

# Cost effective innovations for port operations and process improvements

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**LIEBHERR**

Cost effective innovations for port operations and process improvements

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- Challenges

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## Liebherr – a family business



- Company founded in 1949 by Dr.-Ing. E.h. Hans Liebherr
- The Liebherr Group today: over 130 companies worldwide, more than 42,000 employees and around € 9 billion turnover (2016)
- Decentralised structure with straightforward, autonomous corporate units – divisional structure
- Holding company: Liebherr-International AG, Bulle/Switzerland

## Cost effective innovations for port operations and process improvements

# Liebherr – a family business



- Dr. h.c. Dipl.-Ing. (ETH) Willi Liebherr, President of the Administrative Board
- Dr. h.c. Dipl.-Kfm. Isolde Liebherr, Vice-President of the Administrative Board
- Patricia Rüb
- Stéfanie Wohlfarth
- Sophie Albrecht
- Jan Liebherr

Left to right: Patricia Rüb, Stéfanie Wohlfarth, Jan Liebherr, Sophie Albrecht, Isolde Liebherr and Willi Liebherr

# Cost effective innovations for port operations and process improvements

## Multifaceted product range



A large port crane is lifting a red container from a ship named Atlantic Sky. The ship is white and blue, with the name 'ATLANTIC SKY' and 'Hapag-Lloyd' visible. The crane is yellow and white, and the container is red. The scene is set in a port area with other cranes and containers visible in the background.

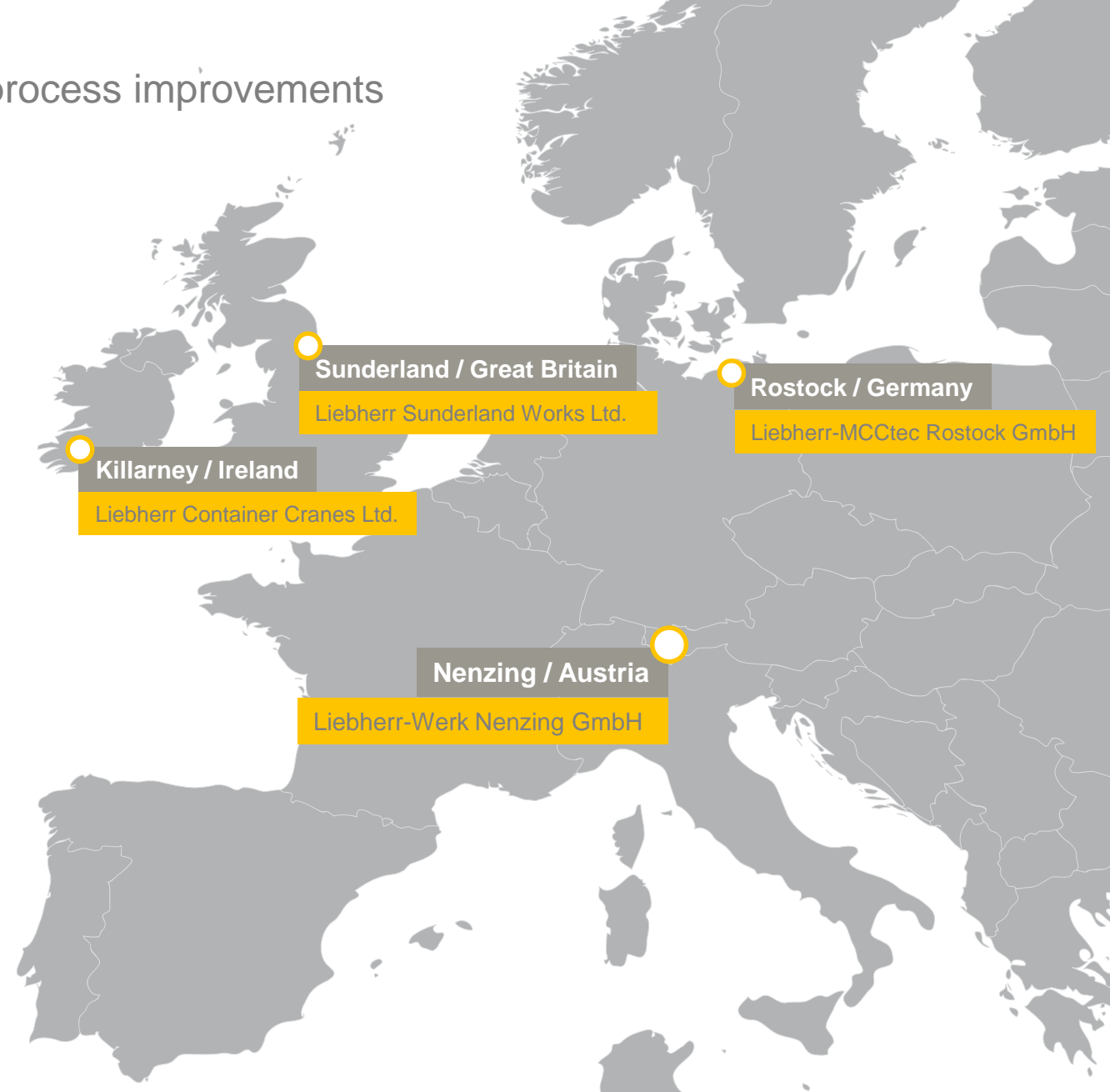
Liebherr-MCCtec Rostock

## Maritime Cranes

For efficient material handling in the maritime sector, Liebherr manufactures a comprehensive range of innovative cranes.

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# Maritime production network



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# Maritime production network

## Facts & figures (2016)



**1.3 Billion €**

Turnover



**4.000**

Employees in total



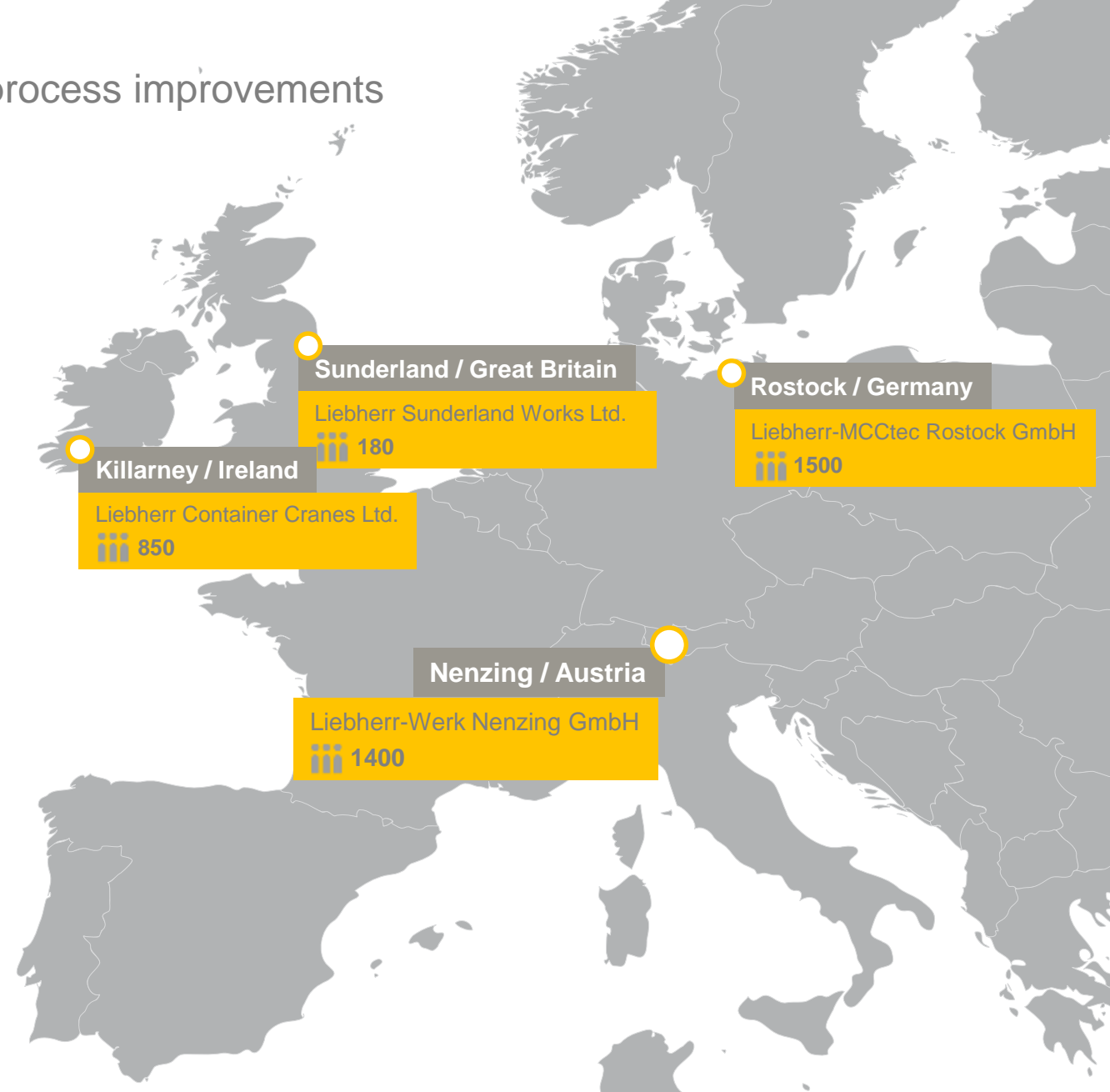
**2,440,000**

Production hours



**40**

Worldwide mixed sales  
and service companies





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## Challenges

Clean      No waste of time      Cheaper  
Really fast      ***The ultimate port ?***      No waste space  
All devices connected      Fully automated  
Safe

State of the art  
Technologies/innovations

&

Smart use of the  
information (Data)

Big data analytics

Virtual Reality

3D Printing

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## Big data analytics



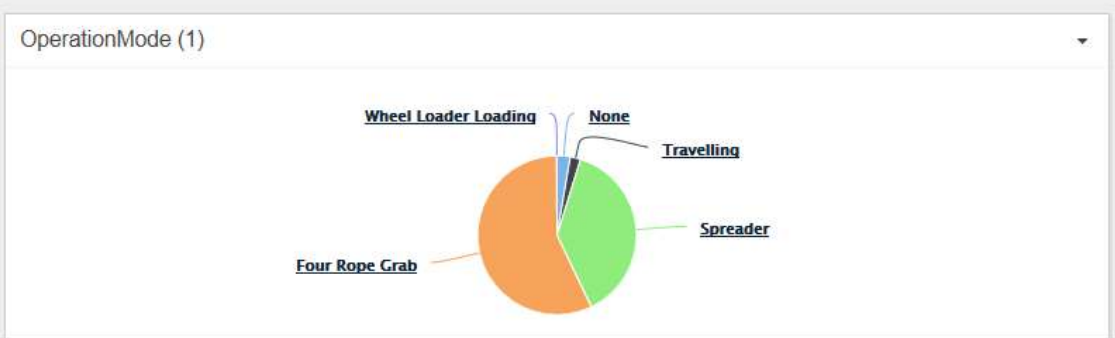
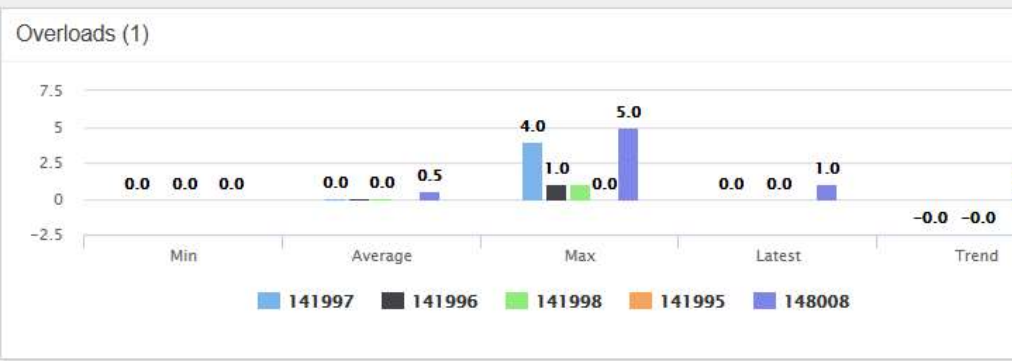
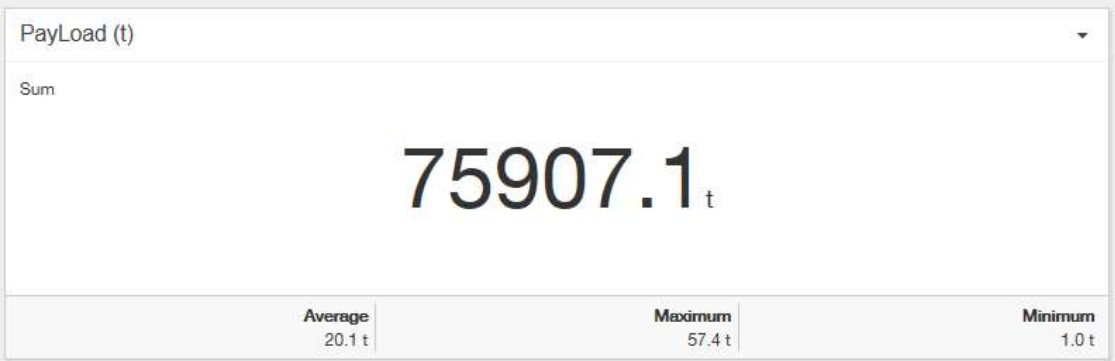
- Information level
- Numbers are everywhere in our lives, and statistics is about turning these numbers into useful information on which we can take action
- Properly represented data are more than just numbers (trends, anomalies, etc...)
- Getting the right information at the right time is the key to act on a process level
- Big data analysis
- To create benefits for our customers data have to be available on demand
- Today's question is not amount of data, but how to gain something useful out of it
- The art is to break down numbers to key performance indicators (KPIs)

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## Big data analytics



- Optimise your performance with big data analytics
- Big data analytics examines large amounts of data to uncover hidden trends, anomalies and other insights
- With LiDAT® smartApp, it's possible to analyse your crane (operating and performance) data and get answers from it almost immediately
- That leads to immediate decisions. The ability to work faster gives ports a competitive edge they didn't have before
- Big data analytics helps to detect bottle necks and to identify new opportunities



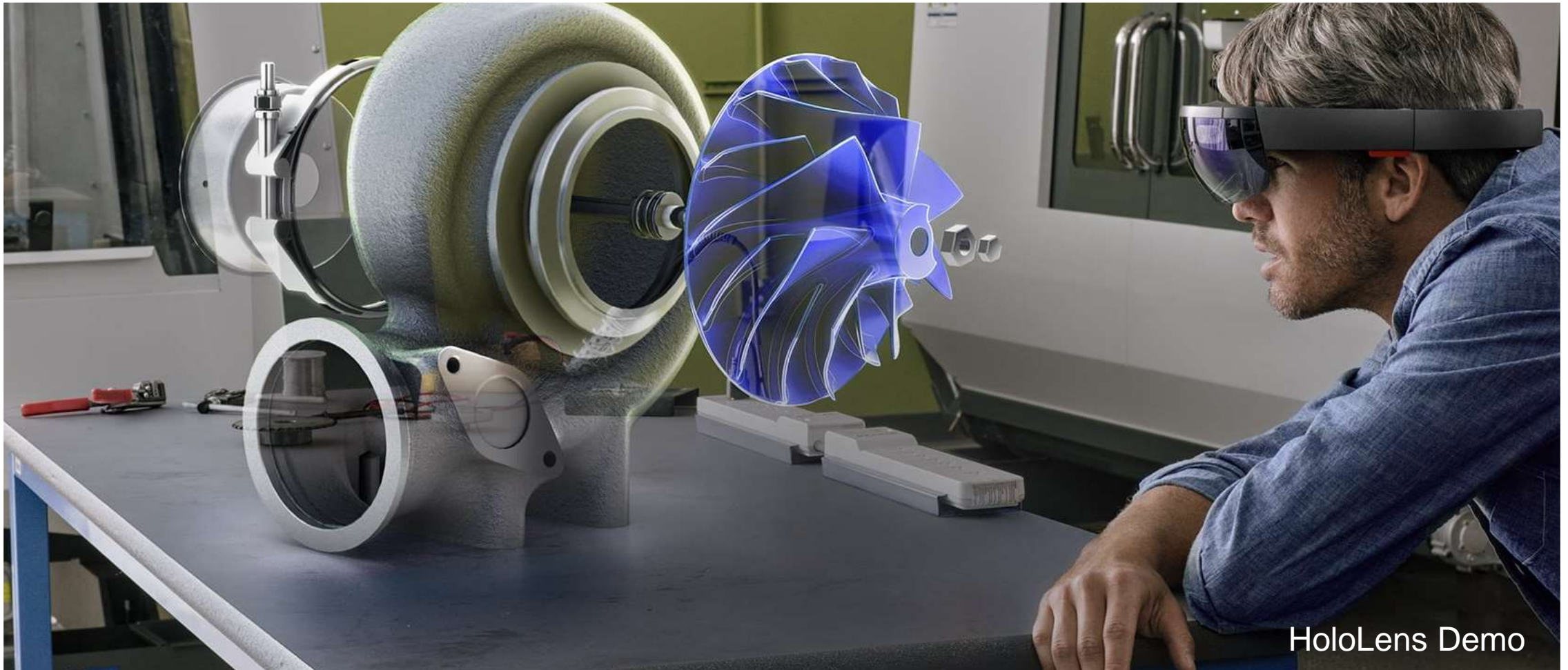
# Big data analytics



- Status reports
- Customise your dashboard (KPIs)
- Monitor your cargo handling process in real time
- Detailed view
- In depth analysis
- Detailed view of variables over time, dependencies and distribution
- Compare multiple cranes
- System integration
- SmartApp calculates forecasts
- SmartApp proposes optimisation measures
- Results can be sent to the crane/driver for immediate action
- Training & simulation
- Data can be used to create realistic training scenarios on a simulator
- Improve operating skills in a safe environment
- Simulator based training can be monitored

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## Virtual reality



HoloLens Demo

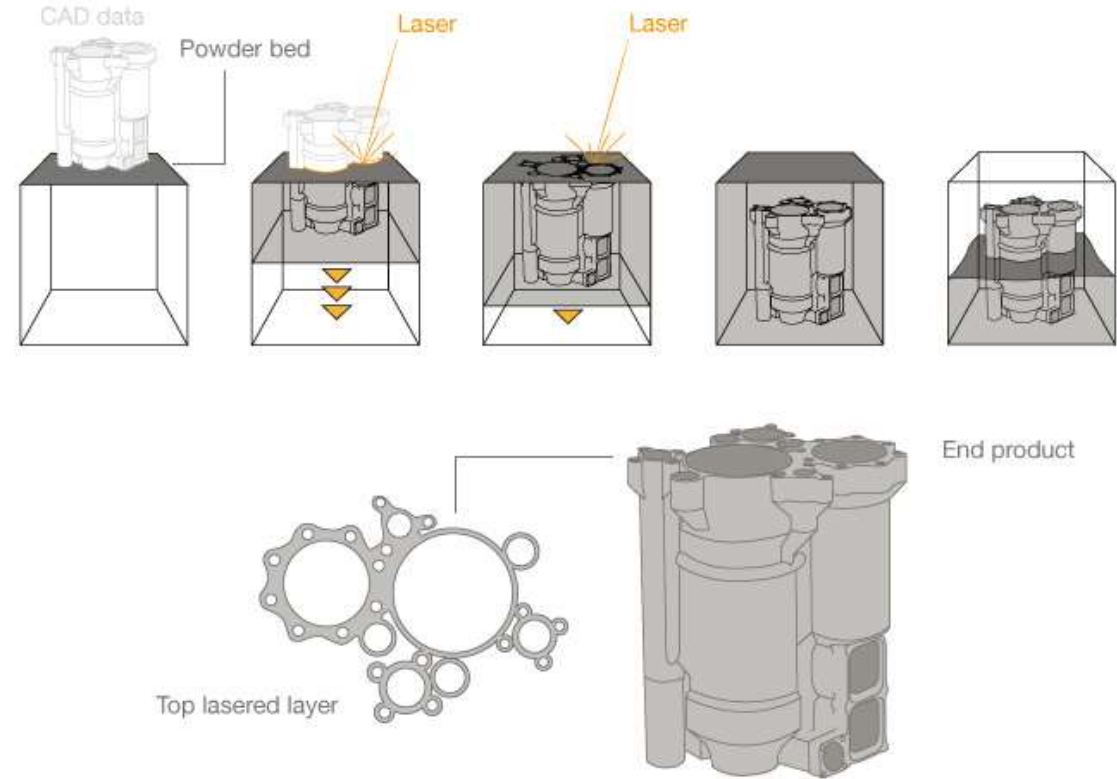
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## 3D Printing



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# 3D Printing



Laser travel across the titanium powder

Laser is melting the material layer by layer

Vacuums



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## 3D Printing



Airbus recently flew with a 3D printed primary flight control component from Liebherr on a flight test A380



Thank you for your kind interest.

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