

we redefine  
**Additive Manufactured  
Components  
Metals**



# We're the UK's leading experts in providing effective post processing solutions for the additive manufacturing industry.

## we redefine:

- Vibratory Finishing
- High Energy Finishing
- Shot Blasting
- Consumables
- Precision Polishing
- Subcontract Services

## Why Choose Us?

We're a family run business that pride ourselves on working as a strong, unified team of specialists.

### We believe in British

Born in the United Kingdom, we are unique in our product design and the manufacture of our specialist machines and consumables.

### We're here for you

Being based in the heart of the country means we have easy access to all of our clients.

### We have experience

With five decades of experience and knowledge in the finishing industry, we know what works for you.

### We provide options

We have an impressive range of media and compounds to choose from, including one of the best polishing compounds in the market. We also provide a wide range of machinery and subcontract services to meet all of your needs.

### We go the extra mile

We'll tailor our services to your needs, not the other way round. Our service is all about you.

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# Surface Finishing of Additive Manufactured Parts

Additive Manufacturing (3D Printing) is now an established technology for prototyping and production. Selecting the most suitable surface finishing technology is critical to prove the viability of components from a cost and functional standpoint. In an ideal world, surface finishing must be considered when designing components for AM to ensure the desired component and its characteristics can be achieved.

## Surface Finishing Metal 3D Printed Parts

A range of materials are used when 3D printing metals.

Metal parts that have been produced through additive manufacturing tend to have a surface with an average Roughness (Ra) ranging anywhere from 10 to 30 microns. The values of Ra may increase at support locations and may decrease depending on the geometry profile.

In order to improve the appearance, surface roughness and mechanical properties of additive manufactured parts, post processing remains an important factor.

Our range of technologies are available as standalone machines or can be integrated as fully automatic systems. Our aim is to ensure our customers understand the main advantages of each technology.



before the mass finishing process



after the mass finishing process



before the mass finishing process



after the mass finishing process

# AM Blasting for Powder Removal

For a powder-based metal additive manufacturing process, first step often involves removing the powder residue left from the 3D printing process. The AM Blasting technology has been designed to remove powder, even from parts with complex geometries, in an efficient way.

## AM DI Blasting Cabinets

The AM DI depowdering system is developed for manually cleaning of powder bed printed parts. Suitable for blasting of individual, large parts.

### Key Features

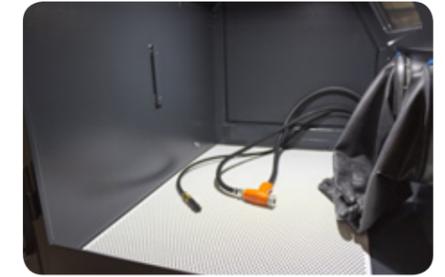
- ✓ Manual blasting of 3D printed parts up to a load of max. 350 kg.
- ✓ Stationary turntable Ø 600 mm. (Optional)
- ✓ Equipped with a cyclone to remove dust and powder from the blast media.
- ✓ Linatex lining in cyclone. (Optional)
- ✓ Integrated ionisation (ATEX) unit ensures cleaner dust free products. (Optional)
- ✓ Also suitable for shotpeening, without any modifications.
- ✓ ATEX certified for processes class II 3/-D T125°
- ✓ Special preparation for unpacking metal printed parts s.a. titanium. (Optional)
- ✓ Automatic cartridge cleaning.
- ✓ Turn-Key 1 unit.
- ✓ 2 side doors.
- ✓ Safety on doors.
- ✓ LED lighting
- ✓ HEPA filter (Optional).
- ✓ Ionisation (Optional).



Check the Matrix on [page 25](#) to see if this technology is best fitted for your part.

### Key Benefits

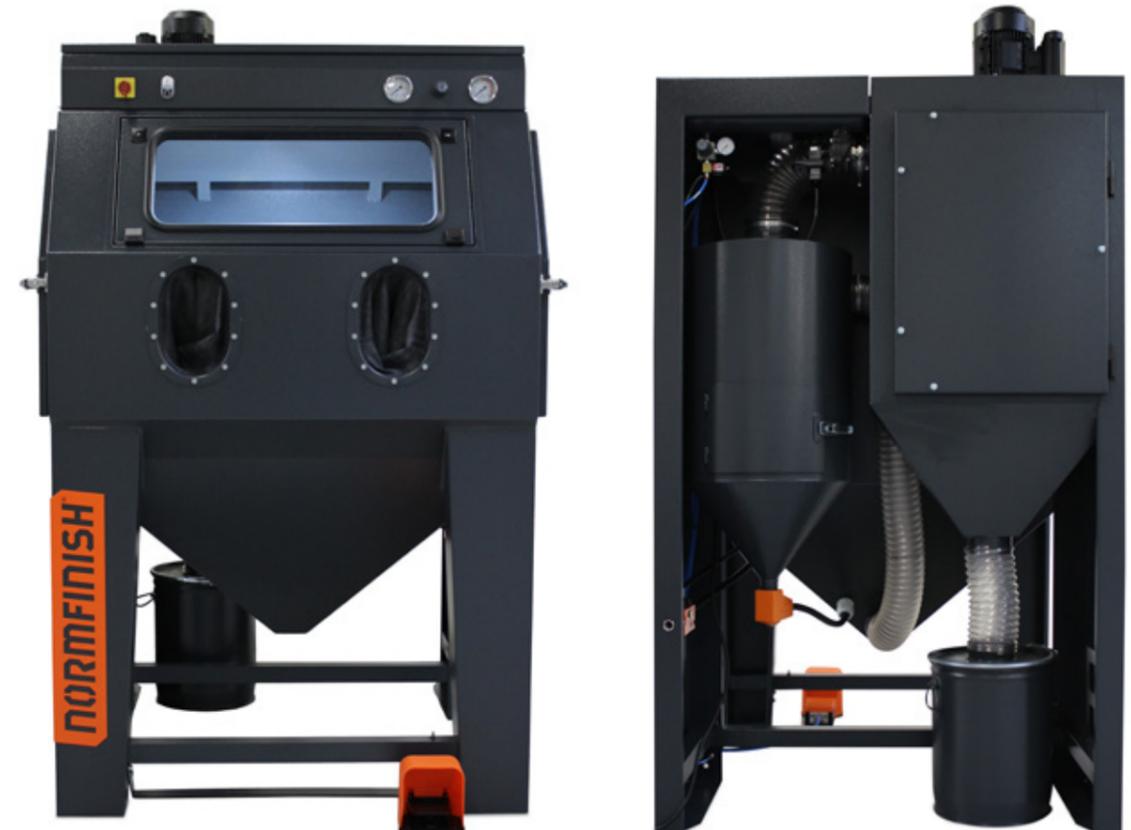
- ✓ Easy to use and low maintenance costs.
- ✓ Reliable and repeatable finish each time.
- ✓ Easy load and unload of parts via the front door.
- ✓ Industry 4.0 Ready
- ✓ Solid proven industrial concept.



### Technical Specifications

	DI12	DI14
Blast Chamber Dimensions in mm/inch (W x D x H)	1105 x 800 x 800 / 43.5 x 31.5 x 31.5	1370 x 940 x 830 / 53.9 x 37 x 32.6
Overall Dimensions in mm/inch (W x D x H)	1220 x 1275 x 2035 / 48 x 50.2 x 80.1	1485 x 1620 x 2191 / 58.4 x 63.7 x 86.3
Door Opening in mm/inch (W x H)	692 x 640 / 27.2 x 25.2	935 x 785 / 36.8 x 30.9
Working Height in mm/ inch	840 / 33.1	840 / 33.2
Approx. Machine Weight in kg	380	480
Illumination	1 x 20 Watt LED	1 x 20 Watt LED
Maximum Load in kg.	350	350
Filter Cartridge (Bia - class M)	1 x 4m <sup>2</sup>	2 x 4m <sup>2</sup>
Power Supply	230V/50Hz/0,85 kW	230V/50Hz/0,85 kW
Air Consumption	6,0 m <sup>3</sup> at 6 bar	6,0 m <sup>3</sup> at 6 bar

Sizes indicated above are standard. Custom sizes can be manufactured to suit specific applications. Dimensions are subject to change due to design improvements.

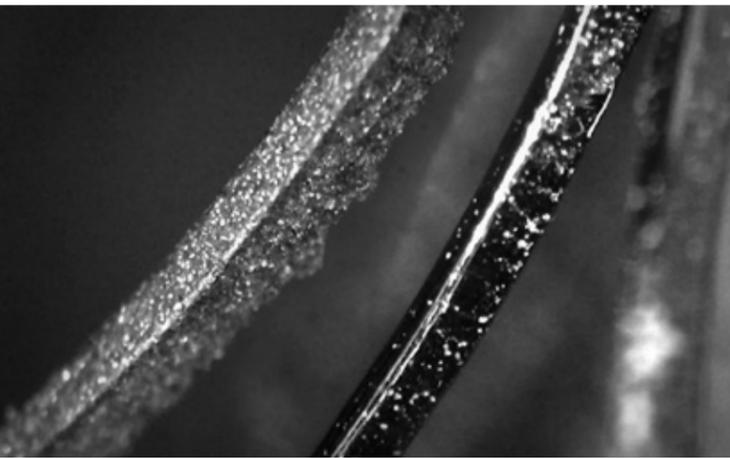




Before  
Ra 21.02  $\mu\text{m}$



After  
Ra 3.03  $\mu\text{m}$



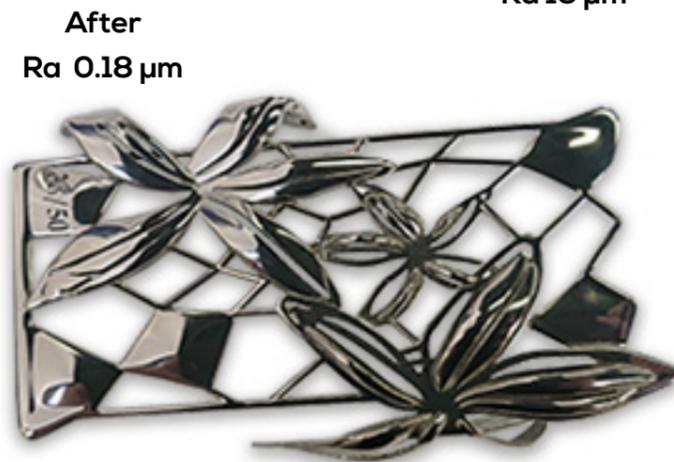
Before the Surface  
Finishing Process



After the Surface  
Finishing Process



Before  
Ra 16  $\mu\text{m}$



After  
Ra 0.18  $\mu\text{m}$

## Surface Finishing & Polishing

Most additive manufactured components require some surface improvement to ensure that they are in an acceptable condition for the end-user.

At ActOn Finishing we understand the importance of surface finishing for metal additive manufactured parts & have worked closely with major manufacturers across different industries to adapt and develop finishing solutions that meet their stringent requirements. It has been proven that the solutions we've developed have benefited the industry by reducing processing times and producing a repeatable and quality product.

### Surface Finishing Processes Deliver Repeatable Results

Manufacturing companies usually implement mass finishing techniques in their processes for the economic advantages and the consistent results achieved. Manual finishing processes are known to be labour intensive, with the disadvantages of rework, high rejection rates, and inconsistent results. Having identified these issues, we offer a wide range of unique solutions that improve current processes, achieving the repeatability and quality desired by manufacturers.

### ActOn Research and Development

We are continually evolving our processes and machines making them more effective. We also have academic connections throughout the United Kingdom and around the world, who help facilitate our Research and Development department. At our headquarters in Coventry, we house various metrological equipment to ensure that our customers' requirements are met and exceeded.

With projects involving modal and dynamic FEA analysis of our finishing machines and the persistent gathering of empirical data on our various compounds, medias and machines, we strive to design and optimise everything we do to a high standard.



## The CHEF Series

High Energy finishing is a process that automates the mechanical and chemical finishing of various shaped parts. This is a stage in the manufacturing process of 3D printed components that allows small or large numbers of parts to be finished simultaneously.

The CHEF Machines are the fastest finishing machines on the market to reduce surface roughness, deburr and polish 3D printed parts.

In many cases, the results achieved via CHEF systems cannot be achieved in a standard vibratory process, particularly applications that

include achieving a high level of surface finish or a high rate of defect removal. Moreover, the CHEF machines can be 10 times faster than traditional finishing methods and produce superior finishes. It is one of the most efficient batch finishing methods.

The action of these machines relies on the high force and speed at which the media chips come into contact with the processed components. The forces can be as great as 15-20 times the force of gravity, depending on the rotational speed and the turret size of the centrifugal machine

### Key Features

- ✓ Automation capable
- ✓ Industry 4.0
- ✓ Control through HMI or control panel
- ✓ Media recirculation
- ✓ Media separation system
- ✓ Compound and water dosing
- ✓ Unbalanced weight detection
- ✓ Removable barrels and liners
- ✓ Programmable recipes
- ✓ Maintenance alerts
- ✓ Very quiet machine in operation

### Key Benefits

- ✓ High polishing efficiency
- ✓ High or low rate of stock removal
- ✓ Gentle action on parts
- ✓ Greater control of the process
- ✓ No need for fixturing or tooling
- ✓ Fast processing times
- ✓ No part impingement
- ✓ Easy to maintain
- ✓ Option to carry out different processes in each barrel
- ✓ Easily customised to suit applications
- ✓ British built, high-quality product

For more information on our CHEF Machines, click [here](#).

To find if this technology is best fitted for your part, check the [matrix on page 25](#).



CHEF Series:  
CHE50 Machine



CHEF Series:  
CPM10 Finishing System



CHEF Series:  
CHE40 with media and parts separation system

# CHEF Machine Case Study

## Identifying a cost-effective surface finishing process for SLM 3D parts

**ActOn Finishing** worked closely with **The Manufacturing Technology Centre (MTC)** to develop an optimum Finishing solution which benefits the industry by reducing processing times and producing a repeatable and quality AM component.

### The Aim

The AM parts have been built using SLM or EBM processes, from materials like Ti6Al4V. Hence these required intensive manual finishing, to remove support structures and to smooth down rough surfaces. Our objectives included:

- ✓ Identifying a cost-effective finishing process for the external surface of the part
- ✓ Develop a finishing process for the internal surface of the part.

### What we did

- ✓ Trials have been carried out where it has been determined that the most efficient equipment is ActOn's CHEF machine to achieve sub 1µm RA surface finishes.
- ✓ The MTC has acquired an ActOn CPM-10 model and ActOn's consumables to undertake in-house development.
- ✓ Further trials have been conducted by both teams to determine the optimum machine parameter settings to process additive manufactured materials like Ti6Al4V

### Ruaridh Mitchinson, Research Engineer at The MTC comments:

"The CPM-10 has provided invaluable insight into finishing both EBM and SLM AM parts. This has provided the MTC with a low cost means to efficiently and effectively conduct R&D into surface finishing of additive manufactured parts."

Click [here](#) to request your Free Trial today!

### Result

- ✓ We achieved a Ra of sub 1µm in 5 hours, 80% faster than traditional finishing.
- ✓ Achieved a Ra between 2µm to 3µm in approx. 30 minutes.
- ✓ 46% cost savings on the finishing process.
- ✓ From reducing surface roughness, to deburring and polishing these are just a few of the applications that have been achieved via the high energy finishing process.
- ✓ The project provided further information regarding surface finish parameters, component weight loss, media weight loss, effectiveness of using media with different abrasive grades and hardness.



**Additive manufactured part before the CHEF process**



**Additive manufactured part after the CHEF process**

## CDF Series

The CDF machine is perfect for processing small and thin components as well as larger parts with a length of up to 150mm. These machines are recommended for processing small to medium batches of parts. One of the main advantages of CDF Series is the reduced processing times for most applications.

The spinning motion of the CDF machine is given by the disc situated at the bottom of an open barrel. The rotating disc makes the media, compound and parts to move in a rolling motion, resulting in effective finishing process in the shortest time. To achieve the desired finishing results it is important to set up the machine RPM, the compound and water mix flow and to use the correct media.

### Key Features

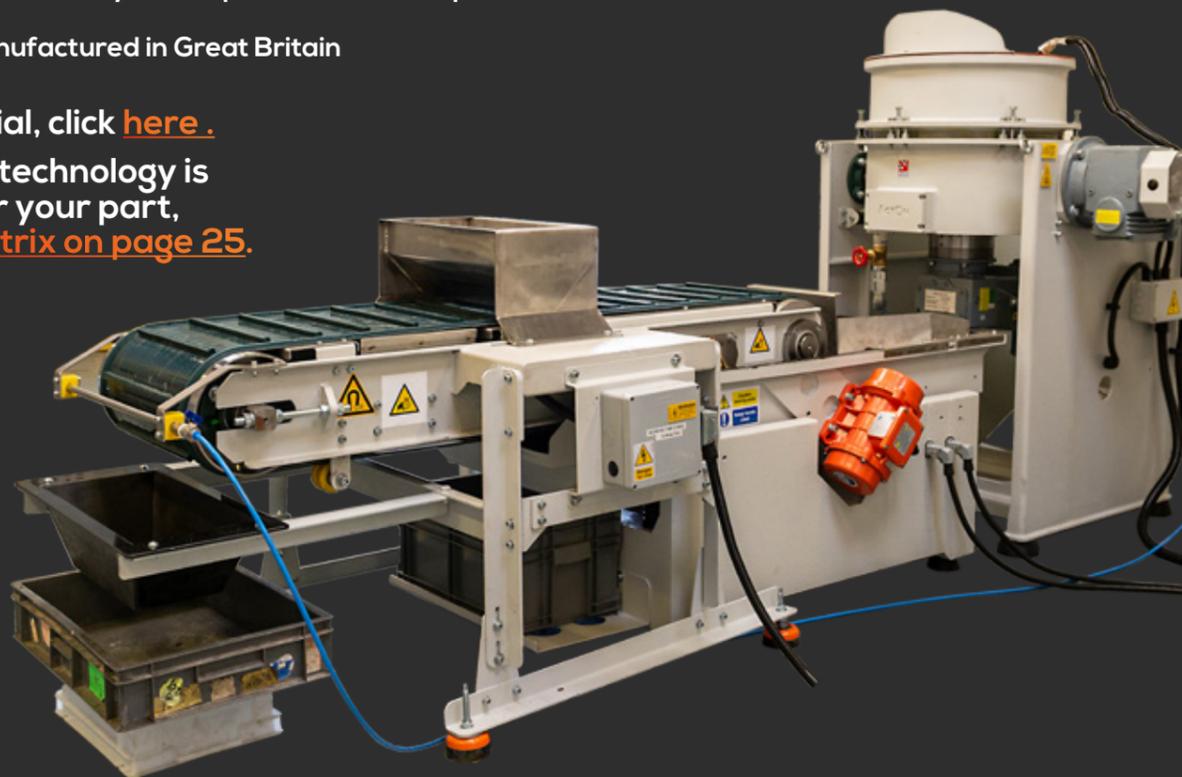
- ✓ Manual and auto gap area adjustment functionality.
- ✓ Temperature sensor to detect high temperature and protect the gap area.
- ✓ Stainless steel upper and lower ring for higher wear resistance.
- ✓ Manual/ auto functionality.

### Key Benefits

- ✓ Efficient in operation
- ✓ Faster than vibratory finishing machines
- ✓ Operator friendly controls
- ✓ Low maintenance
- ✓ Good value for money as it implies a reduced capital investment
- ✓ Proudly manufactured in Great Britain

For a Free Trial, click [here](#).

To find if this technology is best fitted for your part, check the [matrix on page 25](#).



## CLM Series

The CLM machine consists of clamping workpieces inside the process chamber which is driven by two or three strategically placed motors. The spiral, intensive action inside the process chamber allows for components with hard to reach areas to be finished. Mounting the work pieces ensures no part on part contact and the finishing intensity can be precisely controlled by adjustment of the speed and motor angles.

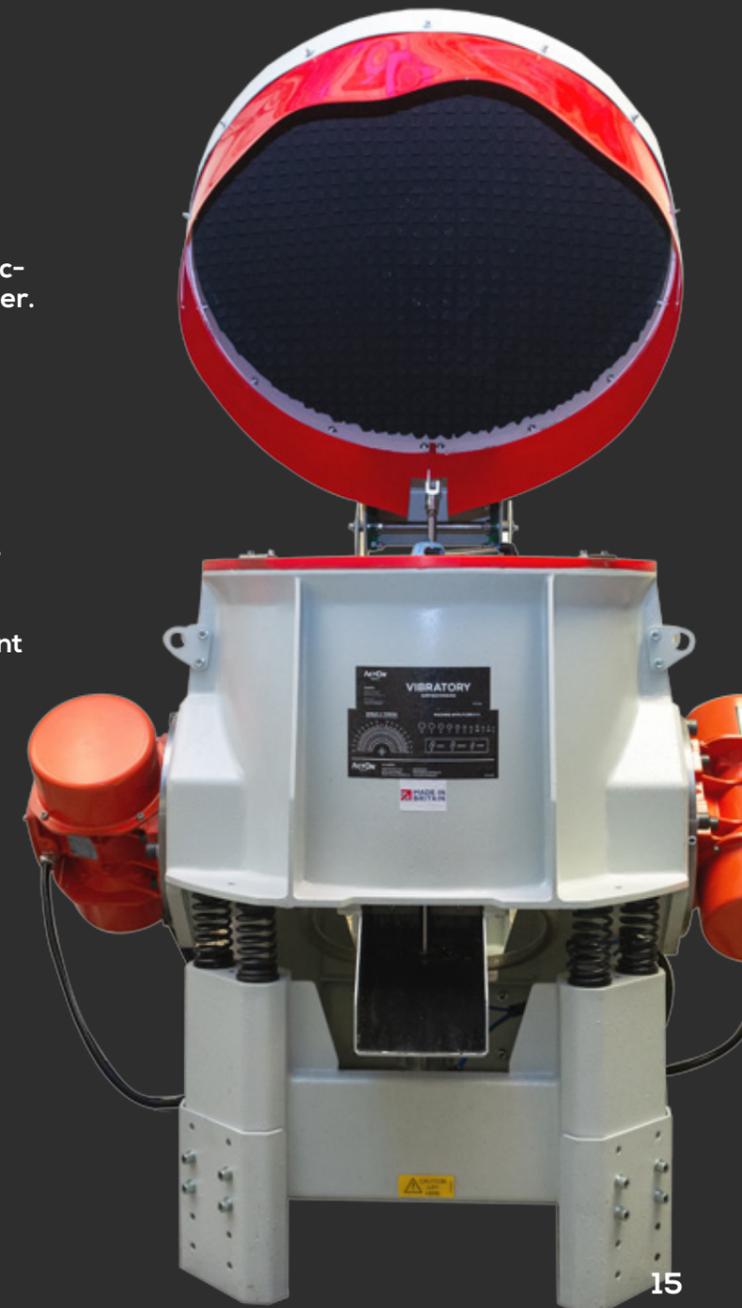
The machine is suitable for achieving a highly polished finish on additive manufactured parts. The CLM machine has been designed to be simple to operate and produce excellent results.

### Key Features

- ✓ Wear resistant polyurethane lining.
- ✓ Pneumatic loading and unloading of parts
- ✓ Compact design.
- ✓ Drive system with sealed bearings for maintenance-free running.
- ✓ Standard control panel to control machine functions including isolator, on/off controls and timer.
- ✓ Speed control
- ✓ Quiet in operation

### Key Benefits

- ✓ Great for achieving a homogenous surface
- ✓ No damage to workpieces
- ✓ Hard to reach areas of components can be accessed
- ✓ Adjustable finishing intensity Design includes system to clamp 3D printed parts with different sizes
- ✓ Reliable and repeatable finish each time.
- ✓ Low maintenance.
- ✓ Cost and time saving.
- ✓ Various sizes of parts can be processed
- ✓ Durable machine due to design, good quality materials & workmanship knowledge.



# CDF Machine Case Study

## Achieving a bright polished finish on Stainless Steel 3D Printed Lizard

### The Aim

To smooth the surface and achieve a bright polished finish on a Stainless Steel 3D printed lizard.

### What we did

We achieved this with our three-stage process, using the ActOn CDF machine, which combines grinding, smoothing and polishing. Due to the rough surface of the part, a high density ceramic media and LQ18 compound were used in the 1st stage.

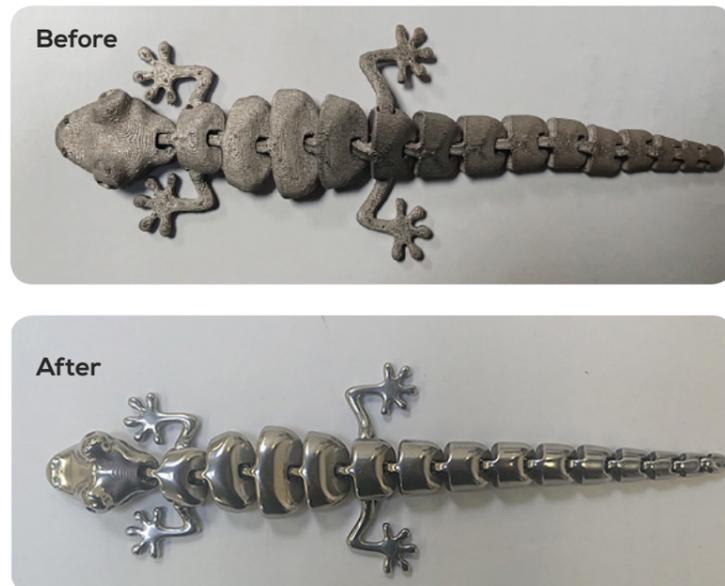
The second stage was carried out using an abrasive plastic media and a finishing compound, which is a good cleaner, polisher. The aim of the second stage was to smooth the 3D printed lizard surface without affecting the dimensional integrity of the component.

Careful consideration to the media shape and size was given to ensure all areas of the component were processed.

Lastly, the 3D printed lizard was processed using a porcelain media and a finishing compound, specially formulated for polishing and brightening of ferrous and non-ferrous metals.

### Result

The total process time took approx. 6 hours which was less than what the customer expected. The process delivered a superior bright polished finish while the dimensional integrity of the part was maintained



# CHEF Case Study

## Improving fatigue strength of additively manufactured Ti6Al4V through surface post processing

This case study has been conducted in partnership with **The Manufacturing Technology Centre (MTC)**, Coventry. For more information on this case study please check the International Journal of Fatigue (2020).

### The Aim

The objective of this study was to investigate how the fatigue behaviour of additively manufactured Ti6Al4V aerospace parts, produced with both laser powder bed fusion and electron beam powder bed, with rough as-built surface could be improved using CHEF finishing.

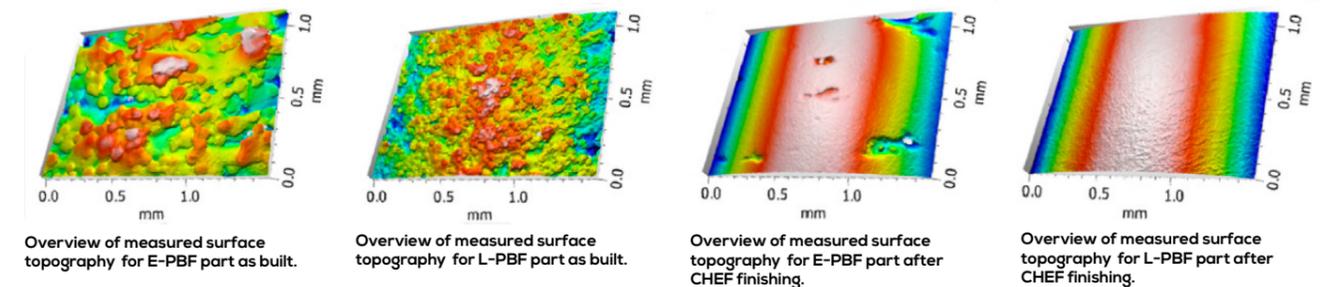
### What we did

Trials have been carried out on different L-PBF and E-PBF parts to reduce the surface roughness and achieve a polished finish. The final approved process included 3 stages:

- ✓ **Cutting stage:** with a highly abrasive ceramic media & LQ18 compound;
- ✓ **Smoothing stage:** with a medium abrasive ceramic media & LQ16 compound;
- ✓ **Polishing stage:** with polishing media.

### Result

- ✓ The fatigue strength on components has greatly increased by over 100% using the CHEF machine
- ✓ It has been determined that CHEF technology is perfect for surface finishing freeform external geometries, simple internal or recessed geometries, complex external geometries



# DLyte Electropolishing Machines

The DLyte® machine achieves high quality finishing for machined, sintered, casting and 3d printed parts, obtaining a mirror finish result. The polishing action reaches every corner of the piece, so it can process inner cavities which cannot be accessed mechanically.

The work-pieces are clamped in specially designed holding systems in the machines. The holder of DLyte® is dragged with a combination of planetary movement, vertical back-and-forth motion &

rotation on its vertical axis inside the drum containing the Dry electrolyte media. The machine includes a high-performance cathode inside the perimeter of the drum allowing uniform electrical fields to achieve homogeneous results across the surface.

The process extracts the material only from the high peaks of the roughness, it does not round the edges and penetrates the internal cavities of the piece that cannot be accessed mechanically.

## Key Features

- ✓ Fully automatic polishing to a mirror finish in one step.
- ✓ Homogeneous polishing across the entire surface of the piece. Respect of tolerances and preservation of initial shape, even cutting edges.
- ✓ Increases resistance to corrosion.
- ✓ No contamination on the surface and no traces of hydrogen on the surface.
- ✓ Controlled costs and predictable lead times.
- ✓ Doesn't generate grinding texture patterns, improving resistance to part wear and fracture resistance, improving the bearing ratio, an improving fatigue resistance.
- ✓ The ability to process complex geometries
- ✓ Ra under 0,09 micrometers
- ✓ Allows for easy processing of channels and cavities.

Click [here](#) for more information on our DLyte Machines.

To find if this technology is best fitted for your part, check the [matrix on page 25](#).



## Key Benefits

- ✓ Maximum size per piece permitted for each model: 180 Ø x 80mm
- ✓ Programmable cycle time.
- ✓ Automatic parameter adjustment.
- ✓ Automatic media conductivity adjustment
- ✓ Storage capacity for X process configurations.
- ✓ Variable motors speed & movement.
- ✓ Digital interface.
- ✓ Customizable settings.
- ✓ Process data can be loaded/ unloaded onto external USB storage drive.
- ✓ Ergonomic loading and unloading of holder.
- ✓ Quick and easy change of media.
- ✓ Anti-vibratory support with wheels for easy handling.
- ✓ Easy and low maintenance costs.
- ✓ Very low noise emissions thanks to the acoustic insulation system.
- ✓ No dust emission.
- ✓ Very low gas emissions.
- ✓ CE certificate.

## DLyte Case Studies



**Before:**  
Ra 0.692 µm  
Rz 3.626 µm

**Before**  
Ra 2,6175 µm  
Rz 12,9495 µm

**After**  
Ra 1,3072 µm  
Rz 4,9578 µm

**After**  
Ra 0.125 µm  
Rz 0.843 µm

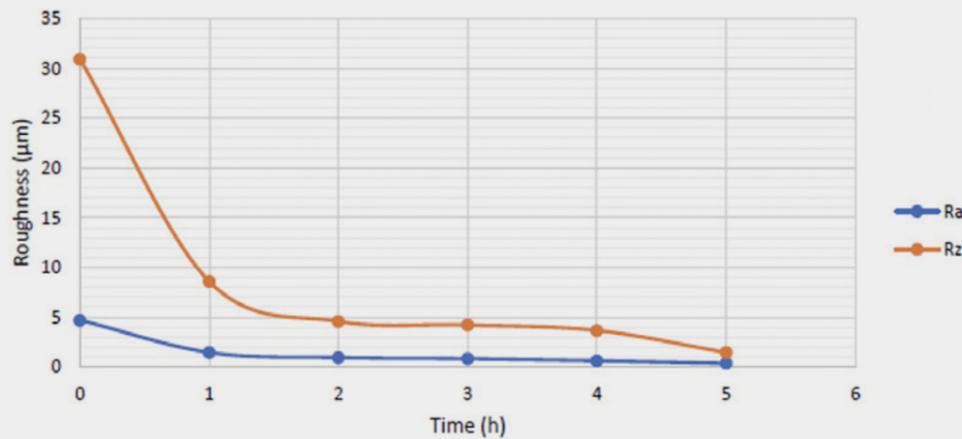
# DLyte<sup>®</sup> Desktop PRO

All the features from a DLyte machine, available in an ultra-compact system. This equipment has been designed to allow any manufacturer, workshop, workroom and SMEs, who would require a cost-effective solution for metal surface finishing, to use the dry electropolishing technology.

## How it works?

DLyte Desktop PRO works by combining the electrical flow created by the high precision rectifier with the movement of the pieces through the electropolishing media. This results in an ion exchange, removing material only from the peaks of roughness. The process does not round edges and can access internal corners that are not easily accessed mechanically.

Roughness evolution vs. time



## Reduce the number of steps in your polishing process

With DLyte Desktop PRO, metal components are homogeneously finished, up to 10 times faster than traditional equipment. DLyte increases productivity and allows any technician to focus in high-value activities while the equipment is finishing the parts.

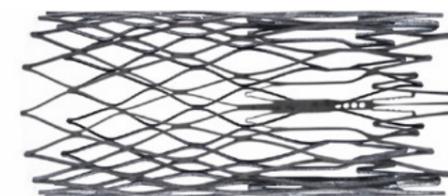


## Key Benefits and Features

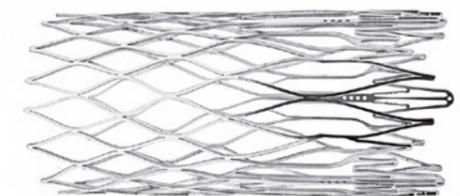
- ✓ Consistent surface finishing results every time.
- ✓ Combines the performance of DryLyte technology with the ease of a plug-and-play system, allowing a higher quality surface finishing in comparison with manual polishing.
- ✓ Affordable finishing solution.
- ✓ Pre-set settings and opt-in advanced controls allow you to finish metal parts at the press of a button.
- ✓ The DLyte Desktop does not require special installation.
- ✓ It operates with a standard household electrical plug.
- ✓ Deduced loading and unloading times due to the holder fixation system with easy pressure and automatic locking system.
- ✓ Includes an advanced and intuitive interface.
- ✓ Space-saving as it can be operated on top of a table of 465 mm x 465 mm.
- ✓ Smooth and silent in operation.
- ✓ The automation of surface finishing with DLyte Desktop PRO protects the technician from the exposure to the chemical agents at work.
- ✓ Consumables are safe and clean, without hazards of chemical liquids waste or dust during the process.
- ✓ Easy to maintain
- ✓ Achieves an Ra under 0,01 micrometers
- ✓ CE certificate.

## DLyte<sup>®</sup> Desktop PRO Technical Specifications

Machine Dimensions (in mm/ inch)	465 x 465 x 510/ 18.3 x 18.3 x 20.1
Machine Weight	33 kg
Power	1.2 kW
Voltage	110 V/ 220-240 V Optional transformer kit 110 V/230 V



before



after

# Surface Finishing Range

## Vibratory Finishing Bowls

Each of our Bowls are simple to operate and highly efficient, manufactured in classic designs and sizes to meet your unique applications.

### Key Features & Benefits

- ✓ Wear resistant casted hot cured polyurethane lining.
- ✓ Acoustic lid for noise reduction.
- ✓ Flap clearing system.
- ✓ Inverse separation.
- ✓ Undersized media separation.
- ✓ Single and Variable speed motor. Powerful drive system with sealed bearings for maintenance-free running.
- ✓ Flyweights set for optimum action in bowl.
- ✓ Bench top options available.
- ✓ British high-quality product.
- ✓ Very quiet machine in operation due to the acoustic lid.
- ✓ Wear-resistant lining.
- ✓ Easy to operate.
- ✓ Low maintenance.

## Vibratory Finishing Troughs

We offer Troughs in many different sizes and an infinite choice of length and width combinations, making them one of our most versatile. These are particularly useful for larger components.

### Key Features & Benefits

- ✓ Wear resistant casted hot cured polyurethane lining.
- ✓ Acoustic lid for noise reduction.
- ✓ Single and variable speed drive.
- ✓ Powerful drive system with sealed bearings for maintenance-free running.
- ✓ Unload door for complete discharge of media and parts.
- ✓ Compact design.
- ✓ Divider plates to remove risk of impingement.
- ✓ Painted or Stainless Steel side panels available.
- ✓ Portable options available.
- ✓ British high-quality product.
- ✓ Simple to operate and highly efficient.
- ✓ Wear-resistant lining.
- ✓ Easy to operate.
- ✓ Low maintenance.

## Vibratory Finishing Duals

The orbital Dual finisher works to both deburr and dry in one single unit. This is both an excellent and economical finishing option.

### Key Features & Benefits

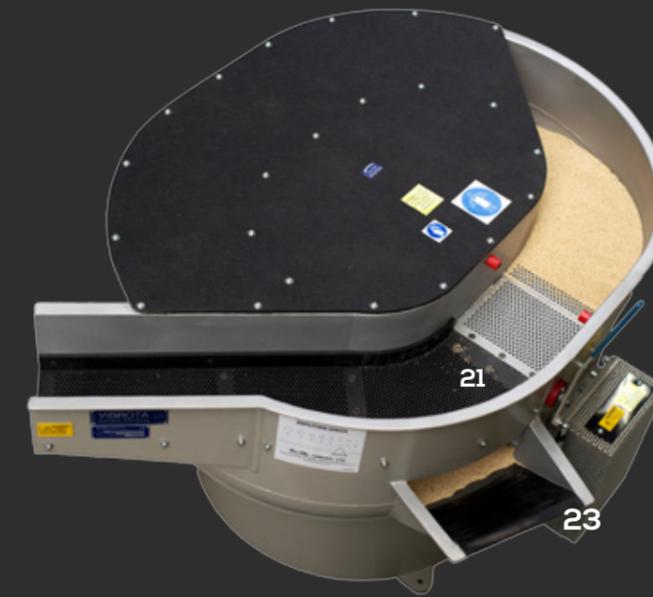
- ✓ Wear resistant casted hot cured polyurethane lining.
- ✓ Acoustic lid for noise reduction.
- ✓ Flap clearing system.
- ✓ Inverse separation.
- ✓ Undersized media separation.
- ✓ Single and variable speed motor.
- ✓ Powerful drive system with sealed bearings for maintenance-free running.
- ✓ Flyweights set for optimum action in bowl.
- ✓ Option to carry out both wet and dry process in one machine.
- ✓ Accessible process chamber.
- ✓ British high-quality product.
- ✓ Low maintenance.
- ✓ Suited to small and medium volumes of parts
- ✓ Can be used as a continuous or batch system.
- ✓ Space saving.
- ✓ Energy efficient.

## Driers

Our unique, elliptical-shaped Vibratory bowl drying machines suit a variety of finishing needs. Our machines are compact in size, and simple to operate.

### Key Features & Benefits

- ✓ Vibratory driers have an elliptical shape to produce 100% discharge of parts.
- ✓ Side loading chute of parts from vibratory bowl machines.
- ✓ Flap clearing system to avoid part and media entrapment.
- ✓ Single and variable speed motor.
- ✓ Powerful drive system with sealed bearings for maintenance-free running.
- ✓ Flyweights set for optimum action in bowl.
- ✓ Can also remove light grease on parts as the agro media absorbs it.
- ✓ Effective as a 1 lap process.
- ✓ Other driers in our range include rotary and conveyorised ovens.
- ✓ Suitable for in line or batch work.
- ✓ Can be used for drying and/or fine polishing using agro media.
- ✓ Takes less floor space due to the elliptical shape.
- ✓ Suitable for in line or batch work.
- ✓ Can be used for drying and/or fine polishing using agro media.



# Automated Vibratory Finishing Systems

## Finishing Solution for Low Volume Additive Manufactured Parts

Our SPU-1 is ideally suited for small batch works and delicate components, which can be used as either a batch or a continuous system.

This vibratory finishing system is perfect for deburring, descaling, degreasing, cleaning, smoothing, radiusing, polishing and drying. This is both an excellent and economical finishing option.

### System Benefits and Features

- ✓ Portable unit.
- ✓ Built in compound recirculation system.
- ✓ Water/compound can be filled from the side of the machine.
- ✓ Available in 3 phase and 1 phase.
- ✓ Compact design
- ✓ British built high-quality product
- ✓ Efficient in operation
- ✓ Quiet in operation
- ✓ Operator friendly controls



# Which Technology Works for My Part?

We have developed a scoring matrix based on some key criteria to help you find the best solution for your components.

	High Rate of Surface Finish Reduction	Maintenance of Geometry	Intricate Finishing of Complex Geometry	High Gloss, "Mirror" Finish
Vibratory Finishing Machines	2	4	2	2
CDF Machine	4	3	2	3
CHEF Series	5	3	2	4
CLM Series	3	4	3	3
DLyte Technology	1	5	5	5
AM Blasting	1	5	4	1

### Notes:

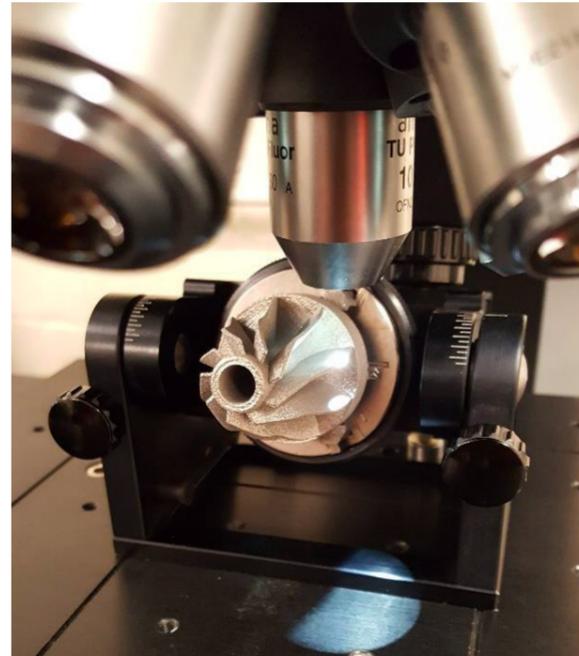
1. Key Scale 1 to 5; where 5 is considered most suited to achieve the surface finish required.
2. A combination of process technologies may be required for optimal results.

# Case Study

## Improve surface finish of Ti-6Al-4V/Al205 additive manufactured impeller.

### About this project

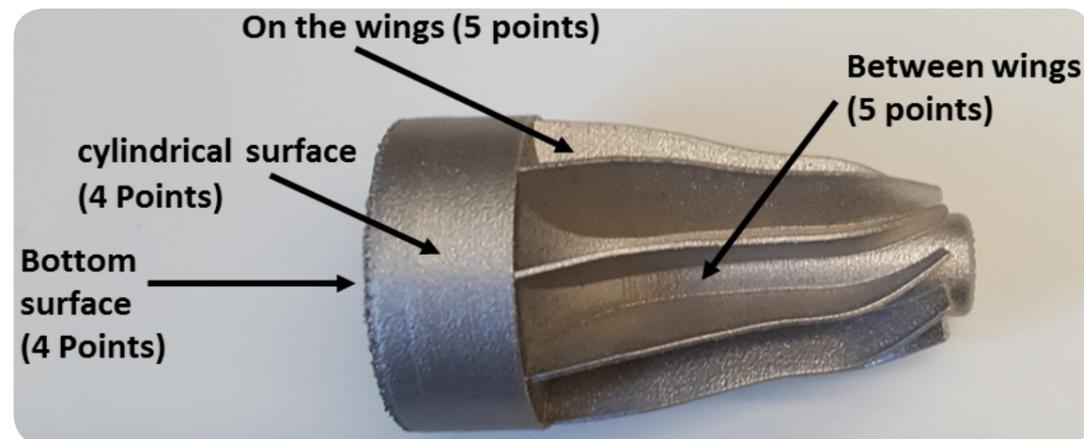
This case study has been conducted in partnership with **University of Birmingham** and **AMTECAA**. Its primary scope was to improve the surface roughness of this automotive part in different positions. This was done after 3D printing and after polishing with different methods to compare the effectiveness of the polishing method.



### Measurement method

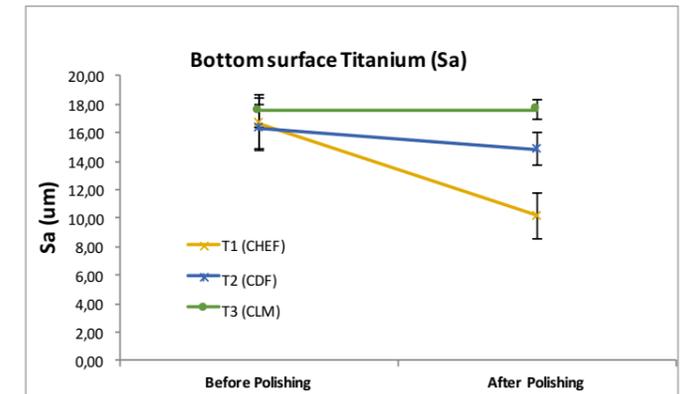
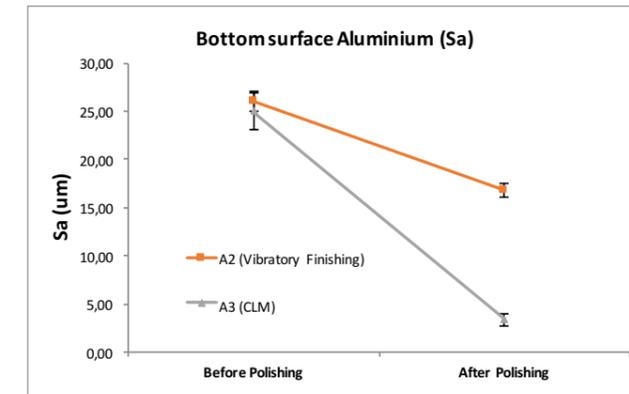
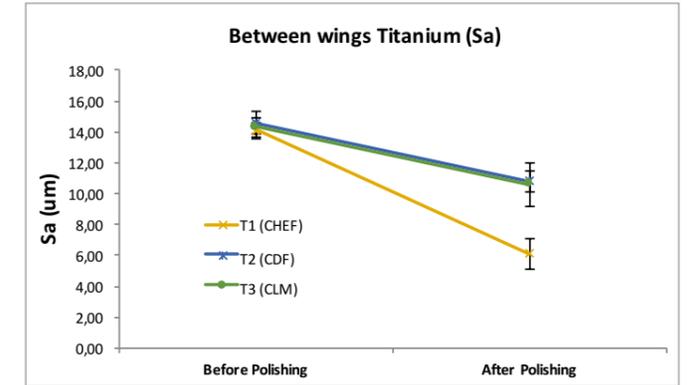
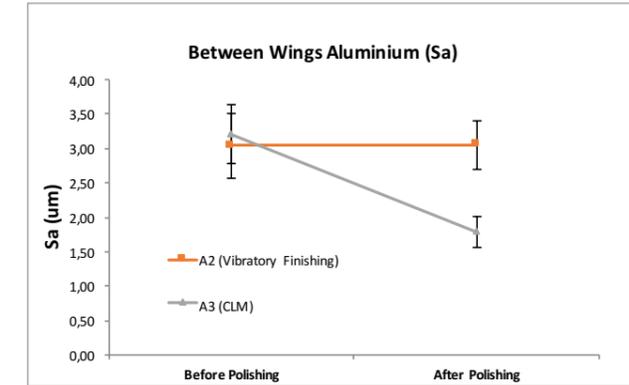
To measure the surface roughness of the samples, a focus variation microscope (Alicona G5) has been implemented. Surface roughness is reported as Sa (arithmetical mean height). The measurements were done on three, 3D printed Aluminium impeller (labelled as A1, A2 and A3) and three Titanium (labelled as T1, T2 and T3).

The polishing methods used included: Vibratory Finishing, CLM finishing, CHEF finishing, CDF finishing. Below you can see the positions where the measurements have been taken:



## Finishing trials

Further to the trials conducted in ActOn finishing machines it has been determined that the most efficient technology to polish and improve the surface roughness would be the CHEF technology, followed by the CL, technology & CDF finishing. While vibratory finishing has improved the surface roughness of the impellers, the results show that this method was less efficient.



## Results

The process delivered a superior bright polished finish, while the surface roughness was improved using the proposed technology. Moreover, the dimensional integrity of the part was maintained.



# Consumables for Surface Finishing

## 3D Printed Components

Over the years, we have been at the forefront of the industry, developing a range of consumables with the aim of achieving the desired finish on various components.

By working closely with highly skilled manufacturers, our Engineers understand the numerous challenges faced in the 3D printing industry, which has led to the development of suitable consumables.

Our most popular consumables for the additive manufacturing industry:

### Ceramic Media

Our ceramic media comes in a variety of abrasive grades, starting from low abrasive to super finishing. This type of media is suitable for various deburring, radiusing and polishing processes, and is specially formulated to go hand-in-hand with ActOn's compounds.



Media Grade	Grinding Performance	Media Shape													
		ACT Angle Cut Triangle	SCT Straight Cut Triangle	ACC Angle Cut Cylinder	SCC Straight Cut Cylinder	W Wedge	S Star	TR Tristar	ACTR Angle Cut Tristar	E Ellipse	ACE Angle Cut Ellipse	AR Arrow	R Rhombus	B Ball	
P	Polishing media	○	○	○	○	○		○	○	○	○	○		○	
CFB	Medium abrasive	○	○	○	○					○					
SFB	Highly abrasive	○	○	○	○	○	○	○	○	○	○	○	○	○	

### Plastic Media

Our range of plastic media comes in various grades, shapes and sizes and is specially designed for smoothing processes and removing light burrs. This media also reduces the risk of part damage, and gives a consistent, bright and matte finish. We offer plastic media in the following shapes and grades:



Media Grade	Grinding Performance	Media Shape									
		C Cones	Pa Paracones	P Pyramid	T Tetra	TR Tristar	W Wedge	O Octocone	B Button	ACT Angle Cut Triangle	
YL		○	○	○	○	○	○	○	○	○	
BL		○	○	○	○	○	○	○	○	○	
BR		○	○	○	○	○	○	○	○	○	
PTX		○	○	○	○	○	○	○	○	○	

### Shot Blasting & Peening Media

ActOn offers a range of Abrasive Consumables for shot blasting and peening processes including: **Aluminium Oxide (White and Brown), Glass Beads and Zirblast media.**



Using ActOn abrasive consumables you can achieve the desired Sa standards to ensure that the part's surface is cleaned to the required specification

### Dry Polishing Media

ActOn Dry Polishing Media is manufactured from corn cob (Maizorb) and Walnut Shell and can be used for a variety of finishing applications, including drying, polishing and cleaning.

We developed our dry polishing maizorb to produce a bright mirror finish. This can be used both in vibratory and high energy machines. The pre-treated walnut shell is perfect for producing a high luster on components requiring a high-quality aesthetic finish.

All of our dry polishing and pre-treated medias are bovine free.



### Finishing Compounds

ActOn liquid compounds are specially formulated for vibratory and high energy finishing machines. They comprise of abrasives, brighteners, lubricating agents, cushioning materials & cleaning agents. Our compounds are environmentally friendly and biodegradable that suit our customers' requirements.

Compound Name	Description	PH	Application guide
LQ9	Specially formulated for polishing and brightening of ferrous & non-ferrous metals.	< 4	<b>Excellent for:</b> brightening & polishing, pickling, foaming <b>Good for:</b> ball burnishing
LQ15D	Specially formulated for die-cast products. Excellent cleaning & emulsifying properties.	8 - 8.5	<b>Excellent for:</b> cleaning <b>Good for:</b> brightening & polishing, ball burnishing, degreasing, de-oiling <b>Average for:</b> foaming
LQ16	Concentrated cleaner and polisher for non-ferrous metals.	8.5 - 9	<b>Excellent for:</b> brightening & polishing, ball burnishing <b>Good for:</b> cleaning <b>Average for:</b> foaming
LQ18	Light descaling, removal of rust & discolouration due to heat treatment processes. Removes metal oxides to produce a bright polish, retaining base metal colour.	1 - 2	<b>Excellent for:</b> brightening & polishing <b>Good for:</b> ball burnishing, pickling <b>Average for:</b> foaming
LQ19	Multi-purpose compound for all metals.	8 - 8.5	<b>Good for:</b> ball burnishing, cleaning, corrosion inhibition <b>Average for:</b> brightening & polishing, foaming

Click [here](#) to download our Consumables brochure for further technical information and media dimensions.

# Subcontract Service

On top of our state-of-the-art machinery and media, we also supply a range of support and training services. Moreover, we'll tailor our services and products to your needs, not the other way around. Our finishing service is all about you.

We suit our Finishing Technology and Subcontract Services to cover your needs. From a proved surface finishing technology we will adapt it according to your requirement. Just [contact us](#). We will do the rest.

## Custom project development:



Don't just think about it.  
It's now time to **ActOn** it.



CHEF, CLM, CDF, Shot Blasting & Vibratory Finishing Subcontract



Inspection Services



Installation, Training, Maintenance Services



Equipment Refurbishment & Spare Parts Service

# What Our Customers Say

" We purchased a CHEF machine from ActOn in 2019 to help with our capacity constraints on our internal deburring process. The professional service received from ActOn Finishing was invaluable especially throughout the qualification process. The purchasing of the CHE50 has increased our capacity by 200% while maintaining a quality product."

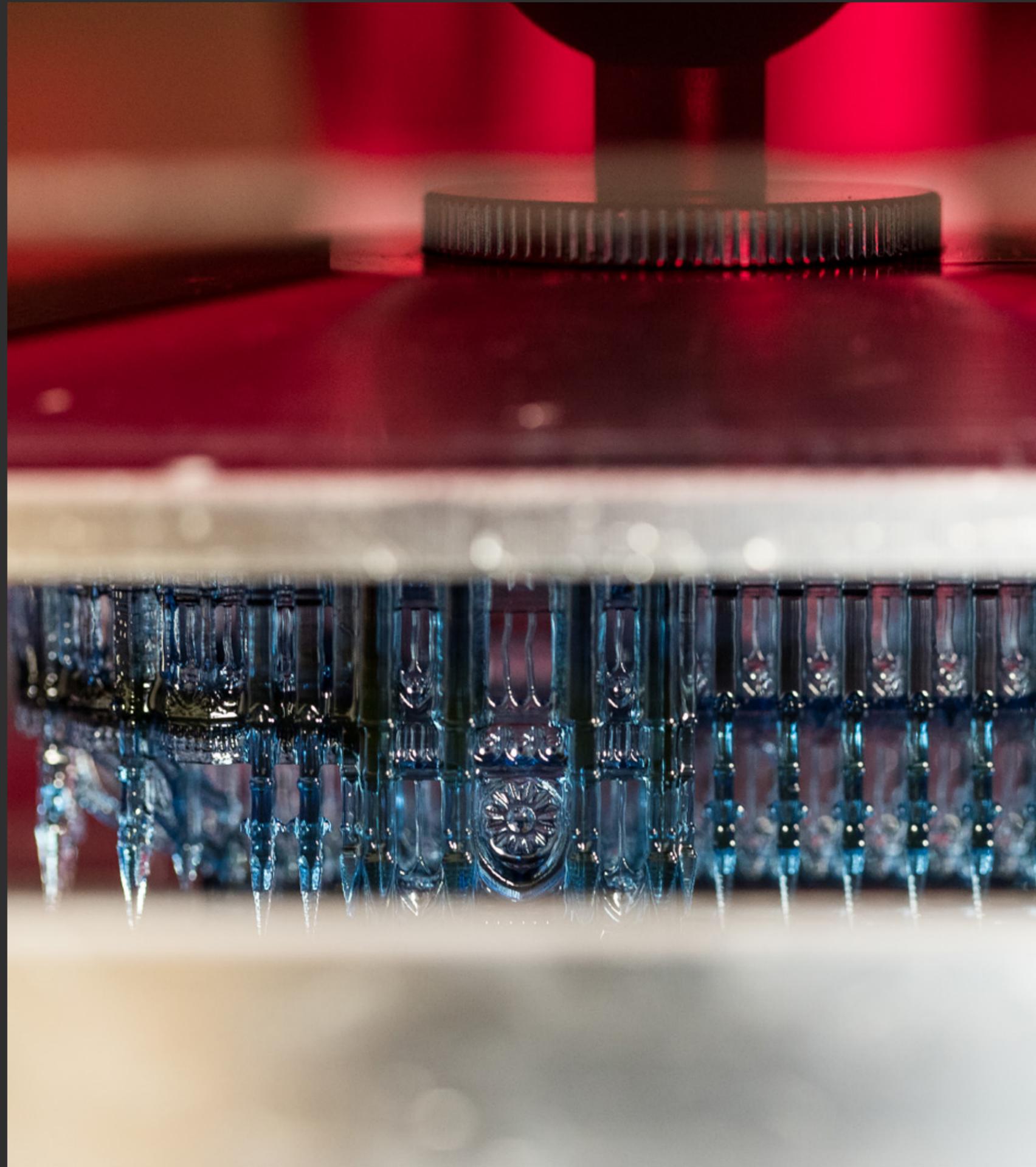
Adam Cook, H.C. Starck Ltd.

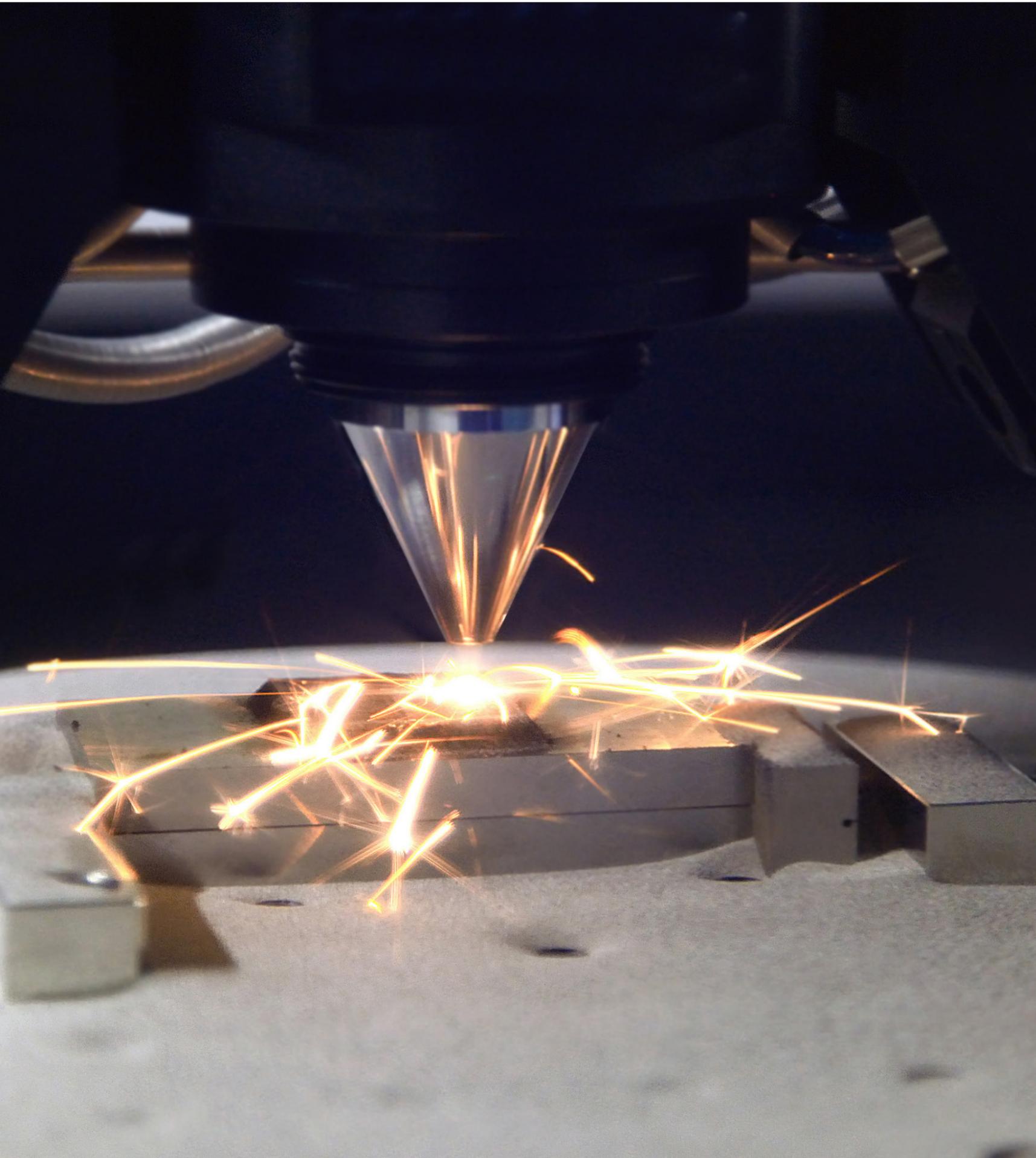
"The CPM-10 has provided invaluable insight into finishing both EBM and SLM AM parts. This has provided the MTC with a low cost means to efficiently and effectively conduct R&D into surface finishing of additive manufactured parts."

Ruaridh Mitchinson, Research Engineer at The MTC

"Professional, knowledgeable, on-time, good value and friendly. You couldn't want for more. ActOn are always the first place on our list for part finishing."

Samuel Nottage-McNeice, MAVEN Technology





## Quality You Can See

We pride ourselves on our excellence, and over the years we have successfully demonstrated an ongoing compliance with ISO quality and environmental standards. We're also an approved supplier for many of our industries, including medical and aerospace.

For ISO, we currently hold:



**“ The bitterness of poor quality remains long after the sweetness of low price is forgotten. ”**

Benjamin Franklin

## we redefine

ActOn Finishing Limited  
213 Torrington Avenue  
Tile Hill, Coventry, CV4 9HN.  
United Kingdom.

+44 (0) 24 7646 6914

[enquiries@acton-finishing.co.uk](mailto:enquiries@acton-finishing.co.uk)

[www.acton-finishing.co.uk](http://www.acton-finishing.co.uk)