



# NMIS

National Manufacturing  
Institute Scotland

# Manufacturing a net-zero future for aerospace

[nmis.scot](https://nmis.scot)



# Manufacturing a net-zero future for aerospace

**The National Manufacturing Institute Scotland supports aerospace manufacturers to develop resource efficient technologies, processes, and products for a net-zero world.**

Here we provide a snapshot of some of our industry case studies from across the NMIS Group, which demonstrate key capabilities from forming to the latest in digital manufacturing technology and advances in forging.

Follow the **QR code** to find out more about each project on the NMIS website.



## **Reducing weight, emissions and production costs with hydroforming**

NMIS specialist technology centre, the University of Strathclyde's Advanced Forming Research Centre (AFRC), delivered a demonstrator project for two of our Tier One Members within the aerospace industry, providing confidence in using magnesium sheet within lightweight design to reduce body structure weight and consequently emissions.

Using a new technology variant to form magnesium sheet highlights material formability benefits such as producing complex shapes, along with cost savings of up to 40% compared to traditional methods such as super plastic forming (SPF).

## **Streamlined measurement procedures for large scale components help meet production goals**

NMIS has made recent advances in large scale measurement innovation and worked with a local manufacturer to streamline its measurement procedures for components larger than five metres.

Following support from the NMIS Digital and Metrology Team, our customer presented a technology review and results from testing to its customer to demonstrate measures taken to mitigate project risks that might have delayed production. This provided confidence, increasing the likelihood of further work for the next six years, supporting up to 60 jobs.

### **Flow forming materials savings and 50% less manufacturing costs for landing gear**

A large aerospace company worked with NMIS specialist technology centre the AFRC to address the issues of cost, materials waste and long lead-times involved in the manufacture of a commercial aircraft landing system component.

Seeking a more efficient method of manufacture, the team at the AFRC carried out a series of trials using flow forming. They found that costs could be reduced by at least 50% due to a significant reduction in material wastage, bringing vast sustainability benefits too.

### **Materials expertise helps manufacturer overcome production problems and reduce energy use**

Working with the Materials and Residual Stress Team at the AFRC, a local manufacturer overcame a problem with cracked cam rings and improved its manufacturing process after we provided close examination and testing of our customer's materials and processes.

The team from the AFRC made a series of recommendations based on the customer's choice of heat treatments and cutting conditions. They also suggested removing unnecessary heat treatments, consequently speeding up production time and cutting costs thanks to a three-day lead time reduction, reduction in energy consumption and two-day decrease in production time.

### **Automated non-destructive testing facility enhances productivity**

A key aerospace manufacturing company identified a need to double its productivity over ten years to meet market demand. Realising the scale of this challenge, the company approached NMIS for help.

Working in close partnership with our customer, the NMIS team developed an automated combined non-destructive testing and metrology inspection facility that delivered a significant reduction in part inspection time – a key achievement in its overall productivity requirement.

## **A net-zero future with NMIS**

As the aerospace industry works towards ambitious targets to reach net-zero emissions, the need for more sustainable manufacturing processes has never been greater.

We help manufacturers to realise their net-zero ambitions by making it easier to develop and embrace new technologies while de-risking innovation and supporting them in their efforts to transition to a low carbon economy.

Learn more about our commitment to net-zero manufacturing.



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