

Profile of the winner of the EWM Award

## **Alexander Atzberger combines real welding with augmented reality**

**Alexander Atzberger is currently working on a pioneering project. The research assistant at the Bundeswehr University Munich is aiming to combine augmented reality environments with the real welding process. For his research project, the 27-year-old has received the EWM Physics of Welding Award, which carries prize money of €30,000. Read more below on how the idea for the ground-breaking project originated and what its objectives are.**

Alexander Atzberger radiates enthusiasm when he talks about welding. “Neat weld seams are like a work of art,” he says. “To the naked eye, the welding process appears very uncontrolled and chaotic with its flickering arc. However, when we researchers use high-speed cameras to observe the process, we can see that it is actually very smooth and orderly.” This discrepancy fascinates Atzberger. It is one of the reasons why he became a research assistant at the Institute of Plasma Technology at the Bundeswehr University Munich. At the institute, he and a team of colleagues led by Prof Dr.-Ing. Jochen Schein are involved in researching a wide range of plasma technology applications, including positioning drives for the aerospace industry, thermal spraying techniques and, of course, welding.

### **A passion for technology**

Alexander Atzberger has been enthusiastic about technology for as long as he can remember. When he was a boy, he wanted to be a jet pilot. But although he eventually had to abandon his childhood dream, the motor sport fan still remains fascinated by technology and speed to this day. As an electrical engineering student, Atzberger and his colleagues set up a racing team at their university and took part in the Formula Student competition – otherwise known as the Formula 1 for students. “We designed, developed and constructed our own racing cars and then raced them against other student

teams,” explains Atzberger. The research assistant continues to support the Bundeswehr University Munich team. “But only in an advisory capacity,” he says.

The link to the current research project at the Institute of Plasma Technology is obvious: welding also involves processes that are executed extremely quickly and which are imperceptible to the naked eye. However, Alexander Atzberger did not start out intending to research welding techniques. “My first research project looked at wire arc spraying. In that project, we tried to influence droplet detachment using current modulation in order to optimise the mechanical layer properties,” he explains. “Matthias Bredack, my colleague in the laboratory, is a welding engineer and got me interested in welding when I was working on my research projects.”

## **Shaping digital transformation**

Alexander Atzberger is not only interested in the centuries-old joining process involved in welding. It is primarily the digital transformation that fascinates him. “The opportunities it opens up are what make it so appealing. Things that were visions of the future in science fiction films for our parents’ generation have already become a reality for us.” The researcher is excited by the notion that he is able to help shape digital transformation and thus the future for the next generation.

## **Link with the real welding process**

A project undertaken by a colleague at the institute in Munich focused on developing an augmented reality solution for presenting repair instructions. It was this project that gave Atzberger’s team the idea of combining welding with an augmented reality environment. This particular approach is not new in the welding technology field, as virtual welding trainers are already used for training experts. But Alexander Atzberger’s thoughts stretch far beyond this application. His aim is to focus on designing and implementing the first-ever AR environment for a real welding process. This will involve actual welding. Things are heating up.

This is true both of the process being researched by Alexander Atzberger and also of the project itself. EWM AG, Germany’s leading manufacturer of arc

welding technology, and the German Welding Association (DVS) have awarded the research project the EWM Physics of Welding Award. This opens up a range of whole new opportunities for the young researcher. “In winning this award and working in collaboration with EWM, we can benefit from the expertise of one of the most important manufacturers of arc welding technology. This, combined with the prize money, simplifies project implementation and significantly increases the chances of success.”

## **Real-time assistance system for welders**

The aim is to record the welding process as realistic as possible and transmit the findings on the augmented reality environment quickly and easily. The welding technology components, such as the helmet or gloves, then become part of the welder’s real-time assistance system. They help when carrying out an optimum welding process, and at the same time display the most important process parameters. Thanks to its future viability and numerous possible applications, the concept immediately convinced the independent expert jury at the EWM Award. The system could be used both for training and development and also for the introduction of new welding tasks in companies. Furthermore, analysis and process optimisation when welding is also a wide application field for the new technology.

## **Further development of welding**

Alexander Atzberger is thrilled to be working with EWM, a partner that shares his personal goals. “We want to shape the digital transformation,” he says. The family-run company from Germany’s Westerwald region has led the way in the research and development of welding processes for many years. For the fifth time, the welding technology manufacturer is supporting a particularly innovative research project by sponsoring the EWM Award, which carries prize money of €30,000. With this commitment, EWM aims to ensure welding remains attractive for future generations. Alexander Atzberger believes that it is also particularly important for welding processes to be continually developed. “Ultimately, the main aim is to simplify and optimise the transfer of knowledge in order to improve welding results,” he says, and then repeats: “Neat weld seams are like works of art. And people have always been fascinated by works of art.”

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**Image 1: Alexander Atzberger (XY from left) is delighted to receive the EWM Award.**

Caption

For more high-resolution images, please visit: [www.ewm-group.de](http://www.ewm-group.de)

## **/ About EWM:**

EWM AG is Germany's largest manufacturer of arc welding equipment and one of the most important suppliers of this technology worldwide. The family-run company provides a complete range of solutions for first-class welding results. From welding machines, welding torches and welding consumables to welding accessories for manual and automated applications – EWM offers everything from a single source. The company assumes technological responsibility for the entire welding process. Customers also benefit from a comprehensive range of services, including "ewm maXsolution" innovation and technology consulting. EWM has a strong global presence with around 600 employees at 12 German and 7 international locations and plants, as well as more than 400 sales and service outlets worldwide.

As a developer of numerous highly innovative products and welding procedures, EWM is recognised in the industry and by users as one of the most important drivers of technology. EWM is committed to bringing the added value of Industry 4.0 to welding production with its intelligent networked solutions that boost productivity. The company's passion for welding is anchored in its guiding principle WE ARE WELDING. This, together with the BlueEvolution sustainability initiative, underscores the company's commitment to meeting specific customer requirements as effectively as possible while always taking economic and ecological factors into account. Users benefit from energy-saving welding processes, a reduction in the use of raw materials, lower emissions and shorter overall production times. This results in significant savings in costs and resources. Customers are thus able to boost their competitiveness while at the same time protecting the environment.

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