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Investing in a Smart, Sustainable and Inclusive Future

Advancing Manufacturing Challenge Fund

AMCF: 1 April 2020 to 30 June 2023

Final Report - SUMMARY

Project Reference:	AMCFST2-029
Project Name:	Advancing Manufacturing within the West Highlands
Lead Organisation:	UHI West Highland College
Partner Organisation(s) (if relevant):	HIE
Project Start Date:	01/06/2020
Project End Date:	30/06/2023

APPROVED BY	
Print Name:	David Campbell
Job Title/Position:	Director of Business Enterprise & Development
Organisation:	UHI – West Highland College
Date:	31/08/2023



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Executive Summary

The Advancing Manufacturing within the West Highlands project has provided unique hands on, practical support and inspiration to SME's in a rural area of Scotland which has benefited immensely from the funding provided.

From one of our first engagements on a project with an SME wanting to retrofit a catalytic converter to a classic Porsche 911 exhaust, it became apparent that the services provided were unique to the area. Following its design, manufacture and test, the product has been exported around the world, having surpassed emission and performance expectations. The business owner was delighted that a facility on his doorstep allowed him to compete in a global market and has now adopted the technology to increase his product range.

The examples and range of products and businesses supported demonstrates the diversity and potential of the manufacturing sector in the Highlands of Scotland. These range from improving the manufacturing techniques of the traditional skills involved in producing a pottery water jug, to providing the 5-axis milling capability to ensure the success of a Scottish business winning a contract to re-shore production of a Dyson composite component from China.

The inspiration provided to potential manufacturers has led to several new products which otherwise would never have been created. The redesign of a protein shaker, that would have been virtually impossible to manufacture economically in it's original form, resulted in a Scottish Edge Design award. The lightbulb moment and large grin when a bespoke Coffee retailer with a captive market at Glenfinnan discovered he could personalise and brand reclaimed pieces of wood to sell to tourists, epitomises



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the reaction of many small business and aspiring business owners who have used our services.

The difficulty in us achieving the target of the number of SME's attending events compared to some of the other AMCF and SPRITE projects in more central areas, demonstrates the difficulty of operating in such a rural area and further strengthens the case for facilities out-with the usual central locations. A real positive message is the quality of the engagements which did take place, with a third of the SME's attending being supported and undertaking projects with us.

Project Overview

The project was to provide SME's within the West Highlands and wider Highland & Islands Enterprise area with access to advanced manufacturing technology and expertise. This was a multi-sector approach with SME's engaged in various manufacturing activities - for example Food and Drink, Construction, Aquaculture, Metals and Timber Products.

The project provided support to:

- Engage leaders and create Advancing Manufacturing Champions.
- Give access to a range of advanced manufacturing technologies in a sand pit environment with dedicated support.
- Enable small scale R&D and product development.
- Help adapt supply chains, identify opportunities, and innovate.

To begin the project, UHI - West Highland College was required to find suitable accommodation, as it was believed during the tendering stage that it would be housed in a new build STEM centre. A change in plan resulted in the project leasing alternative accommodation within Fort William and renaming it the Advancing Manufacturing Centre (AMC).



Figure 1: Picture of the AMC Building

Next, Margaret Weir was appointed as Project Manager to run the project. Margaret is an IMechE Chartered Engineer with a MEng in Product Design Engineering and with experience in several industries including Construction, Water, Oil & Gas and Batteries.

At the beginning of the procurement stage, the project contracted with Advanced Procurement for Universities and Colleges (APUC) to oversee the whole process to ensure the project followed protocol. Due to the value and volume of items requiring procurement, they were split up into different tenders and lots.

Tender:

- CS-WHC-18679 - Provision of Industry 4.0 Advanced Manufacturing Learning Systems
 - Mobile Pneumatic Training Workstations
 - Mobile Hydraulic Training Workstations
 - Workstation Simulation
 - Software
 - Air investigation System
 - Mechatronics
 - Process Automation Training Rigg
 - Machine Maintenance
 - Renewable Energy
 - Industry 4.0 Modular Learning System
- CS-WHC-19496 - Provision of CNC Printers & Scanners
 - 3D Handheld Scanner
 - Laser Scanner
 - 3D Printer
 - 3D Printer
- CS-WHC-19128 - Provision of CNC Equipment - Router, Lathes, Mills & Plasma Cutter.
 - Lot 1 - CNC Mill
 - Lot 1 - Tabletop CNC Mill
 - Lot 1 - CNC Lathe
 - Lot 1 - Tabletop CNC Lathe
 - Lot 1 - CNC Plasma Cutter
 - Lot 1 - CNC Router
 - Lot 2 – Augmented Reality Welding System



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- CS-WHC-19576 - Provision of 5 Axis Industrial CNC Machine Centre ○ 5 Axis Industrial CNC Machining Centre

The first round of tenders (CS-WHC-18679) was awarded to Didactic Services Ltd as the sole applicant and CS-WHC-19496 was a direct award to Abergower Ltd under the APUC Framework Reference: LAB-1009-AP. The remaining tenders yielded a poor response and prices of items were a lot higher than expected in the budget plan. More research was undertaken into the equipment to understand what SMEs required and to what standard, and as a result items had to be removed to fit the budget and provide a better service for the SMEs. A number of items were dropped as they were not industry standard, or there was insufficient interest from SMEs. These items included the tabletop CNC Mill, the tabletop CNC Lathe and the Augmented Reality Welding system, which allowed more money to be spent on industry standard equipment. The CS-WHC-20210 was a more informed tender, based around CSWHC-19576 to encourage more suppliers to tender. For the rest of the equipment, it was split into 2 tenders each, with 2 lots allowing each item to be won by different suppliers in the hope more suppliers would bid.

Revised Tender:

- CS-WHC-20210 - Provision of 5 Axis Industrial CNC Machining Centre ○ Axis Industrial CNC Machining Centre
- CS-WHC-20227 - Provision of CNC Equipment Lot 1 Lathe & Lot 2 3 Axis CNC Mill
 - Lot 1 – CNC Lathe ○ Lot 2 – 3 Axis CNC Mill
- CS-WHC-20226 - Provision of CNC Equipment (Lot 1) Plasma Cutter & Lot 2 Wood Router ○ Lot 1 – CNC Plasma Cutter
 - Lot 2 – CNC Router

The CS-WHC-20210 was awarded to ScotMaz Ltd, the CS-WHC-20227 was awarded to Mills CNC Ltd, the CS-WHC-20226 lot 1 was award to Boxford Holdings Limited and the CS-WHC-20226 lot 2 was awarded to Emco Education Ltd.

All equipment except the lathe was installed before the first ministerial visit to officially open the AMC. Please see Appendix A:, for the photos of the equipment.

The UHI West highland College marketing team created and launched an AMC website, see Figure 2 of the screenshot of the website.



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Figure 2: Website, www.whc.uhi.ac.uk/business/advancing-manufacturing/

As the project moved from set-up to being operational, our focus was the West Highlands and the general Highland region, although AMC can help anyone in Scotland or can redirect them to one of the 12 other AMCF projects. See Figure 3 for the different locations the AMC visited and/or undertook project work.

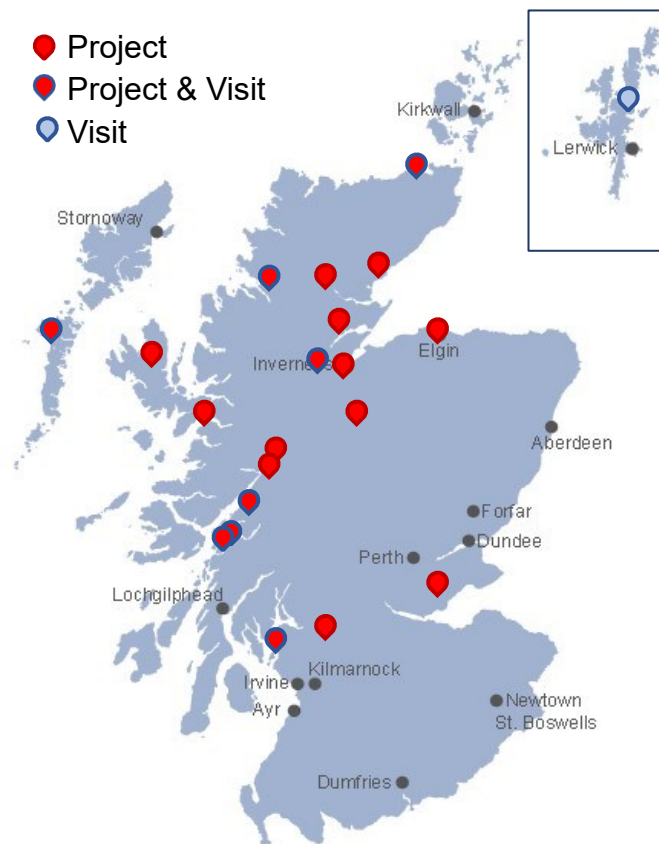


Figure 3: Locations which the AMC visit &/or did projects with.



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Project Results

Outputs	Target	Actual
No. of SMEs attending events	270	91
No. of SMEs supported	40	40
No. of projects with SMEs	43	53
No. of collaborations between SMEs and Research Institutes	4	4
Value of Business Expenditure on Research and Development (BERD) (£)	£60,000	£179,674
Outcomes	Target	Actual
No. of SMEs supported to introduce new to the market products	7	14
No. of SMEs supported to introduce new to the firm products	17	21