

Creative Engineering Solutions

designed and manufactured by

Acres Engineering Ltd



We've got solutions that can reduce your costs by minimising non-conformances, accidents, lead-time and waste.





We make fabricated products, finished assemblies and our own production support equipment products.

Ramp-up and **scale-up your production** with acres creative engineered solutions.

Align with the **best**: product safety, vertical integration, **quality, delivery** and **efficiency**.

We'll identify your exploitable opportunities, and help you to **transform your build process**.

Increase motivation and reduce absenteeism by **improving safety** and **economics**.

Reduce lead-time with the right balance of **innovation** and standardisation.





Compounds and Cages



Custom Automated Machines



Display Areas



Fixed and Working Access Platforms



Jigs and Fixtures



Lifting Equipment



Light Inspection Frames



Production Support Equipment



Shadow Board Trolleys



Stillages



Storage Racks



Sub Contract Fabrication



Swarf Bins



Automated Machines



Transport Trolleys



Work Benches and Stations



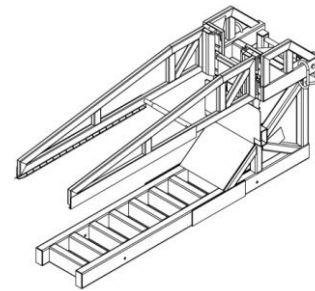
Battery Changing Equipment



Finished Machines



Block Inserter



The Challenge – Develop a machine capable of automating the insertion of 5000kg heating blocks into a furnace. It must be able to operate at the extreme temperatures experienced.

The Solution – A unique design featuring many bespoke parts. Pneumatic pistons are assembled to allow the block to be lifted and twin arms control its movement. A water tank is installed in the rear of the machine to provide cooling to the front arms. Castellations are cut into each arm to prevent warping under the heat of the furnace face.

The Benefit – Accuracy and timing of block insertion is now achieved consistently. The handling system can be operated by one person at a safe distance, replacing 3 operators in heat resistant clothing.



Fixed and Working Platforms



Guard Barriers and Safety



Aero Engine Safety Access Platform



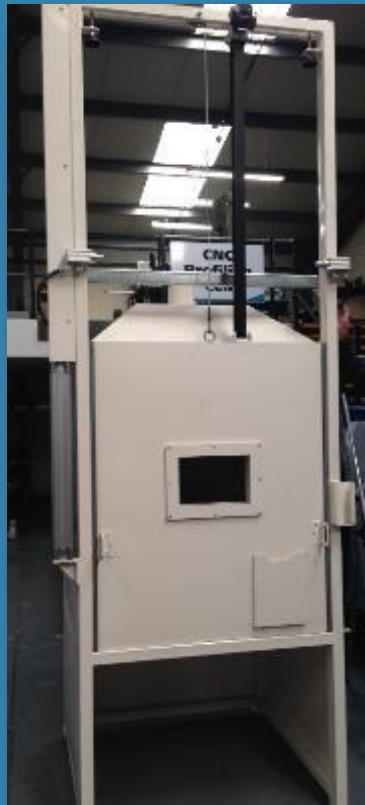
The Challenge – Develop a safe working platform that allows access to all areas of an aircraft engine. It must be flexible enough to adapt its functionality for up to ten engine variants.

The Solution – A fully height-adjustable steel scissor frame attached to a mobile base with heavy lockable wheels. The frame locks into place and is strengthened by steel columns for safety. Two telescopic access ladders lengthen automatically as the platform is raised. The floor area can also be extended by use of a sliding mechanism.

The Benefit – Time spent sourcing specific platforms or adjusting their position is greatly reduced and productivity greatly increased. The extending floor also allows more than one engineer to work on an engine for the first time.



Inspection and Test Equipment



Cooling Cabinets



The Challenge – Develop a bespoke cabinet capable of providing a secure and controlled environment for ceramic castings of delicate fan blades. It must safely contain the hot casings to reduce health and safety risks and prevent ceramic contaminants spreading across the factory floor.

The Solution – A cabinet was built with precise dimensions calculated from heat displacement rates to allow for optimal cooling of the castings. It features a vertical sliding door powered by a pneumatic lift system allows restriction-free access. A hopper tray fits under the cabinet to collect ceramic residue fallen from the casings. It also includes internal heat sensors allowing remote monitoring of the cool down process

The Benefit – More control over the cooling process is possible, improving the consistency of fan blade produced. The cabinet protects the casings from damage and greatly reduces the risk of them inadvertently burning personnel.



Kitting Media



Lean Manufacturing Equipment



RFID Inventory Scanner



The Challenge – Develop a method of automating inventory control that will reduce the number of errors seen with a manual booking process.

The Solution – An easily manoeuvrable frame with adjustable height and width to fit a range of warehouse portals from 3 to 5 metres in height. WIFI scanners are included, capable of quickly reading barcodes in any location on goods that differ in shape and size. The system has been future-proofed by using a modular approach to allow more advanced electronics to be retrofitted as they develop with little impact on the main frame.

The Benefit – The inventory reader transmits data remotely, removing human intervention from the stock control process entirely. It now provides very accurate tracking and tracing of assets and shipments with a vast reduction in error. This has improved the efficiency and lean capability of the customer.



Lifting Equipment



Racks, Stands and Frames



Power Converter Frame



The Challenge – Develop a frame for use in power converter construction to reduce the time and effort required by engineers. It must allow complete access to the converter and remove the need for manual lifting.

The Solution – A mobile frame to which the power converter will be attached from start to finish of the build process. An internal frame holds the casing securely and allows 360° rotation to access all points. The frame provides stability during the build and allows transport on its lockable wheels after completion

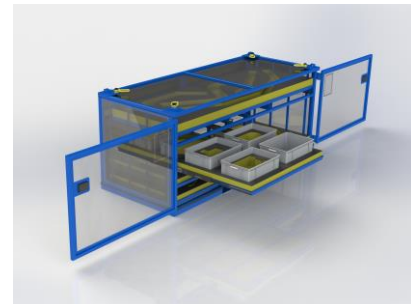
The Benefit – Time is no longer wasted by constant moving around the work to access awkward points. The heavy converters are portable and no longer require moving by crane or forklift. This has greatly reduced the time wasted during the build process.



Stillages and Storage



Wing Component Storage



The Challenge – Develop a portable storage unit that allows components removed from aircraft wings to be easily identified. All parts must be kept secure and isolated to allow them to be reused on the wing they are removed from.

The Solution – A drawer unit that can be transported fully laden by both crane and fork lifts. The dimensions are fixed to fit into aircraft cargo holds and a variety of rails and eyelets were added to ease loading. Ball bearing drawer slides are used to maintain the unit's stability whilst allowing the drawers to be fully extended for ease of access. Transparent panels are included to allow the contents to be inspected without opening and were impact tested to ensure they could survive dropped components.

The Benefit – Parts no longer require individual inspection, saving considerable time and increasing productivity. The number of missing parts, and the cost of replacing them, is also greatly reduced.



Trolleys and Production Support



Waste Management and Environment



Workbenches and Workstations



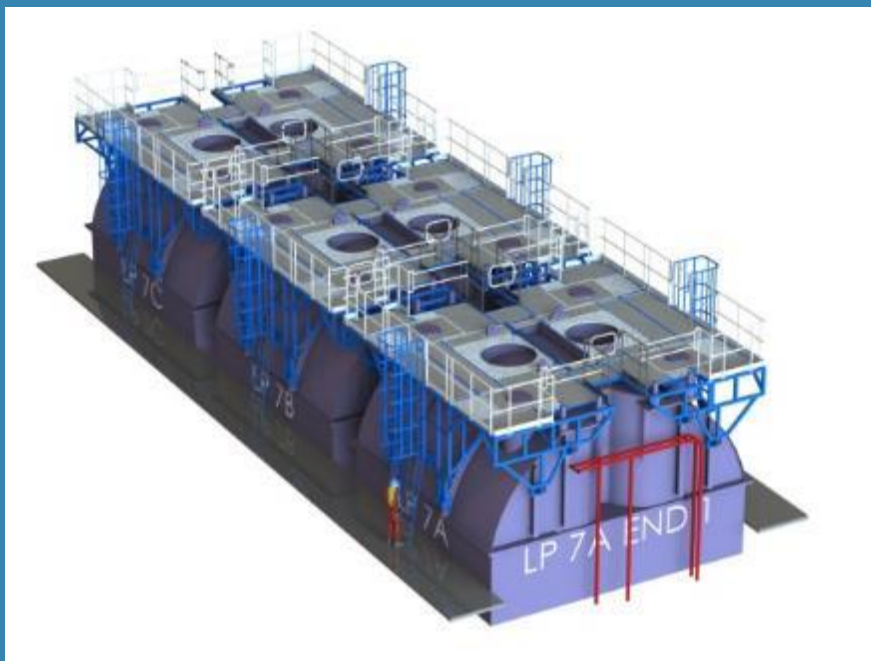
Case Study: Steam Turbine Access Platform

Technical Advancement Sought:

To develop all year round working access to a huge steam turbine eliminating the need for operational shutdowns resulting in vast expense regarding manpower and external costs.

Within a nuclear power plant is a steam turbine unit that extracts energy from steam, passing at very high pressure through three sets of two chambers. Each chamber has a cylinder has a removable cylinder head bolted to it. The steam is drawn through each pair of chamber by turbine fans, starting at the high pressure chambers, through into the intermediate chambers before entering the low pressure chambers. Any residual steam is subsequently vented safely into the atmosphere.

All the turbine chambers are contained in a structure measuring 21 metres in length by 7 metres with and standing 4 metres high.



Annually under the plants' Preventative Maintenance Programme, the whole turbine unit has to undergo a full inspection. In order to access the top level of the unit and work in a controlled and safe environment, an external scaffolding Company was contracted to erect a framework around the entire unit to provide access. The Company spends £250k per annum in scaffolding costs and the full PPM programme can last up to four weeks.

Each pressure chamber has its own cylinder head that has to be lifted away from the unit for inspection and maintenance of the turbines contained within the chamber. In sequence, the scaffolding is fully erected with the addition of flooring across the top of each turbine unit for ease to provide a working platform. Installed around each turbine are various measuring instruments gauges and filters that also require checking on a more regular basis. Smaller scale scaffolding platforms have to be constructed to allow access to the instrumentation.



Once the cylinder head has been unbolted from the cylinder, the horizontal scaffolding has to be dismantled to allow the crane access to the cylinder head for removal. The entire turbine unit becomes inoperable during this lengthy process and reduces the efficiency of the plant during this period of essential inspection and maintenance.

Technical Uncertainty:

Acres Engineering were approached to attempt to develop a permanent structure that would allow turbine operatives ease of access at any time to monitor the instrumentation and to provide a more cost and more importantly time efficient solution for its maintenance programmes.

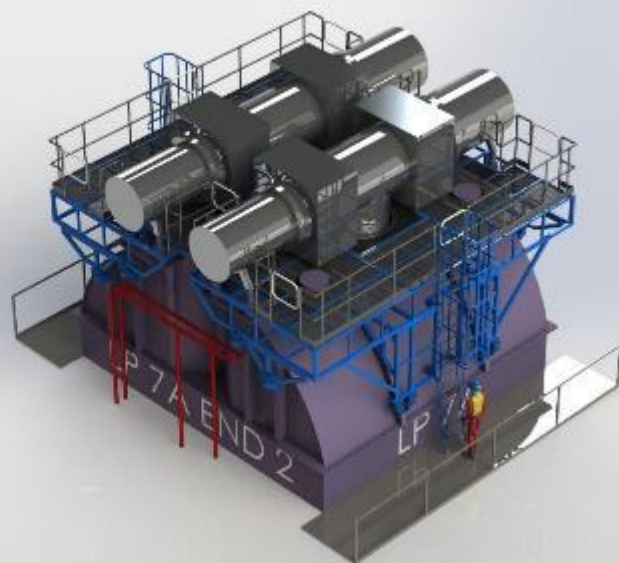
Despite its size, in operation the entire turbine unit generates a great deal of vibration through its outer casings. This was a major obstacle that the engineers at Acres had to overcome.

There were severe restrictions on the method of fixing any proposed structure to the turbine and these restrictions precluded any welding of fixings to the structure.

The technological uncertainty with this project was substantial as the application was unique as a structure of this magnitude and complexity had never been built by Acres before.

We approached Acres to provide us with a permanent solution in accessing our main turbine crossover pipework. Acres replaced the necessity for temporary scaffolding by designing, fabricating and installing fixed access platforms. This provided us with an efficient and safe solution which continues to deliver long term cost savings.

Philip, Lead Contract Manager
EDF Nuclear Generation Ltd

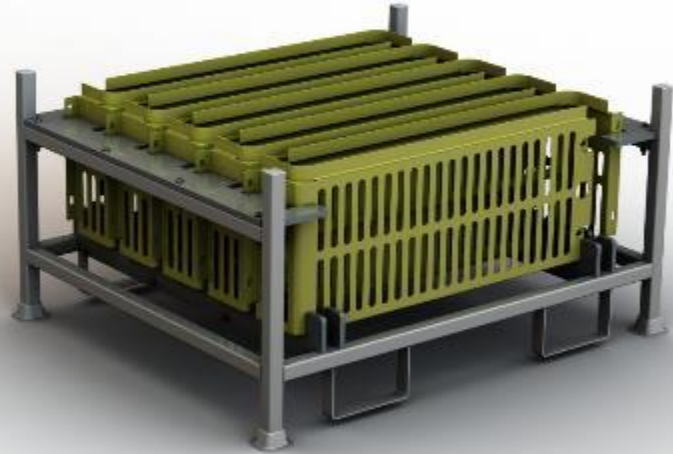


Customer Testimonials:

We were looking for some innovation on paint protection as a step change for our new model. After some initial discussions Luke and the team gave us some CAD schemes which gave us a solution. The team turned around prototypes and subsequently production quantities on time and to plan.

I wish that we had identified you as a supplier earlier in the project and look forward to working with you on future plans from day 1.

Dave, JCB Heavy Products
Paint Plant & Hydradig Assembly Manager



ITP Aero are pleased that we made the correct supplier selection with Acres Engineering and to form a new relationship. We have found that not only are their commercial offers competitive in both price and lead time but we also feel that they bring an essence of creativity and understanding to the table that no other supplier has done with our projects. We are proud of the completed projects we have with them and we look towards many more.

Richard, Head of Maintenance and Investments
ITP Aero



AD-375-2014-02 - IBR FOD Reducing Storage Rack





Get in touch!

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