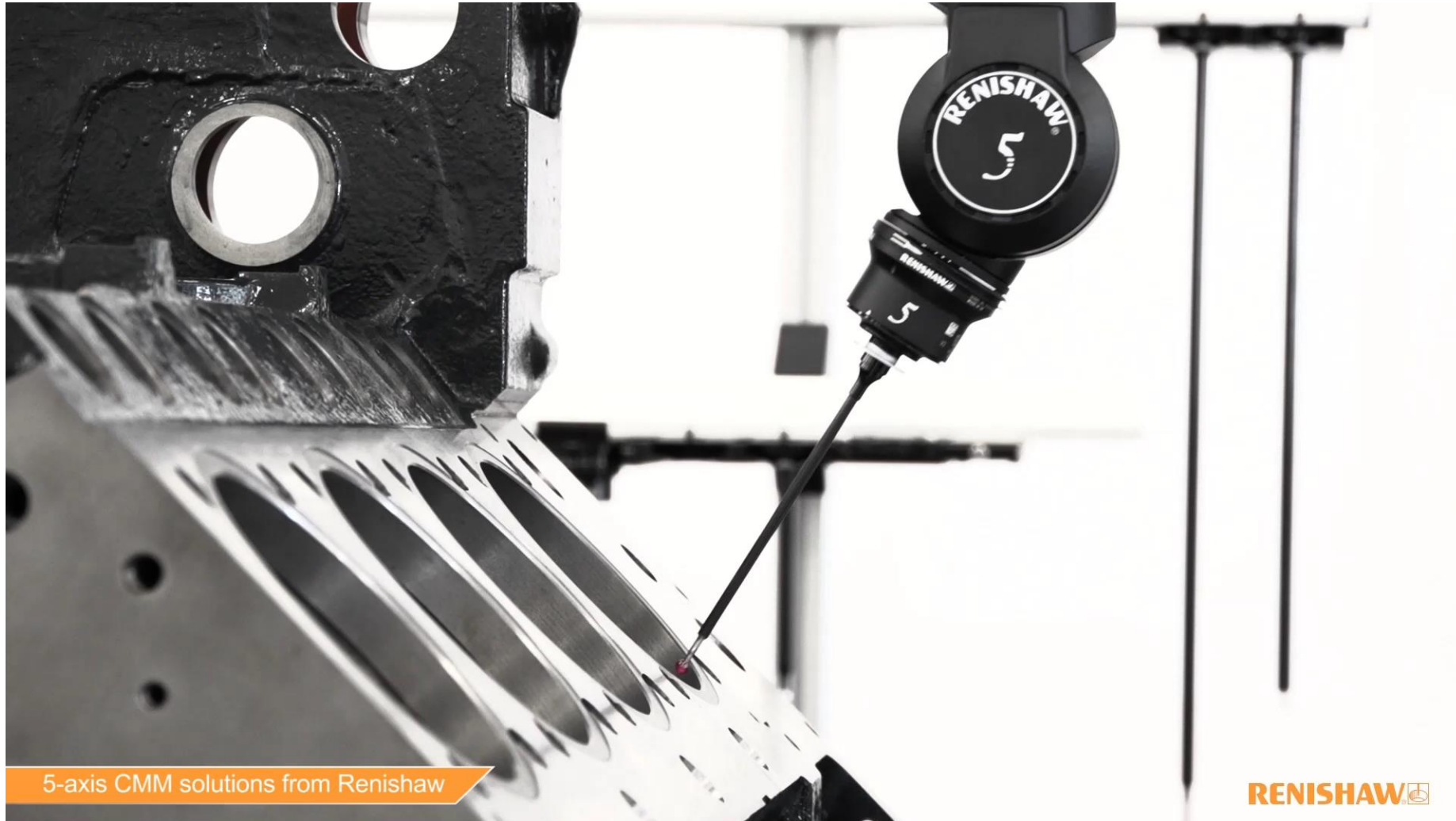
Multi-sensor capabilities with REVO® measuring head on a CMM

One-stop inspection

- Reduces time – one process
- Reduces capital and floorspace
- All data available in single report



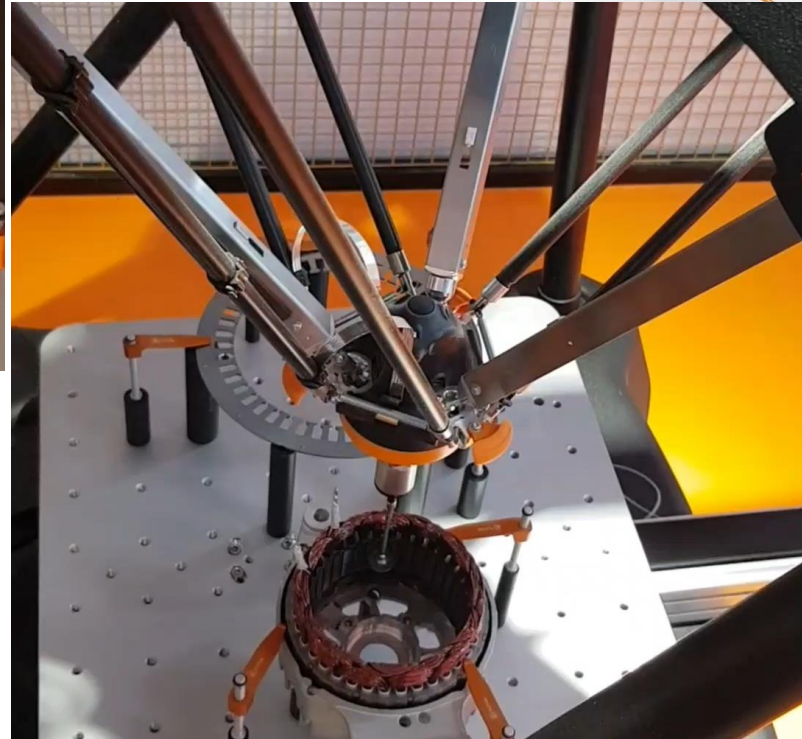
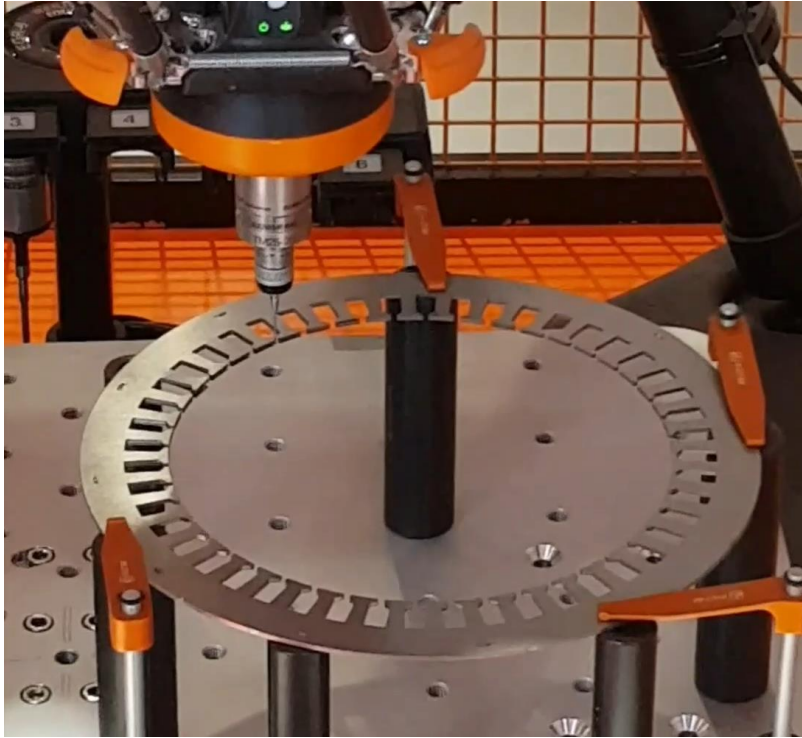
Moving the metrology solution to the shop floor



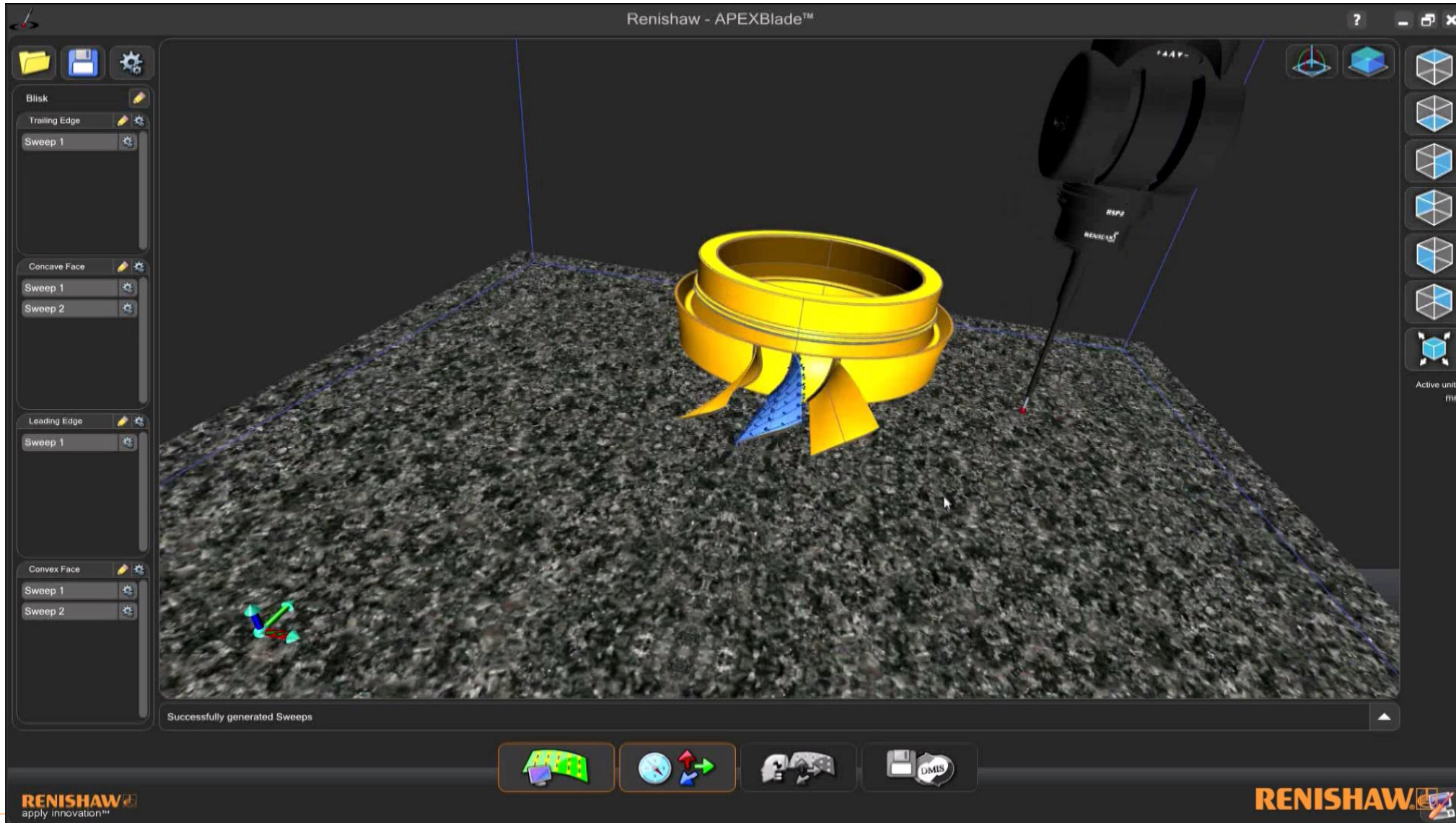
5-axis CMM solutions from Renishaw

RENISHAW 

Industrial Metrology in the electric vehicle industry



Industrial Metrology in aerospace

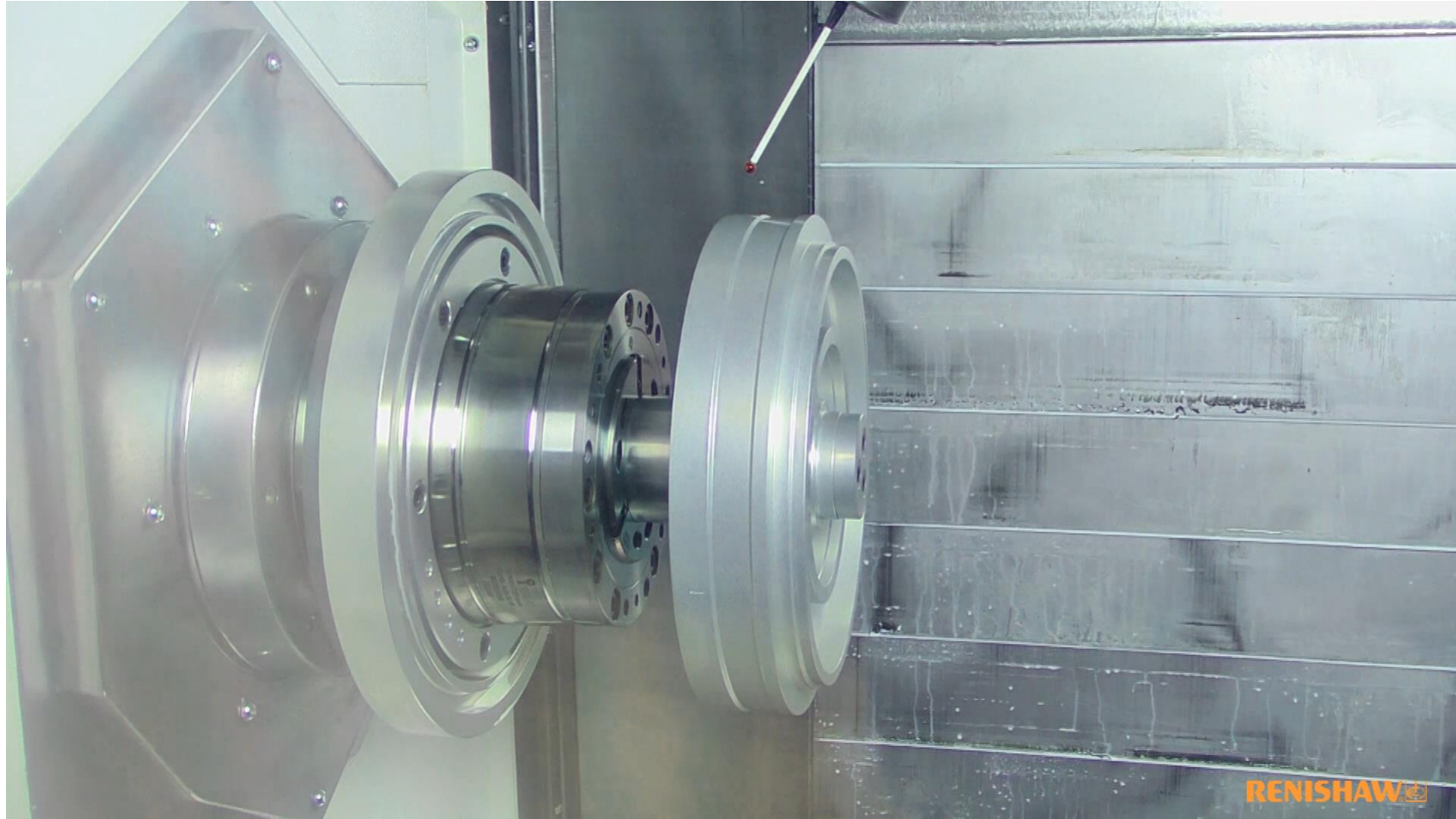


Industrial Metrology in aerospace

Productivity+™ Scanning Suite

Productivity+™: Blade Toolkit

Industrial Metrology in aerospace



Industrial Metrology update

