

SLM
SOLUTIONS

**Rocketing
Ahead!**



PROJECT DIRECTED BY
Liv Culling

WRITTEN BY
Niamh Spence

→ Sam O'Leary
CEO, SLM Solutions

SLM Solutions



Rocketing Ahead!

From tooling to aerospace, energy to automotive, additive manufacturing is here to change the future of production, and SLM Solutions is taking the lead. With its mission to make life easier for its diverse customer base, it can make almost anything out of metal using its advanced manufacturing technique. **SLM Solutions CEO, Sam O'Leary,** tells **Business Enquirer** what sets his company apart from the rest.

Only a few years ago, 3D printing seemed like a thing of the future. Well, the future is here. Also known as additive manufacturing, the process can now take on production at scale.

Simplistically, it is a layer-by-layer process by which lasers solidify metal powder at a granular

level. Each layer is melted into the layer beneath to create the final product.

"Before our customers go into production, their product is envisioned using generative design," explained Mr O'Leary. "This process uses a computer programme to identify stress points and efficiencies. Quite simply, the technology can see things in a way humans can't".

From a complexity perspective, this means that no job is too big for SLM Solutions.

Despite having recently launched the world's fastest powder bed fusion additive manufacturing machine, Mr O'Leary highlighted that they wouldn't stop there. In fact, its R&D team will continue to redefine the status quo in every possible and seemingly impossible direction.

"Additive manufacturing is changing the way the world manufactures," said Mr O'Leary, "we are utilising the latest technology and science rather than using traditional techniques of force (think subtractive casting). This digitisation of the additive manufacturing process makes it more sustainable and enables us to be a driving force behind industry 4.0 in the industrial revolution".

Brit Abroad

SLM Solutions CEO, Sam O’Leary, is British-born and bred, so what led him to the Brick Gothic, North German City of Lübeck?

After realising at 18 that life in the classroom wasn’t for him, Mr O’Leary started an apprenticeship at a local engineering firm. “I went from strength to strength learning different roles, and then I was headhunted for a role at Alstom Power,” he shared. Alstom Power, now GE, was Mr O’Leary’s first move out of the UK, taking him to Switzerland, where he headed an R&D organisation. He then moved from General Electric to SLM Solutions in Germany.

“Working in a different country and a different culture is a great experience for personal growth,”

said Mr O’Leary, “It’s exciting to be able to head up a smaller company like SLM Solutions, where I can focus on my passion for what we do, rather than pushing against corporate complexities”.

SLM’s Got Talent

SLM Solutions takes a flat hierarchy approach, which Mr O’Leary considers important in driving passion and intensity. “We consider ourselves to be one group of people, one team,” he said.

As such, SLM Solutions are planning to move away from the traditional structure of an office to having open spaces, collaboration rooms and less segregation.

Mr O’Leary is very passionate about the business’s talent and takes a hands-on approach

TRUSTED
AM Serial Production
AS9100D & ITAR Accredited **LEADER SINCE 2006**

CA
CUMBERLAND
A D D I T I V E



TURNKEY SERVICES: 3D Printing, Heat Treat, Finish, Test, Inspect
 Metal Powder Bed Fusion (PBF) | Plastic Selective Laser Sintering (SLS)
 CNC Machining and Post Processing | Design for Additive Manufacturing Services

cai-3d.com | 512-982-7777 | info@cai-3d.com | Pflugerville, TX | Pittsburgh, PA

Cumberland Additive

Cumberland Additive, is an established force in the additive manufacturing (AM) industry, offering prototype through serial production of parts and engineering design services in both metals and polymer materials, with a focus on Powder Bed Fusion technology. **Cumberland** has partnered with some of the largest global aerospace, defense, space, and oil & gas companies to deliver repeatable high-quality parts.

To leverage recent growth in the energy, defense, and space markets **Cumberland** has expanded operations to a new Pflugerville, Texas location and is also establishing a second facility at the Neighborhood 91 Additive Manufacturing production campus located at the Pittsburgh International Airport.

The expansion in Pflugerville has enabled **Cumberland** to add 30% more square footage to operational capacity, including additions to its fleet of **SLM@280** systems, along with machines from EOS (M 400-4) and the opportunity to grow their GE (Arcam Q20plus) electron beam AM technology. The company has also expanded its finishing capabilities with additional Haas 5-Axis CNC machining mills and lathes.

The Neighborhood 91 location is gearing up with new large format printers, including a new **SLM@500**, coupled with CNC Machining Solutions to service the entire additive manufacturing campus.

In 2022, **Cumberland** is demonstrating that AM is here to stay by responding to customers with turnkey solutions that meet their critical part and specification requirements. With 16 years of growth, **Cumberland** is an established contract manufacturer that unlocks the value of AM for partners with data driven insights, exceptional design for AM solutions, and operational agility.

www.cai-3d.com

BECKER

What do **BECKER** and **SLM Solutions** have in common?

They are both pioneers and leaders in their technologies in the metal 3D printing industry today.

BECKER sets the standard for gas-tight blowers and heat exchangers in inert gas recirculation of metal 3D printing machines. Thus creating the best build chamber atmosphere for superior 3D printing results.

In addition to gas-tight blowers and heat exchangers specially designed for metal 3D printers, **BECKER’S CYCLEAM** offers metal AM machine manufacturers intelligent gas recirculation and filtering with extremely long maintenance intervals, up to one year.

As a result, **CYCLEAM** enables the operators hassle-free long stable print jobs without worrying about remaining filter lifetime or cleaning cycles, the prerequisite for increased productivity.

With almost 140 years of solid experience in air technologies, **BECKER** provides cutting-edge solutions to a broad range of vacuum and blower related applications worldwide. Make it Premium. Make it **Becker**.

www.becker-international.com

Rocket Factory Augsburg (RFA)

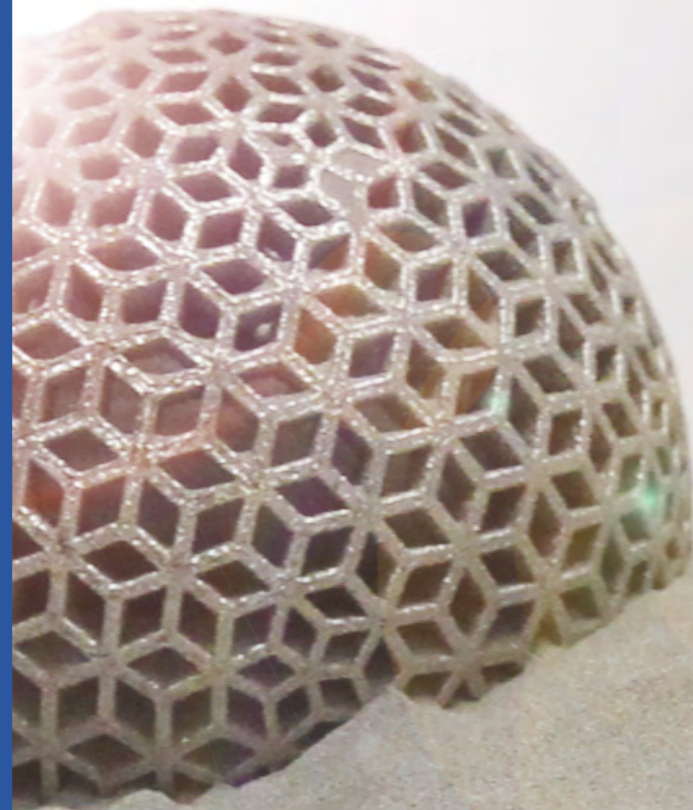
Rocket Factory Augsburg (RFA) was founded in 2018 with the mission to significantly reduce launch costs in the space industry. The company's goal is to launch satellites into low Earth orbits and beyond on a weekly basis to enable a variety of business ideas from space.

The **RFA ONE** rocket combines three key competitive advantages: A customer-focused service with precise in-orbit delivery and a high degree of mission flexibility through its orbital stage; at a highly competitive price; enabled by superior staged combustion technology, industrial automation with as many components off-the-shelf as possible, and low-cost stainless steel structures.

The orbital stage can serve as a platform for a wide range of applications and precisely deploy entire constellations in orbit with just one launch. It can change altitude and inclination, perform RAAN phasing and provide up to five years of in-orbit services such as monitoring, maintenance and eventually de-orbiting. **RFA ONE's** structures are made of low-cost stainless steel, which not only enables simple, fast and inexpensive series production, but also reuse of the first stage. On the other hand, it is the staged combustion Helix engine that burns fuel 7% more efficiently, which translates into 30% more payload capacity. At the same time, it is significantly more sustainable because, as a closed cycle engine, it emits hardly any sooty exhaust gases into the atmosphere. **RFA** is very proud to be the first company in the European Union to develop and test a fully integrated full-scale staged combustion engine.

RFA has already secured several customers for its first flight in early 2023.

www.rfa.space



when it comes to recruitment. *“We always have technology roles available because we need particular people with a particular set of skills, so I’m always keen to keep the door open,”* he said.

Of its 550 employees, there are 30 different nationalities represented, with the majority located in Lübeck. *“The fact that we can attract the world’s best talent is a fundamental enabler to extending our position of technology leadership”* shared Mr O’Leary.

This unique and diverse spectrum of cultures offers immense benefits in terms of sharing different perspectives and techniques.

Adapting to Change

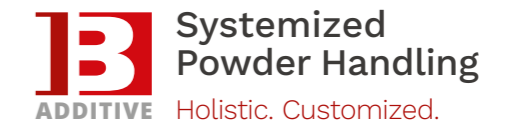
Northern Germany is known for its traditionalism. However, the COVID-19 pandemic forced companies to review their approaches.

Despite 40-50% of its staff continuing to be on-site day to day, staff now have the opportunity to work from home two to three days a week if they are able.

“This has also allowed us to recruit a better quality of talent from further afield,” explained Mr O’Leary, *“there is no longer a requirement for staff to be in the office every day. The pandemic changed our perspective on flexibility. We can now recruit from around the world on the basis that the colleague physically comes into the office once a month, for example”*.

The pandemic also encouraged SLM Solutions to make even more technological advancements. *“We adapted from entertaining one or two customers a week in the showroom to implementing virtual tours of our facilities and what we have to offer,”* shared Mr O’Leary, *“This has opened doors to a wider customer base”*.

Despite its challenges, SLM Solutions saw growth rates of more than 20% in the first year of the pandemic and then again in the second year.



Individual system solutions for metal powder handling
Automated into the future

- › Ultrasonic screening for AM
- › AM powder recovery
- › Printer independent
- › Process stable
- › Compact design



IB Verfahrens- und Anlagen-technik GmbH & Co. KG

Großer Kamp 10-12
32791 Lage
T: +49 5232 69190-200
E: info@ib-additive.com

www.ib-additive.com

SLM Solutions

A Smörgåsbord

With the ability to manufacture practically anything made of metal, SLM Solutions has a diverse range of name-droppingly good customers.

The pandemic and the current geopolitical situation have encouraged larger OEMs to invest in technology and reshore processes. SLM Solutions is, therefore, an attractive additive manufacturer, the technology needing little in terms of human labour.

“Once a human sets up the machine, the process is labour cost agonistic,” said the CEO.

The growth in customer base has enabled the business to work on a wide range of projects.

“One of the coolest projects we work on is Bugatti brake callipers, which are produced with name personalisation. Cristiano Ronaldo has one, for example,” said Mr O’Leary.

Now, the factory floor can go from producing high-value products like Bugatti’s brake calliper to high volume items such as locomotive callipers which are being used in tram systems in Italy.

“The high-value items can be very cool, but the high volume products are helping our business to grow, so they’re equally as valuable to us”.

SLM Solutions also works for customers such as NASA, BMW, Collins Aerospace, Divergent, Siemens, MAN Energy Solutions and Rolls Royce, to highlight just a few.

“What is attractive about our business is that the process of discussing requirements, through to ordering the technology and then producing the item can take days and weeks rather than months and years,” said Mr O’Leary.

Much like his proactive approach with his staff, Mr O’Leary ensures he has a key involvement with the business’s customers, too. *“I ensure I speak to the majority of our customers throughout their journey with us,”* he said, *“this could be a phone call, or something as simple as a text message, depending on how the client functions”.*

Its flexible approach is another USP of the business. Changing tact to having more empathy with how a client operates has created more loyalty from its customer base.



RFA
Rocket Factory
Your Launch into the New Space

www.rfa.space

[@rfa_space](https://twitter.com/rfa_space)

[Rocket Factory Augsburg](https://www.linkedin.com/company/rocket-factory-augsburg)

Learn more



YOUR SOLUTION PROVIDER FOR GAS RECIRCULATION IN METAL 3D PRINTERS

MAKE IT PREMIUM
MAKE IT BECKER.

More about gas-tight blowers and components from Becker at www.becker-international.com.

Pillars of Success

“As the technology pioneer, we create endless possibilities to change the future of manufacturing forever”, states SLM Solutions’ mission statement.

Its CEO shared with Business Enquirer the three pillars which help the business to achieve this: Technology Leadership - working with SLM Solutions gives customers access to world-class engineers.

Operational Leadership - SLM Solutions does things in a structured and orderly way. What it considers to be “the right way”.

Customer Proximity - SLM Solutions want customers to see it as the model supplier. When the customer needs something, SLM Solutions is there for them.

“It’s not rocket science; these are three simple pillars that make our business work and our customers successful,” said Mr O’Leary in conclusion.

www.slm-solutions.com



Manufacturing Feature



Bertram Dental Lab

Founded in 1976, **Bertram Dental Lab** of Menasha, WI USA manufactures CoCr removable partial dentures (RPDs) for US based lab partners nationwide. Owned by cousins and business partners **Tim Bertram** and **Joe Bertram** their lab is committed to manufacturing their work within the USA and supplying their lab partners a superior additive manufactured product.

As the largest manufacturer of **Chrome RPDs** in the USA, they have opted to exclusively use **SLM Solutions** metal printers and **LazerTEK®** partial alloy for superior results. "While less expensive printers are available, quality, consistency and capacity were our goal. We partnered with **SLM Solutions** in 2015 and never looked back. We have both grown exponentially together through all the growing pains," said Tim Bertram.

Bertram Dental Lab has achieved technologically advanced results as independently lab tested. US lab partners looking to supply their Doctors with a **LazerTEK®** partial can do so by partnering with **Bertram Dental Lab**. They have two digital workflow options.

"Demand has been very strong, and we are proud of the results our printing process has produced. In fact, our new 21,662 sq/ft facility that we moved into early 2021 is filling quickly. Most recently we have shifted our focus to IT improvements and integrations, thus making a more seamless experience for our lab partners through our new website and upgraded partner portal. We really have the right IT/Development team in house that shares the long-term vision," says Joe Bertram.

www.bertramdental.com

Getting Started Is Simple!

LazerTEK® Partials

The Premier CoCr Laser-Printed Framework

Bertram Dental Lab is proud to be the exclusive provider of LazerTEK® partials. Backed by selective laser melting (SLM) technology, these partials are never at risk of traditional casting issues, such as porosity, miscasts, or supply chain disruptions. Every LazerTEK® Partial is manufactured using German SLM Solutions printers, the same equipment used to manufacture Bugatti supercar Chiron brakes.

Benefits:

- ▲ Superior Yield & Tensile Strength
- ▲ High Accuracy
- ▲ 5-Year Warranty
- ▲ 5-Day In-Lab Turnaround (From Your Model)
- ▲ 2-3 Day In-Lab Turnaround from Your RPD .STL Upload
- ▲ 100% Manufactured in Wisconsin



Independent Test Group-C0212-H

Customer Alloy Name	LazerTEK® Partial Alloy			
Material	CoCrMo			
Room Temperature Tensile Testing	ASTM E8/E8M-21			
(3) Test Samples per group				Dated 8/23/2021

COMPARISON

	LazerTEK® Partial Alloy	Vitallium 2000 Plus	Vitallium 2000	Vitallium
Yield Strength-MPa The Ability to resist permanent deformation				
X-Average	878	-	-	-
Y-Average	850	-	-	-
Z-Average	815	-	-	-
Total Average	847.67	680	600	616
Tensile Strength-Mpa Fracture Resistance				
X-Average	1074	-	-	-
Y-Average	1042	-	-	-
Z-Average	1029	-	-	-
Total Average	1048.33	960	855	855
Elongation-% Adjustability				
X-Average	4.9	-	-	-
Y-Average	4.5	-	-	-
Z-Average	6.7	-	-	-
Total Average	5.37	10	6	4.5

See for yourself the exceptional quality of the LazerTEK® Partial Alloy. Getting Started Is Simple!

Visit bertramdental.com to gain access to our online Rx forms, shipping service OR upload partner portal. Ship BDL your gypsum or 3D-printed model and Rx form. Our team will scan your model and begin work using our German in-lab printers.




www.bertramdental.com
slm@bertramdental.com
 408 2nd St, Menasha, WI 54952
 920-731-1483





SLM Solutions

 www.slm-solutions.com