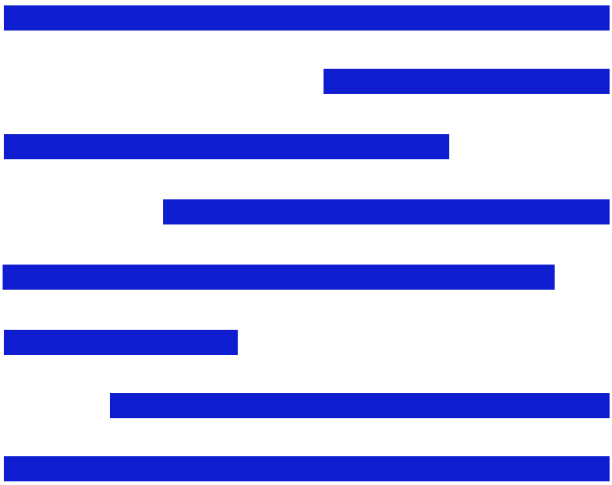


Danish AM Hub

AM Venture Day 2019

Here is the new class of AM entrepreneurs

3D print will change production as we know it. At AM Venture Day, we have assembled Danish startups, which are moving the boundaries of the latest 3D print innovations. Every one of them explores new ways of using additive manufacturing for their business.

Whether they work in health, robotics or fashion, they all aim to reap some of the great benefits of the 3D technology. From increased flexibility and faster design processes to reduced environmental costs compared to traditional production. At AM Venture Day we introduce a strong palette of entrepreneurs who are working with this technology in their everyday life.

We also give you the chance to connect with investors that support the growing ecosystem around AM startups.

Two prizes will be given at the end of the program.

Danish AM Hub Startup Prize from Danish AM Hub and Nordic Alpha Partners given to the best overall showcase. The Prize consists of 25.000 DKK and an expert workshop.

The AM Ventures Prize given to a startup with a new advanced value chain fit for serial production. The Prize is a spot at the Must3DP event in Munich 2020.

AM Venture Day is brought to you by
Danish AM Hub in collaboration with Talent Garden Rainmaking.

Danish AM Hub

AM Venture Day: 3D Fast Forward

Danish AM Hub is Denmark's national focal point for Additive Manufacturing. Our goal is to change the way we traditionally understand the concept of production by promoting the use of newer production technologies such as Additive Manufacturing and 3D printing – in business and in a wider Danish context.

The Danish industry needs to improve its international competitiveness. We believe that increasing knowledge of new technologies and business models is a crucial tool for change, and that particular additive manufacturing can be a source of innovation, sustainable production and value creation for the individual company.

Danish AM Hub wants to bring together the Danish ecosystem and together inspire, change and advise on AM with the aim of making Danish industry look at the multifaceted possibilities of AM technology. We work to build future-proof competencies and bring new knowledge to the development of new business models and innovative solutions. All of this is done by developing and initiating ambitious programmes and activities that challenge what technology can do with cross-cutting development projects, which at the same time put Denmark on the "AM World map".

The Danish AM Hub is an open alliance that stands together to demonstrate and disseminate the effects of 3D print and AM for the company's business, for the customers, for development and for sustainability. Internationally, we work with similar sister organisations and have a global network.

Danish
AM Hub

www.amhub.dk

The Danish Industry Foundation

AM Venture Day: 3D Fast Forward

Danish AM Hub is initiated and developed by The Danish Industry Foundation.

The Danish Industry Foundation is a philanthropic foundation enhancing the competitiveness of the Danish Industry. The foundation supports projects that generate application-oriented knowledge, new competences and increased innovation, benefiting the Danish industry as a whole.

As well as creating new projects, the foundation also develops and implements its own strategic initiatives. The creation of Danish AM Hub is an example of such, where the foundation gathered visionary partners in Denmark, included existing experiences and relevant knowledge from abroad, and then formed a structured formal collaboration within the fields of 3D-printing, laser cladding, business development and additive manufacturing in general.

Competitiveness is crucial to the future success of Danish companies. And the companies are key players in the creation of growth, jobs, wealth and a well-functioning welfare system in Denmark. Therefore, it is crucial that Danish businesses stay ahead, innovate, enter new markets and constantly maintain a competitive business.

To support that, The Danish Industry Foundation initiates new projects every year. Approximately 30 Million Euros are spent yearly on new initiatives within fields such as technology, exports, leadership, competences, research and much more. The projects are made as open-sourced collaborations and the foundation constantly put focus on the impact made by the projects to ensure that each project benefits Danish companies.

INDUSTRIENS FOND
FREMMER DANSK KONKURRENCEEVNE
The Danish Industry Foundation

www.industriensfond.dk

Talent Garden Rainmaking

AM Venture Day: 3D Fast Forward

Talent Garden Rainmaking is a local ecosystem facilitator within a European network of entrepreneurs.

Founded in Brescia, Italy, Talent Garden has now grown its activities across 18 European cities and is hosting over 3,500 digital professionals in 23 campuses across 8 countries. Unlike real estate driven international co-working operators, Talent Garden puts education and innovation at its core in developing its tech community. It focuses on new ways to transform and connect the flexible work and education environments that are being demanded by digital entrepreneurs and businesses undergoing digital transformation.

Our Copenhagen location on Holmen is at once a workspace for 300+ entrepreneurs and an innovation school. Start your morning drafting a new wireframe, take a class in UX after lunch, and finish off the day connecting with an interesting business angel. That is our take on how professional life should be. We are all about crossing borders too. The Talent Garden family allows you to share launch tips with fellow founders in Milan, recruit a growth hacker from Dublin, and find the right developer in Barcelona. What does it mean to be a European startup? That's something we're defining day by day. We hope you want to explore it with us.

tag Talent Garden Rainmaking

www.talentgardenrainmaking.com

Startups

Create it REAL

Startup

AM Venture Day: 3D Fast Forward

Based in Aalborg, Create it REAL's international team is made up of experts in 3D printing technologies, electronics, 3D graphics and mechanics.

The company has developed the first real-time processor dedicated to 3D printing and launched a platform that reduces the time to market by half. It allows up to five times the printing speed compared to standard technology and encrypts 3D files from the server down to the printer itself for IP protection.

Their team works mainly with 3D printer manufacturers, but also with startups willing to enter the 3D printing market as fast as possible, using the best technology available. Create it REAL provides consulting for companies interested in implementing additive manufacturing to develop their business. And they build custom features and platform tools that strips the 3D printing technology of any unnecessary complexity.

Create it REAL

www.createitreal.com

ZOLES

Startup AM Venture Day: 3D Fast Forward

ZOLES® is dedicated to increase the comfort and performance that customers experience with their footwear. Their offerings are for everyone, and of particular relevance to those with special needs and sports people seeking the maximum advantage.

Insoles from ZOLES are designed in 3D and produced according to each user's measurement, needs, as well as the type of shoe. In addition to the shape of the insole, their team can also adapt the firmness of the sole, shock absorption and agility according to the person's weight, needs and physical challenge. The products address a range of common feet problems, including pain in the arch, heel or the ball of the foot (metatarsal).

ZOLES® is owned and managed by a father and daughter team, Cecilie Lisberg Holst and Per Lisberg, working together with independent specialists in chiropody, physiotherapy and IT.

ZOLES

www.zoles.eu

ATLANT 3D Nanosystems

Startup AM Venture Day: 3D Fast Forward

ATLANT 3D Nanosystems is an early stage high-tech company with the vision to revolutionize micro and nanofabrication processing with additive microfabrication technology.
ATLANT 3D Nanosystems was found by Dr. Maksym Plakhotnyuk, Ivan Kundrata and Dr. Tomas Rindzevicuis as a DTU spin-off company in November 2018.

Since the first moment of its foundation, it received support from the Danish Innovation Fund through the Innobooster funding grant. ATLANT is also a proud resident of the DTU Skylab Incubator with their multinational and interdisciplinary team. Currently they employ engineers and scientists from more than five countries serving a global customer base.

Through a patent pending combination of nano-technology and 3D printing they have developed a solution that can accelerate prototyping for micro-/nanodevices and systems. This is possible at a fraction of the current cost and time with previously impossible geometries. Their prototype tool, ATLANT Nanofabricator I, is currently under development in collaboration with the Technical University of Denmark, Slovak Academy of Science and Friedrich Alexander University in Germany. The ATLANT Nanofabricator I has the potential to open up new and unprecedented possibilities for rapid prototyping of micro and nanodevices and accelerate scientific and technological progress in all fields of micro- and nanotechnology.

ATLANT 3D NANOSYSTEMS

www.atlant3d.com

Particle3D

Startup AM Venture Day: 3D Fast Forward

Particle3D is a Danish medical technology company working to make bone replacements more accurate, effective and safe.

They use a widely applicable and worldwide IP protected technology invented while investigating the possibility of 3D printing bone implants for human use. Particle 3D's solution is a bio-ink composed of powder particles suspended in a solid but meltable fatty acid matrix. The bio-ink enables a new 3D additive manufacturing process where objects are constructed directly from a computer-aided design (CAD) file. The bio-ink is loaded into a syringe, heated to its melting point and extruded as a thin line onto a cooler stage on which it re-solidifies. The fatty acid is then removed through burning and the powders are sintered or fused together.

The invention can be used with many materials and in many industries beyond the medical field. The bio-ink is completely degradable, which allows the implants to convert into real living bone over time.

Particle3D works in close collaboration with surgeons to tailor each implant to the patient. Their team has received several awards, including the Danish Venture Cup 2017.

Particle3D

www.particle3d.com

AddiFab

Startup AM Venture Day: 3D Fast Forward

AddiFab envisions a world where data-driven product development improves and develops human societies. By 2025 their team aims to enable mass customization, support global distribution of development and manufacturing and lower the barrier between corporations and individuals. All while reducing the footprint of global manufacturing.

With roots in medical and hearing aid industries, AddiFab has a deep understanding of how to manufacture products with high levels of accuracy and flexibility. The company unites technicians, engineers and end-users who push the boundaries of today's Injection molding via FreeForm Injection Moulding (FIM). FIM leapfrogs conventional prototyping. It offers faster prototyping, continuous iterations, increased design freedom, and access to Injection Molding materials from day one. Injection Molding batch-of-one or many, have never been easier.

In short, AddiFab's mission is to enable the qualities of injection molding, whether the project at hand focuses on prototyping, low-volume or one-of-a-kind productions, or personalization.

AddiFab
Industrial Additive Fabrication

www.addifab.com

Investors and experts

AM Ventures

Investor

AM Venture Day: 3D Fast Forward

The world's leading venture capital firm in additive manufacturing has an extensive portfolio of successful international companies such as DyeMansion, Elementum3D and Sintratec. AM Ventures possesses in-depth technology knowhow and is networked with the most relevant players in the field of industrial 3D printing. As an investment partner, the company stands upon an industry-leading ecosystem of sustainable strategic investments in hardware, software, material and application startups.

AM Ventures can offer customized investments and provide startups access to advanced production technologies. They also introduce entrepreneurs to a pool of industry experts, each with decades of experience in engineering, production or executive management. Another resource made available is the opportunity to connect with sister companies within additive manufacturing from leading hardware providers to advanced production hubs around the world.

AM VENTURES

www.amventures.com

PreSeed Ventures

Investor

AM Venture Day: 3D Fast Forward

Founded in 2000 PreSeed Ventures has a long track record of spotting, fostering and financing tomorrow's winners in syndication with top-tier investors locally and globally. Inherently to the name PreSeed Ventures operates at the earliest stages, where founders need professional support more systematically than most BAs can offer, but where the risk prevents most VCs and other institutional investors from engaging. With the experience from hundreds of startup journeys, PreSeed Ventures passionately excel in supporting and nurturing the growth of promising startups on the rise.

PreSeed Ventures has grown out of the technological research environment at Denmark's Technical University, DTU. In 2020 they launch their first full blown commercial venture fund, yet continuing to be a subsidiary company to the university.

PreSeed Ventures

www.preseedventures.dk

Nordic Alpha Partners

Investor

AM Venture Day: 3D Fast Forward

Nordic Alpha Partners is a hardware and hardtech focused growth fund with more than 130 million EUR under management. Established in 2017 it is considered a leading venture/growth fund in the Nordics with a team that strives to be as entrepreneurial as the growth companies they support. In fact, they employ the principle that they ask more of themselves than of their portfolio companies.

In a greater societal context, Nordic Alpha Partners promotes responsible investments. CSR is built into all their processes: from how they screen potential target companies to strategy development and later growth execution. Aside from their partner team, they offer knowhow from a range of industrial sector and functional experts within areas such as automation & rapid factory scaling, robotics, global supply chains, strategic sales execution, and the automotive industry.

NORDIC ALPHA
PARTNERS

www.napartners.dk

Experts

AM Venture Day: 3D Fast Forward

Tue Mantoni
Chairman of the Board, Danish AM Hub

Tue is the helpful voice in the room for companies within consumer lifestyle. He serves on boards, spanning from furniture (Gubi) to portable speakers (Soundboks) and food (Joe & The Juice and Lakrids by Johan Bülow). Previously CEO at Bang & Olufsen and Triumph Motorcycles.

Arno Held
Chief Venture Officer, AM Ventures

Industrial engineer by education, Arno has been with AM Ventures, since the fund was founded in 2015. He was part of R&D teams at EOS and DyeMansion, before he joined AM. As an investor he emphasizes that he invests in people, not in companies.

Laurits Bach Sørensen
Value Creation Partner, Nordic Alpha Partners

Prior to co-founding Nordic Alpha Partners in 2017, Laurits has grown companies in different leadership roles.
He served as CEO and later Chairman of the Board at MicroShade, a cleantech driver within the building sector.
Earlier in his career he was CEO at the Danish division of Aastra, a publicly listed telecom provider.

Experts

AM Venture Day: 3D Fast Forward

Michel Honoré
Specialist, Project Manager, Force Technology

Michel comes with deep experience from the industrial engineering industry. At Force he focuses on project management and R&D within high-power laser applications, processing, and safety. He holds M.Sc.E. focused in Optics, physics, engineering from Technical University of Denmark.

Alexander Viterbo-Horten
Investment Manager, PreSeed Ventures

Alexander has been with PreSeed Ventures since 2016. Some of his most notable investments include Ontame and Archii. He has a background as a management consultant in PA Consulting Group, where he was deeply involved in PA Denmark's commitment to innovation

Perspective: How 3D print grew up

From mass personalization and bioprinting to disaster relief and children prosthetics: additive manufacturing and its impact on our world is here to stay. As new opportunities present themselves with the advancement of this technology, 3D printing has proven to be much more than a fad or simply a consumer-focused tool. Today, the total worth of the additive manufacturing industry is estimated at $9 billion. This is, of course, still just a fraction of the $12 trillion manufacturing industry, but unlike the latter, additive manufacturing is a rapidly evolving sector which is expected to grow to $36.61 billion by 2027. Here, we take a look at five ways in which additive manufacturing is making an impact.

1. It’s becoming personal

Seemingly an oxymoron, mass personalization - also known as every retailer’s dream - has recently been made possible thanks to additive manufacturing.

New generations of consumers crave more than off-the-shelf products and have been growing up with a world so customized to their tastes that they do not even notice it themselves half the time. In regards to manufacturing, this has been a difficult demand to meet. Logistic constraints, a complicated supply chain and product cycles that get too lengthy for competitiveness, are among the barriers.

Thanks to additive manufacturing, however, customers can soon (and in some cases already) customize a desired object - a pot, a mug, a toy, a sneaker - with immediate effect. Unlike in a traditional industry setting, the customization workload will in this case be on the customer without any extra cost for the manufacturer. For example, in the field of dentistry, mass personalization has already been used successfully for a while thanks to 3D printing. Crowns, bridges, teeth, caps, orthodontic bridges and even surgical tools are being tailored to each patient. Other industries are eager to follow.

The fashion giant Adidas stated last year that they will start using 3D printing to manufacture plastic midsoles. It is not a coincidence that this initiative comes from a sportswear company, as every athlete’s foot is unique and the best sneaker is made for a specific foot. In the car industry, all the biggest players are taking this approach too. In 2017, Volkswagen launched a 3D printed spare parts

initiative together with its luxury car brands Audi and Porsche, who announced that they would strive towards a 3D printed “reproduction on demand”. One year later, in 2018, the BMW Group invested 10 million euros in an Additive Manufacturing Campus, at the same time as Daimler became a founding partner of a NextGenAM project.

2. Part of the surgeon’s future toolkit

From bioprinting to prosthetics, additive manufacturing has made a significant impact on the medical industry during the last ten years.

Analysts predict that 3D printing within this field will be worth $3.5 billion by 2025, compared to $713.3 million in 2016. With regards to bioprinting, the process does not even involve plastic, but actual living cells that are layered to create artificial living tissue. Another use of additive manufacturing in the medical field is surgical simulation, where replicas of a patient’s organs can be printed and practiced on. Surgical simulation has had a huge impact on both scientific advances and patient welfare in recent years with 3D printing as an important driver.

Additive manufacturing can also be used to “print out” patients’ organs and compare them to donated organs in order to ensure a correct fit. The same goes for prosthetics, which are also made cheaper through 3D printing. This is especially useful in the case of children’s prosthetics, which are quickly outgrown and represent a high cost for the patient’s family.

3. Every maker’s friend

Additive manufacturing has become an essential part of the so called “maker movement”, which consists of artisans, engineers, artists and others who are interested in producing physical objects.

Thanks to new (and often free) tools and software that makes 3D printing easy to understand, the process from idea to prototype has become accessible to all. Another way in which 3D printing has been spurring innovation within the maker movement is the practice of open source designs, which allows for community members to tweak and build on each others’ ideas. Finally, prototyping - which is a key component of lean and innovative manufacturing - is now made easier and cheaper thanks to 3D printing. The fact that prototyping can now be done for as cheap as $2000-$4000 opens the way for more entrepreneurship and more “makers”. Using 3D printing in schools also serve to educate future entrepreneurs, who are shown - in a practical and fun way - that an idea can crystallise into something concrete.

4. It speeds up relief efforts

After the Nepal earthquake in April 2015, Oxfam decided to use 3D printing to build water pipe fittings and washers. In general, additive manufacturing has proven very useful in war or disaster situations where the infrastructure needed to transport goods might be compromised or rudimentary. The entire supply chain, from procurement, storage, shipping and distribution are made easier thanks to additive

manufacturing, which also offers a super quick way to offer relief in an urgent situation. More long-term, 3D printing solutions can also be implemented in local communities, as a way to foster industry but also offer ways to quickly and cheaply receive help.

5. A sustainability driver

Industry is a fundamental pillar of the European economy, as it provides 25 % of its GDP. It is also responsible for more than half of the total emissions in the EU. Additive manufacturing could offer a way of mass production in a sustainable way. Thanks to their streamlined production processes, additive technologies save up on both storage, transport and waste. As 3D printing uses the cloud to save its designs, it avoids large storage spaces. 3D printing also makes it possible to reduce - or completely eliminate - transports between manufacturers and users. For NASA, this means a way for astronauts to print custom tools in space.

For the rest of the planet it means less pollution due to transport. Additionally, thanks to the streamlined production model of 3D printing, where the production stands very close - both geographically and timewise - to consumer demand, there is none, or little, waste involved, neither in terms of material used nor in regards to over-production. The forming and milling involved in metal manufacturing, which is an important polluter, is not required in additive manufacturing. In fact, a 2014 study concluded that by 2025, 3D printing could reduce primary energy supply by between 2.54-9.30 exajoules and slash CO2 emissions by up to 525.5 megatonnes.

However, there is still a lot of work to be done. For example, 3D printing is undoubtedly still a huge energy consumer - even more so than the milling and drilling of a traditional factory. And it still uses plastic as its main prime material, which is not sustainable either. The plastic material, when heated to extreme temperatures, has also been proven to hold toxic byproducts. Nonetheless, when we consider the entire product life cycle; from the extraction of raw materials to the assembly, refining, manufacturing, re-assembly, use, maintenance and end of a product life cycle, additive manufacturing leaves much less of a carbon footprint than traditional manufacturing.

These five advantages - or opportunity lanes - of additive manufacturing are just examples of what this technology will bring us in the future.

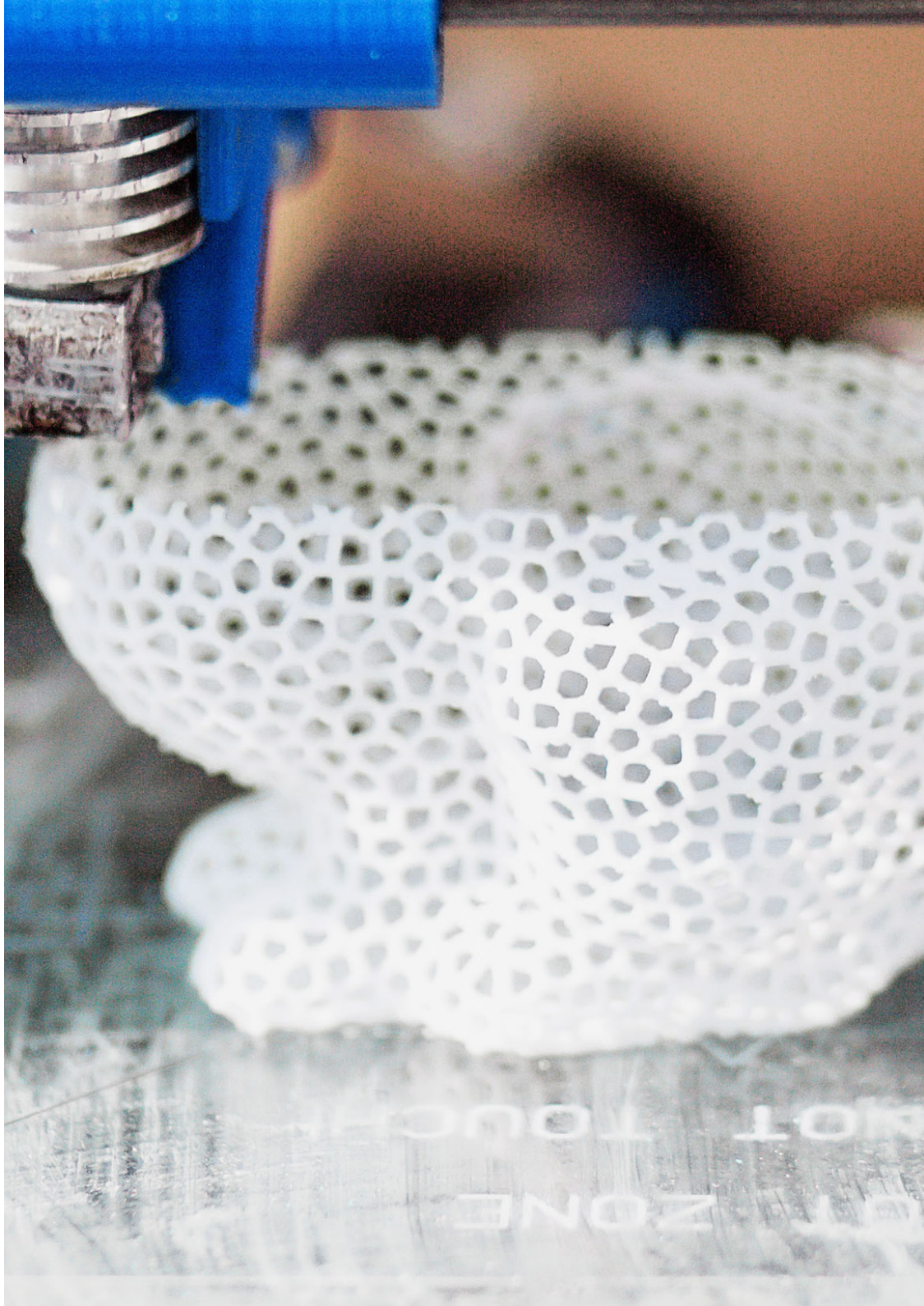
Want to learn more about how 3D print changes industries?

October 23: AM Summit 2019

How do additive technologies bring value to industry leaders? AM Hub answers that question with help from leading brands, including LEGO, Airbus, and BMW. Joining the conversation are decision makers and global thinkers, making sure that the tech is put into context.

Program + sign up: *https://am-hub.dk/am-summit-2/*

Stay updated on what happens in the AM community by following Danish AM Hub on LinkedIn.

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