

Investor Day

Laser and Calibration Spatial Measurement Product Divisions

15th May 2014

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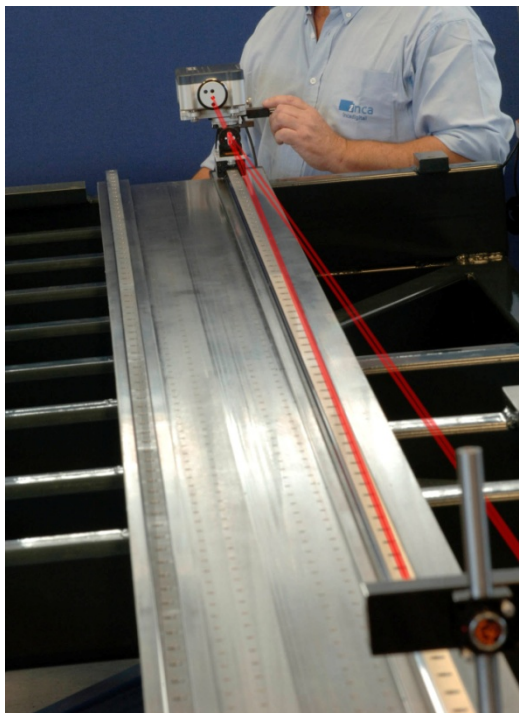


Laser Calibration - Customer needs

- Traceable measurement performance
 - For setup of new machine tools
 - For regular correction through use
- Regular assessment
 - Ensuring machine quality before committing to cutting parts



Engineering solutions



XL-80



XR20-W



QC20-W

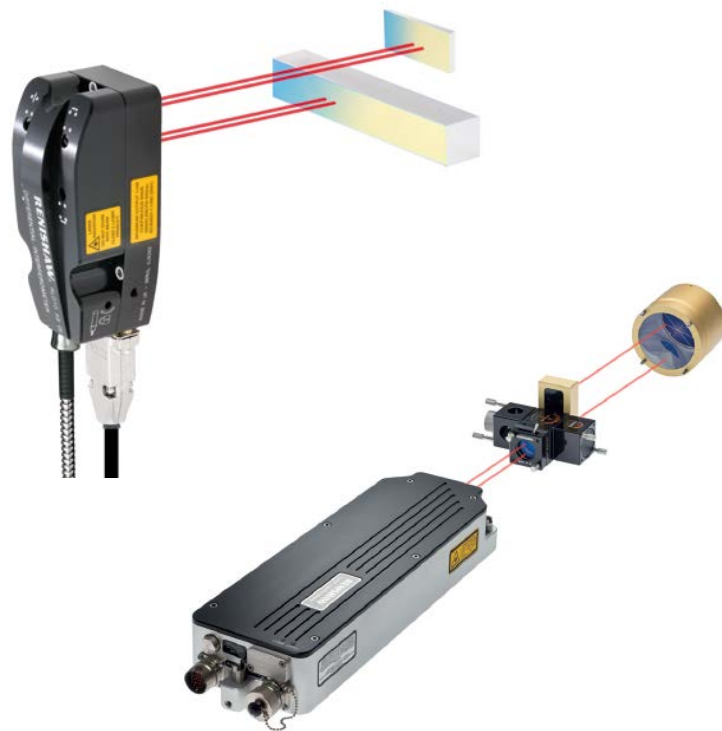
Successful outcomes – Machine tool builder - SPINNER

- Spinner improved specific machine accuracy without the need to change the machine design
- Calibration of linear axes on machining centres
- Calibration of rotary axes
- Use of ballbar before and after installation to confirm performance



Motion control systems - Customer needs

- Same laser interferometer technology as XL-80 but integrated into customers equipment
- Semiconductor industry
 - High accuracy levels unachievable with traditional tape encoders
 - RLE laser encoder
- Aerospace machining centres
 - Long range up to 60m
 - HS20



Successful outcomes – Flow International

- Flow International chose the HS20 laser system as the feedback system for their machine tools used for manufacturing aerospace components
- Enables 1ppm accuracy over 40m range during 130hour manufacturing cycle.



Successful outcomes – Vistec lithography inc

- Vistec lithography chose the RLE20 for their latest e-beam machine
- Chosen due to
 - Significant reduction in installation complexity
 - Improved measurement accuracy due to differential interferometer head
 - 1ppb accuracy in vacuum environment



Spatial Measurement Product Division



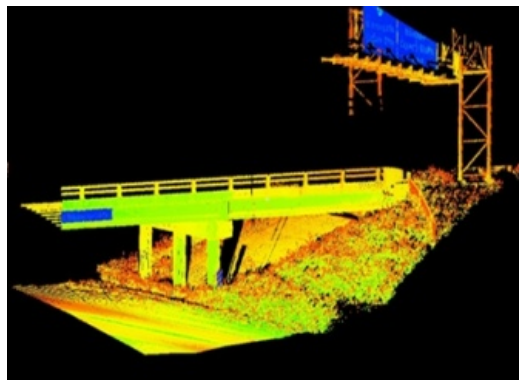
Marine – customer needs and engineering solution

- Supply vessels need to position automatically relative to oil rigs
- Measurement redundancy required due to strict safety demands (regulatory need)
- Fanbeam measures boat position to oil rig using laser sensor



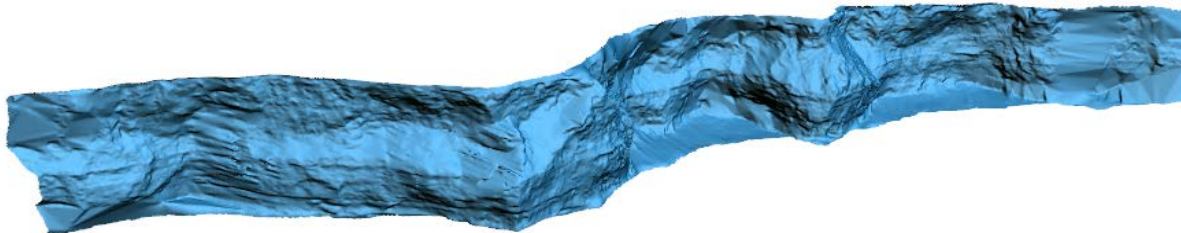
Mapping - customer needs and engineering solution

- Customers need quick and accurate positional information of their environment
- Dynascan mobile mapper mounts to the roof of a vehicle
- Combination of laser scanner and GPS used to build point cloud of data



Mapping – successful outcomes

- Dynascan mounted on boat to map the Cliffs of Moher in Ireland
- UNESCO world heritage site



Mining - customer needs and engineering solution

- Customers need accurate positional data of their mines and quarries
- This includes underground voids, blasting holes and rock faces



CALS borehole
deployable laser
scanner



VS150 underground
laser scanner



Boretrak®
borehole logger



Quarryman® Pro 3D
rock face profiler &
laser scanning system

Mining - successful outcomes

- Mapping of disused underground mine with Voidscanner – no plans existed
- Data allowed mine to be safely reopened to extract more valuable resources

