

Manufacturing Case Studies

Use Cases, Capabilities and Examples

Use Cases



Increasing overall
throughput



Cost saving



Stabilising
Production Flow



Machine utilisation
optimisation



Process monitoring



Predictive modeling



Dashboards and data
acquisition



Bottleneck identification
and remediation



Root cause analysis



Enhanced planning
efficiency



Increased operational
efficiency



Issue identification

Capabilities



AI



Machine Learning



Computer Vision



Internet of Things (IoT)



Cloud and On Prem
Development



Automation &
Power Platform



API Development



Web & Mobile Apps



Integration



Analytics



Data Visualisation



Augmented and Virtual Reality

Case Studies

**Most of what we do for our clients is particularly sensitive.
In many cases it gives them an unfair advantage and can be
disruptive to the sector.**

**We won't be able to share the details but give you a high
level overview.**

There are some projects we just can't talk about.





Gripple, a global manufacturer known worldwide for its innovative wire joining and tensioning systems, among other products, is recognised as a relentless pioneer. Gripple looked to us to help accelerate their digital transformation.

Gripple wanted to take control of their data and have visibility and actionable insights for both management and operators. Data needed to drive decision-making, and the data had to be accurate to enable better decisions.

IT was considered a supporting function, but to take the next step into a bold new digital manufacturing world, this needed to change.

We understood, challenged the status quo, uncovered the possibilities, and together formed a vision for the future.

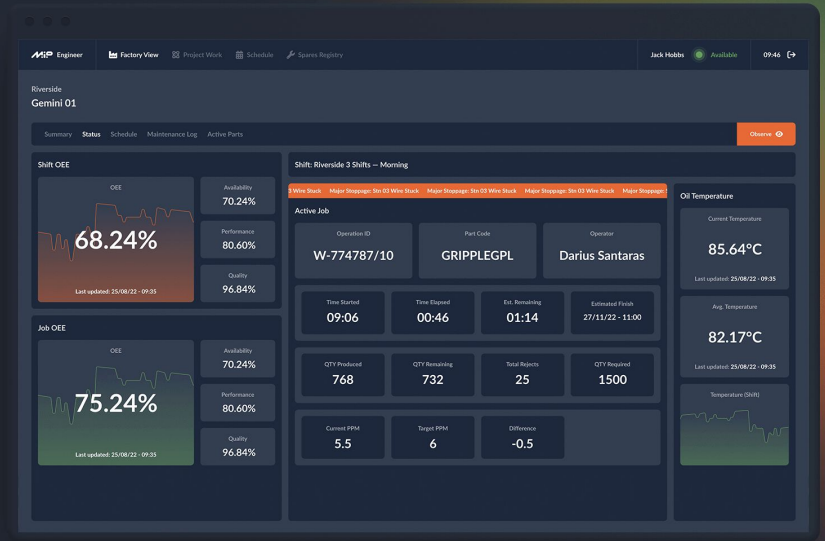
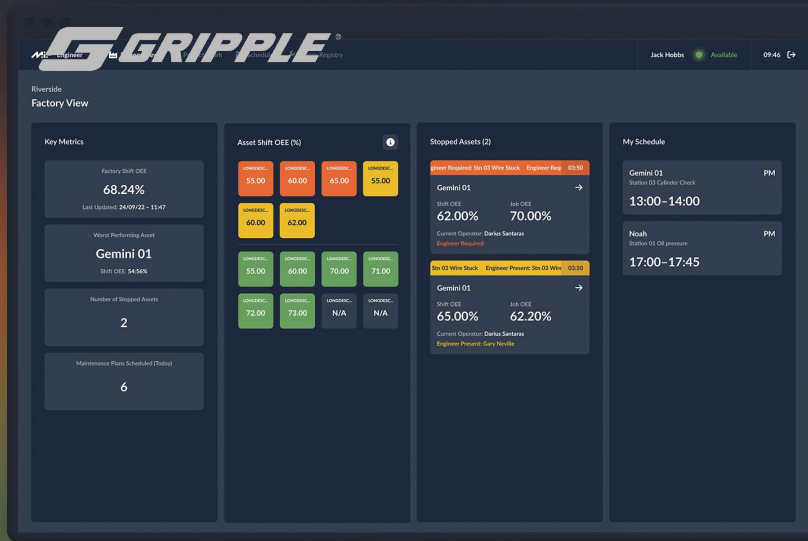
A platform was developed specifically for Gripple's unique needs that brought together all of the existing best-in-class systems and created a data spine for actionable insights.

The platform for Gripple solved 80% of the common problems that manufacturers have.

This work formed the basis for the Manufacturing Insights Platform (MIP).

Capabilities

- Strategic consultancy
- Integration with existing systems
- Cloud Development
- Machine connectivity
- Data processing



Jürgen Maier CBE FRS, ex Siemens CEO visiting Gripple to learn more about their Digital Journey with Fulcrum



"Working with the team was more than a business transaction, hearts and minds together we took on a challenge and transformed this core process in our company."

Daniel Ambler
Business Intelligence Developer



AMRC /

ADVANCED MANUFACTURING
RESEARCH CENTRE



The AMRC is a research centre born out of a project with Boeing and is now a government catapult focused on unlocking game-changing research to support the advanced manufacturing sector in the UK. Members include Boeing, Airbus, Rolls-Royce, McLaren, BAE Systems, Spirit AeroSystems, and Siemens, to name a few.

We are a member of the AMRC, a partner in the commercialisation of research projects, and a supplier of production software.

As a partner, we work with other members to realise the possible and contribute back to the ecosystem with advances in technology and knowledge. Our Manufacturing Insight Platform (MIP) has been inspired by some of the AMRC's research and has been developed using unique access to the facilities and machines.

As a commercialisation partner, we're called upon during the early stages of research to be ready to take research and turn it into a commercially supported solution, crossing the chasm from academia into the challenges of the commercial world.

As a supplier, we have worked with the AMRC within a long-term framework and developed platforms to monitor and measure energy usage, with the remit to reduce the carbon footprint of its operations and to be a leader for other manufacturers to follow. These include Power Platform systems for HR, generative AI-integrated search for complex research documents, and many other projects.

TRL Rating: 2 out of 7

Complete - Your final score
86/100

Results Diagram



Results Text

Production Carbon Footprint

The project aims to reduce the material required to manufacture product A by 50%, reducing virgin material requirements.

▼ Material Circularity

- Wider Environment Impact

▼ Global Societal Impact

- Use Carbon Footprint

▼ Critical Transition Technology

- Quality Livelihoods / Regional Development

Edit Results



PLATFORM MODERNISATION





"When the MD rings me and says, "We thought we could do it 20 times quicker but have worked out a way to process it 4,000 times quicker" that's when you know you have partnered with the right guys. "

Ben Morgan

Research Director at the AMRC







Technicut is a global leader in solid rotary cutting tools for the aerospace industry. They are a pioneer in cutting technology and advanced manufacturing processes.

The work that we have done with Technicut is highly sensitive. What we can share is that we have been working on identifying key data points that influence the quality of batch production of cutting tools.

We use high-volume data streams from PLCs and additional sensors to form the basis for their process monitoring and alerting for automated tended processes.

prism**medical**uk

a prism**healthcare** company

Prism Medical, a manufacturer of moving, handling, and bathing products, was frustrated with the limitations of its existing digital system and looked to Razor to develop a custom extension to unlock efficiencies in their production process.

Integrating with the legacy, complex, and undocumented data store, a simple user interface was created for operators to interact with, displaying what they needed to see and capturing feedback data from the shop floor.

Although only a small extension to the existing system, it resulted in an increase in the throughput of products due to the ability to plan more efficiently, ensuring works orders were completed in the right sequence, leading to satisfied customers.

Data captured from the production line, which fed back into the management system, helped inform future planning and forecasting decisions—a step in the direction of a data-driven factory.

[Go back](#)

Hoists, TX

You're viewing
< 09/01/2024 >

Parts

Worcestershire County C... QTY.
Prism CP200 FSG/TPEF 1SALES NO. WORK NO.
1808390EXPECTED DATE ESTIMATED DUR.
13/11/2023 00:59Sarah Lloyd QTY.
SPREADER BAR FOR 3... 2SALES NO. WORK NO.
1810079EXPECTED DATE ESTIMATED DUR.
20/11/2023 00:00Henshaws Soc. for Blind ... QTY.
Swivel Trolley set 1SALES NO. WORK NO.
1809976EXPECTED DATE ESTIMATED DUR.
20/11/2023 00:00Eagle sales orders within... QTY.
BACK COVER ASSY (P... 1SALES NO. WORK NO.
1809579 755966EXPECTED DATE ESTIMATED DUR.
30/11/2023 00:05

Work order details

STATUS

In Progress

QUANTITY

1

DURATION

00:00 (1488:33)

CUSTOMER

Henshaws Soc. for Blind People

VALUE

£50.00

WORKS ORDER

SALES ORDER

0000001809976

Parts required

Part code	Part description	Due date	Quantity
1002TRSETSWITPTA	Swivel Trolley set	20/11/2023	1

Operator actions

Pause

Complete



Rolls-Royce®



Rolls-Royce®

Jet fan blades are made of superalloys that contain more than 50% nickel, allowing solidification of the entire blade as a single crystal. In the back end of the engine, the blades operate in an atmospheric temperature of approximately 1,500°C, while their melting temperature is around 1,300°C.

To enable this phenomenon, the blades have cooling ducts inside them, and coolant is forced through the blades to keep them just below their melting point.

Inspecting the internal integrity of the crystal is vital to validate the safety of each blade. Even a minor issue with the crystal structure could cause a fan blade failure and potentially lead to catastrophic engine failure.

The challenge from Rolls-Royce was to find a way to inspect the crystal formation validity of the jet fan blades—a daunting task.

We faced a challenging task involving an exponential combinatorial problem. There were thousands of X-rays per blade, each needing to be processed against one another. Complex mathematical algorithms had to be implemented in a robust and efficient manner.

Our challenge was to take the crude academic prototype and transform it into an easily usable tool for operators. This required creating a simple interface for a complex procedure, processing thousands of large-scale X-rays with computer vision, and doing all of this quickly. Additionally, the solution had to work offline—right next to the X-ray machine, not in the cloud.

This truly is a game-changing piece of technology that gives Rolls-Royce an unfair advantage, benefiting both their operational team and customers by ensuring a higher level of efficiency and quality.

Simulation

Toggle Simulation



Presets

Change Orientation

φ_1

1.53

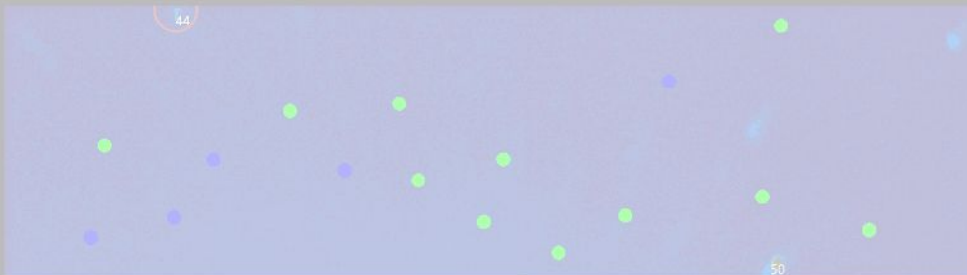
φ_2

4.60

φ_3

-0.14

Rotation Speed



Performing angle fitting

Which images would you like to classify?

All Images

Selected Image

Contrast

80

Toggle Labels





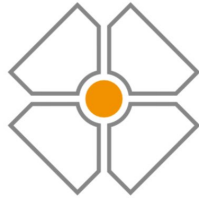
"I can confirm we've been really happy with the support that we've had from the team and the product that you have delivered will allow a step-change in our capability. This is the first time we have taken this collaborative approach and the combination of the AMRC and Fulcrum Labs together seems to have worked really well. The amount of effort and passion that's gone into this project from your team has been evident throughout and I'd be happy to recommend you for future projects."

Jackie Griffiths

Manufacturing Engineer Rolls Royce



Rolls-Royce®



SHEFFIELD
FORGEMASTERS



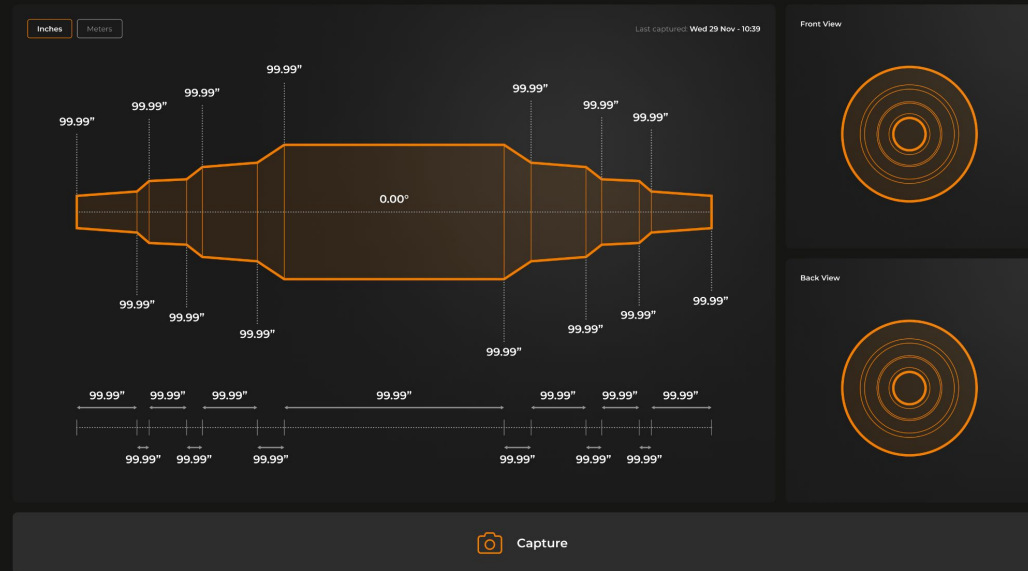
Forgemasters, a global name in being able to deliver the largest and most complex engineering projects in the world. It has capabilities of casting, forging, press and fabrication at an unparalleled scale.

Now owned by the Ministry of Defence, retaining these unique capabilities to secure sovereign capability, there is an inherent need to modernise and accelerate production to meet the defence needs of the western world.

Forgemasters' legacy is over 200 years and with this level of heritage and the nature of engineering, there are challenges to adopt digital technologies.

The team has been instrumental in the development, initially of discrete projects, of measuring forged parts in real time whilst in the press. Ensuring accuracy using laser capture, furnace and press data capture, measurement and predictability for optimal efficiency.

We are currently working together to refine a vision for the future and to deliver digital transformation for the entire organisation. Bringing together best in class technology, fully integrating it with a digital spine provided by MIP and grounded with data and interleaving tailored digital solutions to match the unique capabilities of the company.



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