# Press release

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**Precision and stability in its purest form**

**Weiss Klimatechnik: Planning and installation of a measuring room for FANUC Germany, a room-in-room solution for the operation of a coordinate measurement system for monitoring the production of ROBOCUT wire erosion machines.**

**Weiss Klimatechnik has designed and built a state-of-the-art, turnkey measuring room in the form of a room-in-room solution with a measuring room air-conditioning system for the FANUC Germany automation company in the municipality of Neuhausen auf den Fildern in Swabia, southwestern Germany. This measuring room is used for the operation of a coordinate measurement system for monitoring the production of ROBOCUT wire erosion machines.**

The topic of automation is receiving a lot of attention at the moment. Process requirements are becoming more exacting, and higher and higher production efficiencies are being demanded. Companies are increasingly recognising the advantages of robot technology. Higher performances are being achieved with falling machinery costs. The productivity of industrial robots and industrial automation solutions is rising thanks to the increased ease of programming and higher speeds and reliability. With technological progress, a new era in automation is emerging where versatile, intelligent robots are being employed in more and more areas of factories and in society in general.

At its centre of expertise in Neuhausen auf den Fildern in southwestern Germany, FANUC – the leading global producer of factory automation technology for CNC control systems, robots and machinery – markets high-speed milling machines, injection moulding machines and electrical wire erosion machines and develops customised applications in partnership with its clients. The company also conducts trials with automation solutions and tests them for continuous operation under realistic production-like conditions. The technology supplied by FANUC improves the efficiency of processes in a wide range of areas, including sandcasting, injection moulding, machining and the mounting of small components.

In the wire erosion process, an electrical spark cut through materials such as aluminium, copper or graphite. This spark eroding method allows for the production of intricate parts with extremely high precision and at very high speeds. The precision of this process results from the fact that the electrical discharge always occurs at the location where the separation distance between the workpiece and wire is at a minimum.

In many cases, a highly sensitive coordinate measurement system is required for such applications. Coordinate measurement technology systems can be used to monitor whether workpieces fulfil the requirements of the design engineer with regard to geometrical form.

Up to three ROBOCUT wire erosion machines can be monitored during the production process with the aid of a highly sensitive coordinate measurement system in the measuring room designed and built by Weiss Klimatechnik for FANUC.

**Measuring room cabin as a room-in-room solution**

With its many years of experience in measuring rooms and cleanrooms, Weiss Klimatechnik can boast many reference projects in the area of measuring rooms that comply with standards. This experience proved very beneficial in the joint development of a procedure for planning and implementing this project.

“As a general contractor working in close cooperation with FANUC, Weiss Klimatechnik designed the layout of the new class 3 measuring room as per VDI/VDE 2627 in such a way that it is perfectly tailored for the company’s specific processes,” explains Karl-Heinz Lotz, head of the Cleanroom Strategic Business Area at Weiss Klimatechnik. “When designing the measuring room for FANUC, we were confronted with processes that deviated considerably from the norm. The wire erosion machines presented particular challenges in terms of humidity and heat removal. As a result, a sophisticated, customised layout was necessary for the measuring room and air-conditioning designs,” he adds.

An area inside the hall was created as a room-in-room solution for the measuring room. This was built using a special particle-tight, abrasion-resistant, thermally insulated and airtight dividing wall system. A compact air-conditioning system was installed to supply air to the measuring room.

The end product of all this was a turnkey measuring room with a total area of around 95 m² that can guarantee an adjustable basic temperature of 20 - 24 °C and temperature stability of ˂ 1.0 K during the operation of up to three wire erosion machines.

The air flow for the measuring room was designed in such a way here that ventilation with turbulent mixing is ensured. Swirl diffusers guarantee a high degree of mixing between the supply air and indoor air, while simultaneously preventing any draughts. As a result of the dilution of the indoor air that takes place, the desired measuring room climate with temperature change requirements of ≤ 1.0 K/h and ≤ 2.0 K/d is reliably ensured. The air enters the return air duct through custom-designed return air diffusers installed in the ceiling area and floor, and then flows back to the air-conditioning unit for treatment.

**Particularly space-saving compact air-conditioning unit with high energy efficiency**

Weiss provided air-conditioning technology for thermal and hygienic treatment of the supply air in the form of a particularly space-saving ULTRACONSTANT compact air-conditioning unit that is integrated directly into the technical equipment area beside the measuring room. In this way, operation can be maintained irrespective of the exterior conditions. The supply air is filtered, cooled, dehumidified, heated or humidified here as required and then enters the room. The noise emitted by fans, shut-off dampers and flow rate controllers is reduced by sound absorbers installed directly in or on the relevant units.

Fine particulate matter is removed from the supply air in two filter stages. The fraction of outdoor air is around 500 m³/h and is provided for the persons who work in the room, while also ensuring a continuous overpressure in the measuring room. Volume flow controllers are installed on the supply and extract air lines to ensure overpressure.

The heat given off in the measuring room by the equipment, lighting, persons and motor of the fan is removed by the integrated refrigerating machine. The system works successfully, and in a very energy-saving manner. Total heat loads of 22.2 kW in the measuring room were taken into account when designing the system.

**Process Control 3 plus (PC3+) control system**

The entire control system is housed in the air-conditioning unit. This system includes components required for power supply, motor control for the fans, and the general measurement and control technology. A DDC control unit is provided to regulate the temperature. The Process Control 3 plus (PC3+) control system from Weiss impresses with self-explanatory touchscreen operation. The easy-to-understand menu structure guides users conveniently through the system’s functions. The air-conditioning unit and the associated optional system can be controlled and monitored using the highly capable PC3+.

**Perfect interplay even with complex requirements**

The overall implementation of the project benefited particularly from the ideal partnership relationship between the Weiss Klimatechnik and FANUC project teams as regards planning stages and from good communication with regard to installation sequences, and the complex engineering challenges were successfully overcome as a result. Everyone worked together particularly with regard to timing, and the ambitious schedule was successfully adhered to!

Markus Möck, the engineering manager for Robomachinery at FANUC Germany, is very satisfied with how the project went. “Beforehand, we looked at many companies. Despite our rather complex requirements, Weiss Klimatechnik impressed us from the very start with its high quality standards. Back in the planning phase and also during the overall construction phase, the staff at Weiss Klimatechnik demonstrated high levels of expertise and flexibility in the design and installation of sophisticated measuring rooms and of the associated air-conditioning technology.”

Weiss Klimatechnik has been synonymous with pioneering developments and high quality in air-conditioning technology for many years. Air-conditioning units and systems from Weiss have proven themselves in service in all areas where ideal climatic working conditions are required for both humans and equipment in production processes. Weiss Klimatechnik operates successfully in the areas of hygienic climate, cleanroom air-conditioning systems, air-conditioning solutions for data and telecommunications, and air-conditioning for offices, conference centres and industrial facilities.

**Weiss Technik companies**

In line with the slogan – Test it. Heat it. Cool it. – the Weiss Technik companies provide solutions that are used around the world in both research and development as well as in production and quality assurance for numerous products. Our expert employees in over 22 companies in 15 countries at 40 sites provide ideal service support and ensure the high operational reliability of your systems. The products that bear the **weiss**technik® brand include environmental simulation, heating, air-conditioning and containment solutions.

Weiss Klimatechnik provides reliable air-conditioning solutions wherever optimal climatic conditions for man and machine are required: in industrial production processes, cleanrooms and measuring rooms, hospitals, mobile operation tents or in the information and telecommunication technology fields. As one of the leading providers of professional cleanroom and air-conditioning systems, we provide you with effective and energy saving solutions, and support you with our expertise from the planning to the implementation of your projects. The Weiss Technik companies are part of the Schunk Group, which is based in Heuchelheim, close to Giessen. www.weiss-technik.com

**Schunk Group**
The Schunk Group is a globally operating technology company with a business unit structure. The company is a leading supplier of products made of high-tech materials – such as carbon, technical ceramics and sintered metal – as well as machines and systems – from environmental simulation and air-conditioning to ultrasonic welding and optical machines. The Schunk Group has more than 8,500 employees in 29 countries and achieved sales of €1.28 billion in 2018.