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Outotec

Outotec Turula Oy

Reaching new levels in welding management with Kemppi ARC System 3 software solution

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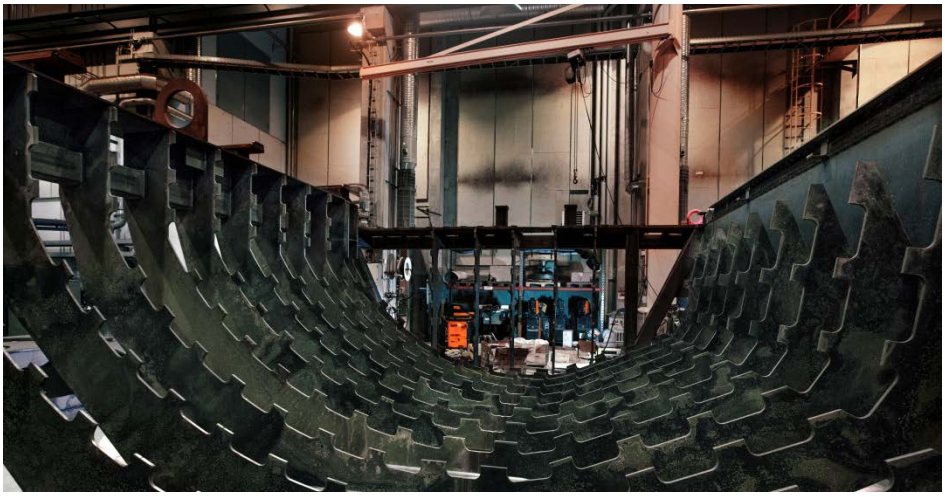
Outotec as a company

Outotec Oyj is a Finnish high technology company that specializes in designing and developing tailored process machinery solutions and life cycle services for mining, metal, energy and water industries. With 4 800 employees, operations in 25 countries and business in over 80, Outotec is a global leader in minerals processing technology. The company is known for innovative products and solutions that create value for the customer from natural resources in the most sustainable way.

The Outotec Turula factory in Outokumpu, Finland.

Out of Outotec's five production facilities located in Finland, China and USA, Outotec Turula Oy in Outokumpu, Finland is the largest with its 25 000 m² premises and 200 employees. The Turula engineering workshop produces machines, equipment and production lines for metallurgic processes, mainly copper production. The end products vary from compactors and converters to acid tanks and flotation cells.

Since the beginning, Outotec Turula has invested in the latest technologies to ensure a seamlessly flowing production process, with welding and its quality control as one of the key activities in the workshop. When the time came to look for new solutions for welding management, Kemppi was chosen as the partner with expertise on comprehensive welding management software.



Work in progress at Outotec Turula.

All eyes on quality

Outotec partnered up with Kemppi in 2012, when it was in need of a way to monitor and report welding quality whilst managing a large staff of welders. In addition to 70 MIG/MAG, TIG and MMA welding machines and 60 full-time welders, it was common to hire some extra help during production peak seasons. Not only was the company responsible for managing the numerous welder qualifications of the regular staff and external workforce, but they also had to make sure that welding quality would stay consistent.

Working with demanding materials, such as duplex stainless steel, sets strict limitations on the heat input and makes it critical to stay within the welding procedure specification (WPS) limits. Moreover, Outotec is obliged to operate in accordance to the requirements of EN ISO 3834-2 quality standard, which needed to be demonstrated in regular auditing procedures.

'Quality is critical for our customers given that they often employ our products in very harsh environments, where a defect can have very costly consequences. Thus, our ability to prove quality in accordance with EN ISO 3834 is a clear competitive advantage. '

Markus Mutanen
Plant Manager, Outotec Turula

Kemppi provided Outotec Turula with ARC Quality, a Kemppi ARC System 3 software module for modern welding quality management. With welders using the Smart Reader connected to the module, ARC Quality controls welding quality by automatically collecting data from the work stations. Senior Advisor, Manufacturing Ilkka Hiltunen gives the system unequivocal praise: 'It can't get any better than this. Previously, there were cases in which the client required data on who welded what, and when. Now, the system collects all the required information automatically.'

Kari Koistinen, Ilkka Hiltunen and Rauno Kakkola from Outotec Turula.

In fact, traceability is one of the main benefits of ARC Quality. The system is able to produce documents on whether a single weld in a specific location was welded by a qualified professional in line with the WPS and with the right filler. The best part is that it leaves no loose ends. Outotec's Production Development Manager, Kari Koistinen, commends ARC Quality's performance as a management tool, as it allows immediate intervention on deviations by recording and alerting the managing staff of them.

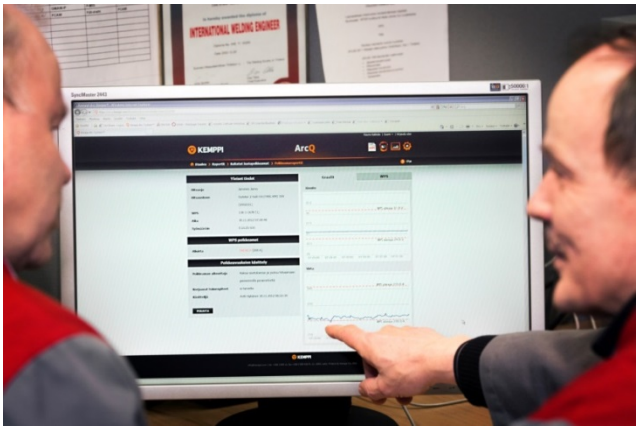
Moreover, welding can only be performed by a competent welder. It is one of the rare professions in which one's expertise is constantly scrutinized and put under evaluation every six months. Welding Coordinator Rauno Kakkola is impressed by ARC Quality's effectiveness in the field: 'ARC Quality helps out in this respect also. The system lets us know, well in advance, about the need to update welders' qualifications.'

Setting the standard

Deploying ARC Quality places some new demands on welders and may bring out various training needs. Without reliable data on welding quality, such needs may have existed already before, but are revealed only now. Kakkola says that systematic, unintentional mistakes may have been made in the past, but with ARC Quality, those errors can be eliminated right away, and the same goes for mistakes in WPSs. The welders will have a chance to hone their skills, as they have access to their personal work data on a PC set up in the break room.

The ARC Quality Smart Reader scanning a welding procedure specification from the bar code.

Adopting the new system requires a proactive approach from the operator, not just the supplier. Successful implementation requires individual training with the Smart Reader device becoming a personal tool for every welder. Hiltunen points out that it is important to explain to the welders why we are using the system in the first place: 'The manufacturer has to provide the client with the quality required, and one needs to be able to prove the quality of the product – in a concrete manner – to both the client and the quality assessment organization. ARC Quality is a modern, up-to-date way of ensuring quality control,' he says.



Rauno Kakkola and Kari Koistinen analyzing a deviation report on ARC Quality user interface.

ARC Quality brings changes also to managerial practices, as real-time reports are now available. 'The management must make sure that welding procedure specifications are available. At first, the system requires guidance and training. It is used to make everyone's work transparent, and employees should not feel that there is extra pressure on them because of this,' Koistinen stresses.

He adds that quality and productivity go hand in hand, and high welding quality is achieved by making sure that the company employs top-notch quality control processes. As a seasoned metal workshop man, Koistinen knows what he is talking about, having served the company for over 30 years.

ARC Quality benefits

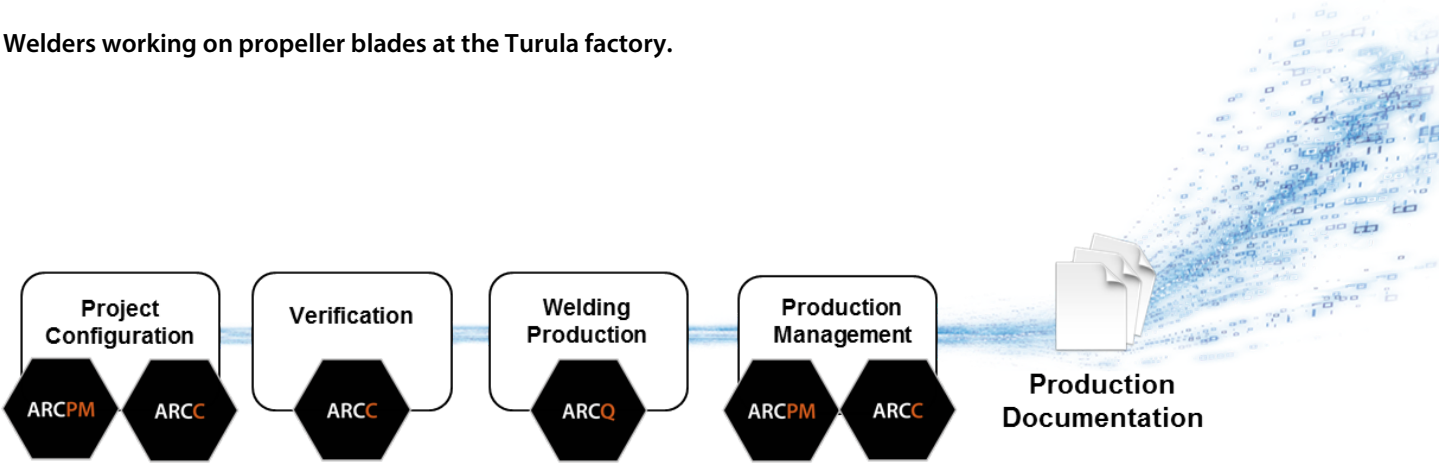
- monitors WPS compliance throughout the welding project
- ensures that welders hold valid qualifications
- creates non-conformance reports
- automates data collection with WLAN technology
- reduces rework costs through early intervention on defects
- reports the arc and non-arc time
- includes a welding fleet management tool
- anticipates service needs and records service history
- applicable for both MIG/MAG and TIG welding
- web-based reporting accessible from any location
- supports welding, quality control and management personnel

Time for add-ons

With ARC Quality successfully in active use, Outotec Turula decided to advance to the complete Kemppi ARC System 3 software in 2014. After two days of on-site training, the company deployed two new modules, ARC Coordinator and ARC Production Management, in order to maintain high quality and improve productivity in production. By using the modules together, the company now had a full system for project planning, management and follow-up in place. Along with monitoring and verifying top level welding quality, it became possible to manage WPSs and welder qualifications more efficiently while saving precious time and money on reporting.

Welders working on propeller blades at the Turula factory.

In terms of welder qualification management, Kemppi ARC System 3 was able to solve the integration issues with the previous software used for the task. New welder qualifications and certificates proved easy to generate, with updates and expiry dates efficiently under control in ARC Coordinator.



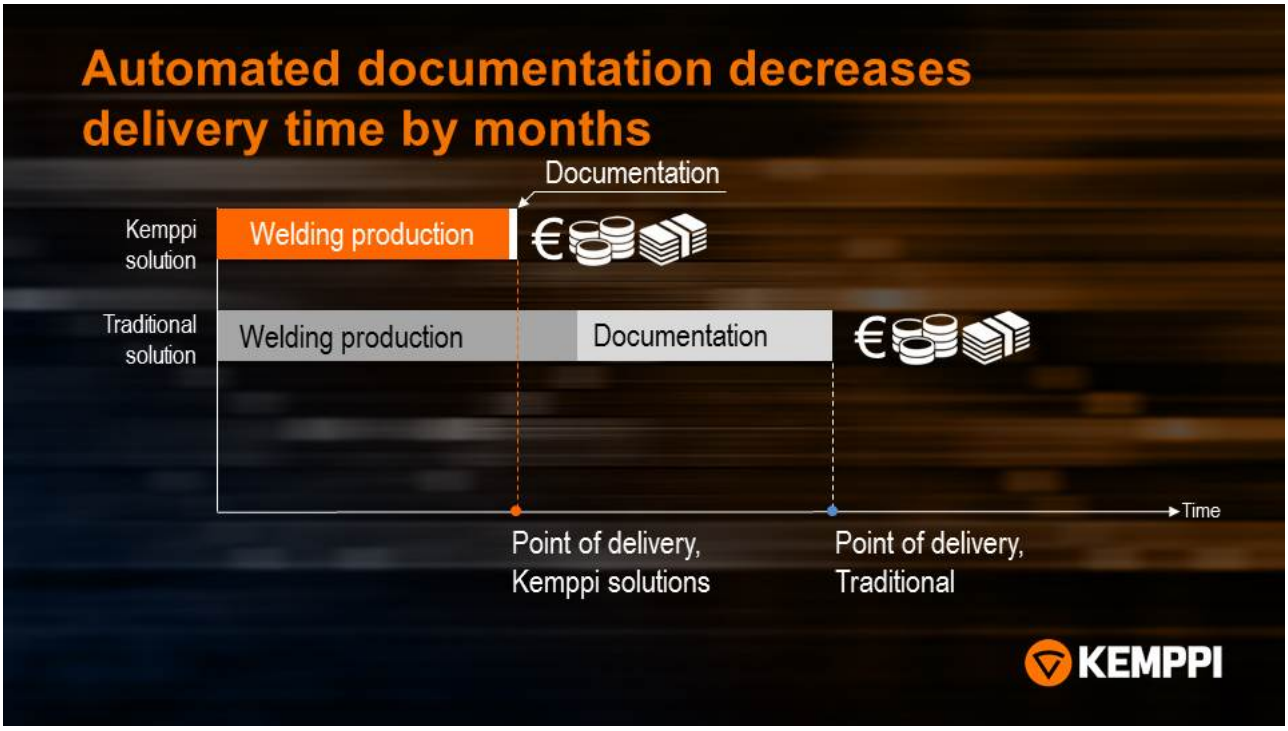
Kemppi ARC System 3 modules ARC Coordinator, ARC Quality and ARC Production Management are present in every step of the welding production process.

Likewise, all relevant data on gases, fillers and parent materials could be easily managed and kept up-to-date. While ARC Coordinator stores all used WPSs, generating new WPQRs or WPSs became simple based on the creation of a single pWPS.

When setting up a welding project, it is possible to configure all of the welds, drawings and inspection test plans directly into the ARC Production Management module. Moreover, it provides an extensive overview of the project status at all times along with as-built documentation, a feature welcomed by Outotec.

'It used to take us at least 1-2 hours to collect welder info from the ERP system, print and scan qualifications and manually gather all WPS info. Now, with ARC Production Management, I can generate a pdf in just five minutes.'

Antti Nykänen
Team Leader, Welding (IWE, VT2), Outotec Turula



Convenient cloud service

Kemppi ARC System 3's ability to transfer qualitative welding data digitally into a cloud service via a secure server receives positive feedback from Outotec. Previously, all of the information was input in several programs on personal work computers. In worst case scenario, the access to the data would be blocked if a key user would get sick. Now, Kemppi ARC System makes data accessible from any place through a web user interface, and it doesn't place a burden on the company's own network. With the cloud, all updates and new features can be put into good use immediately.

The cloud-based service is exceptionally suitable for multisite management for the needs of globally operating companies such as Outotec. The company is considering an extension of the system to its other factories and subcontractors abroad. 'If we want to convince our customers around the world, we should also work to get our subcontractors to introduce Kemppi ARC System. When subcontractors or sites abroad use the system, we can monitor the overseas production from Finland,' Nykänen concludes.

The partnership continues

Antti Nykänen from Outotec and Pertti Kaarre from Kemppi exploring the new black FastMig X.

With a comprehensive solution for pre-planning, managing and monitoring all aspects of welding production, Outotec is now able to manage welding projects in a systematic way. The time spent on project documentation, NDT inspections and managing WPSs, welder lists and qualifications has been dramatically reduced from hours to minutes. Now, it is possible to reliably verify the high quality of the products with qualitative proof on WPS and quality standard compliance.

By partnering up with Kemppi, Outotec has been able reach its goals in improving quality consistency and productivity, and thus gaining competitive edge compared to its competitors.

Kemppi is an arc welding expert, providing its customers with advanced solutions consisting of welding equipment, software and services. During over 65 years in business, Kemppi has introduced many new innovations, pioneering the development of both welding technology and productive welding solutions. While investing in continuous research and product development, Kemppi places primary focus on usability and design, in addition to the technical quality of the products.

And you know.