DO'CERAM

ModulMaster Pro

WELDING DEVICE WITH INTELLIGENT SENSOR TECHNOLOGY

8D REPORT?
MODULMASTER PRO
IS YOUR SOLUTION!

TOP PERFORMANCE IN A NUTSHELL

MORE EFFICIENCY, LESS REJECTS

The **ModulMaster Pro** from **DOCERAM** is setting standards in terms of quality, process reliability and efficiency. The new welding device is compatible with almost every projection-welding machine in the automotive industry and can be precisely adapted to the respective performance requirements thanks to its modular design.

The **DOCERAM ModulMaster Pro** welding device comprises a cylinder housing with connection plate, a change electrode as well as a pneumatically actuated pull centring pin or a centring sleeve made of **Cerazur**® or **Volcera**® high-performance ceramic, depending on the application. The pin is completely retracted, thus permitting a wide range of other component handling options.

DOCERAM centring pins achieve a service life up to 40 times longer than steel centring pins. With the new design of centring pins, centring sleeves and change electrodes, extremely short retooling times can be achieved with the **ModulMaster**.

MAJOR ADVANTAGES IN A CONFINED SPACE.

Completely retractable centring pin
- Safe and fast change of components
- A wide range of other handling options

Fast retooling
- A pin mounting for centring pin sizes for weld nuts ranging from M4 to M12 and 7/16" UNF
- Mounting with a stainless steel union nut

Optimised operating safety
- Water cooling with cooling channels directly on the housing to minimise wear on the change electrode
- High-quality metal hose connections for compressed air and water cooling
- Integrated spring for automatic return of the pin to the starting position

Quality control before welding
- Sensor-controlled real-time detection of the pin position
- Now also available with the Doceram ModulMaster compact control system

High load capacity
- Change electrode with a large support surface and contact area including marking for post-processing
- Compact size
- Large piston diameter 32 mm

Extended modularity
- Free threaded holes, e.g. for sensors or component supports

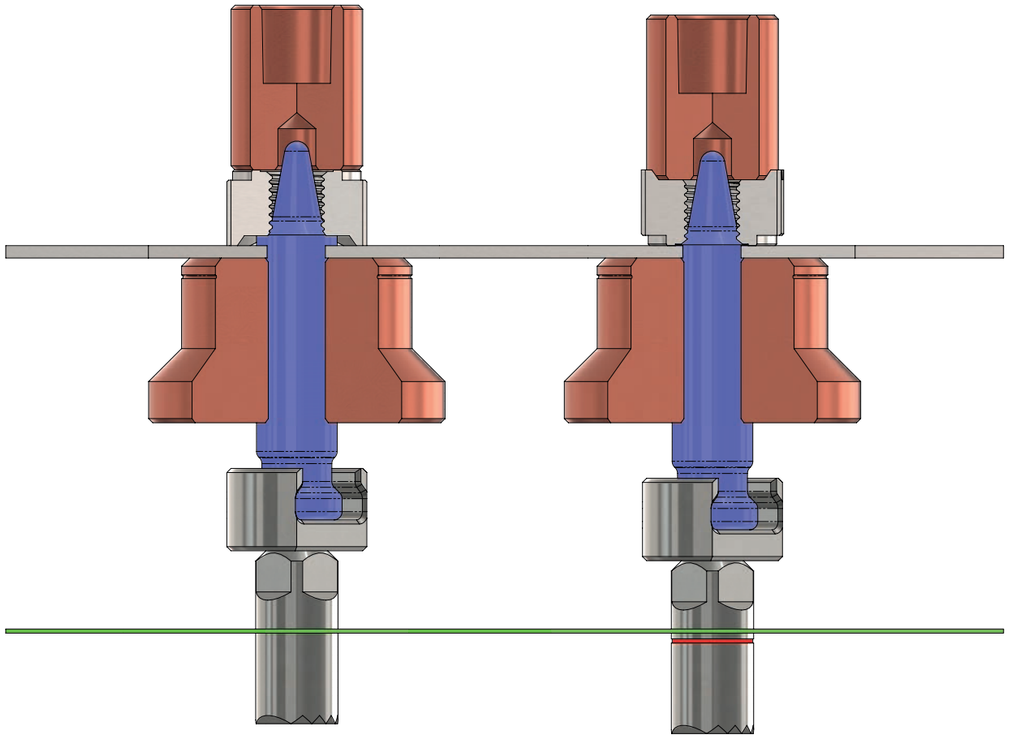
INTELLIGENT SENSOR TECHNOLOGY

WELDING WITH INVERTED NUTS IS A THING OF THE PAST

The new **DOCERAM** welding device enables reliable quality control with sensor-controlled real-time detection of the centring pin position.

The optional sensor is connected to an existing PLC or the **ModulMaster** compact control system.

The ModulMaster Pro welding device enables detection of the nuts and identifies a variety of potential production errors **before** the welding process is triggered: from inverted or incorrect nuts to incorrect or missing components and/or sheet metal parts.



Nut is seated correctly

Nut is inverted

The sensor technology on the **ModulMaster** registers in real-time whether the centring pin is in the correct position for the respective welding process. This enhances the process reliability and quality assurance during production and significantly reduces waste.

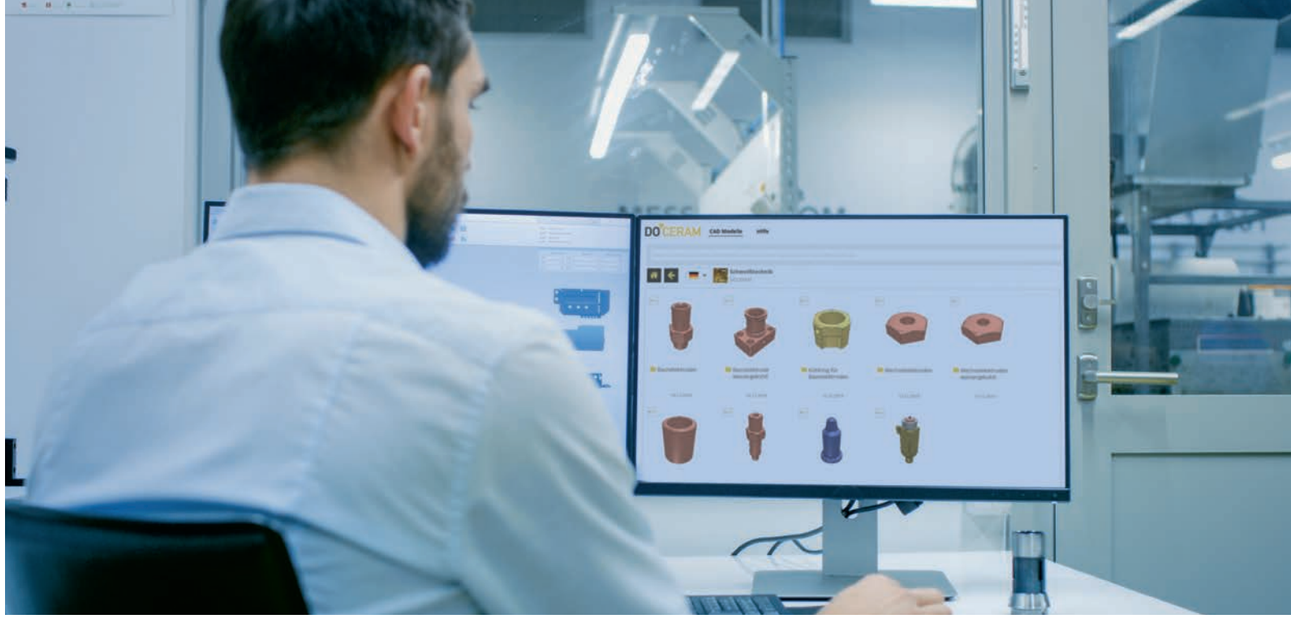
ModulMaster Pro: MASTER OF MODULARITY

The modular concept makes the **ModulMaster Pro** extremely versatile. Based on a universal cylinder housing, four connection plate types and an extensive range of centring pins and sleeves, a large number of device variants can be implemented and precisely adapted to the respective production requirements.

The conversion of a **ModulMaster Pro** welding device, for example from nut welding (Type N) to bolt welding (Type S), is also possible in just a few simple steps.

Configure your device in three steps:

1. Select Type N (for nuts) or Type S (for bolts)
   - The information required for Type N is the nut size, sheet thickness, sheet hole diameter, pin geometry and material
   - The information required for Type S is the bolt diameter, bolt length and sheet thickness
2. Select the sensor technology
   - Analog sensor for nut detection
   - Digital sensor for end position detection
   - No sensor
3. Select the connection plate mounting



ONLINE CONFIGURATION OF YOUR MODULMASTER WELDING DEVICE

The **ModulMaster Pro** welding device can also be configured online. All product variants are stored in our CAD portal – you can make adjustments quickly and easily by entering the parameters for your welding process.

Once the individual parameters have been defined, the set configuration can be downloaded as a CAD file in all common formats so that you can integrate it directly into your design.

Of course, you can still order the **ModulMaster Pro** welding device from us as usual by simply specifying the application parameters.

The extensive CAD portal includes the following DOCERAM products:

- **ModulMaster** welding devices
- Positioning and cylindrical pins
- Locating bolts
- Insulating sockets

Our team of consultants for technical applications will be happy to provide you with detailed information on the new ModulMaster welding device. Give us a call or write to us!

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technik@doceram.com

The portal is available at:
https://doceram.partcommunity.com

Alternatively, you can scan the QR code here and you will be transferred directly to the portal.

DOCERAM CAD-PORTAL
WWW.DOCERAM.PARTCOMMUNITY.COM

ModulMaster Pro Type N

AUTOMATICALLY FLAWLESS WELDING OF PROJECTION WELD NUTS

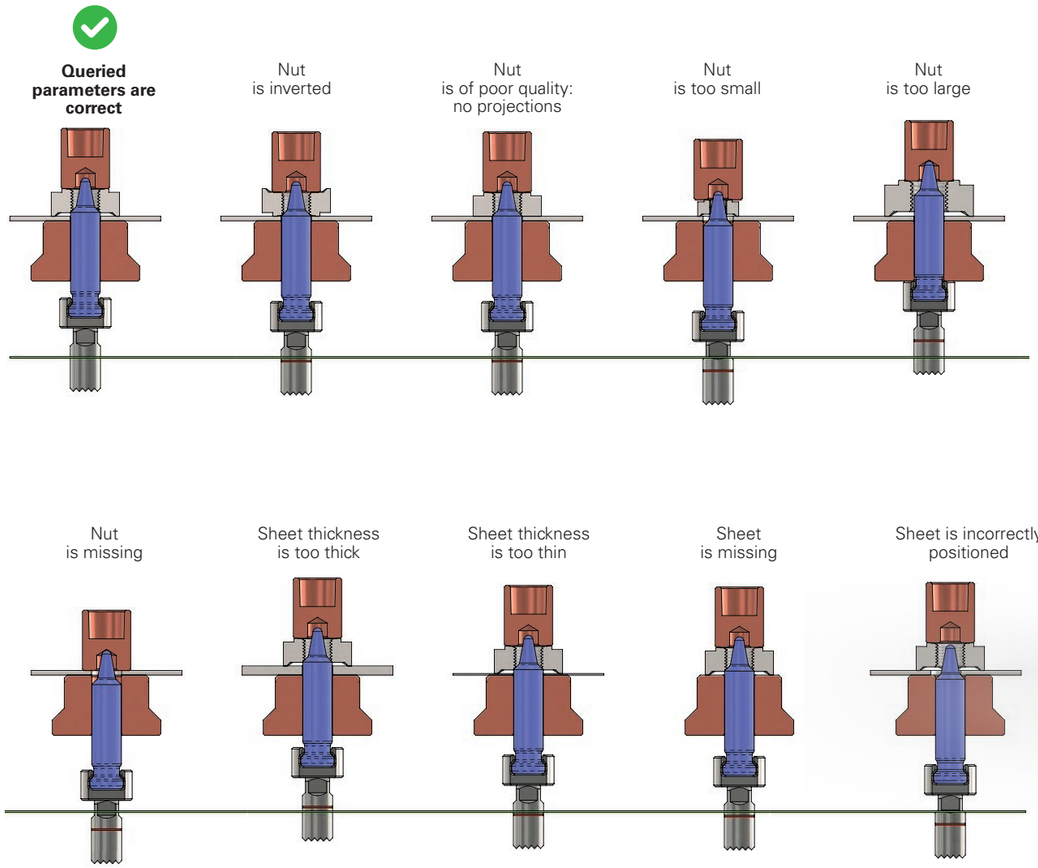
The top model brings the entire spectrum of the new **DOCERAM** welding device into the production process. The sensor technology integrated into the **ModulMaster Pro Type N** offers enhanced functionality through a precise position measuring system that detects a wide range of possible production errors in real-time.

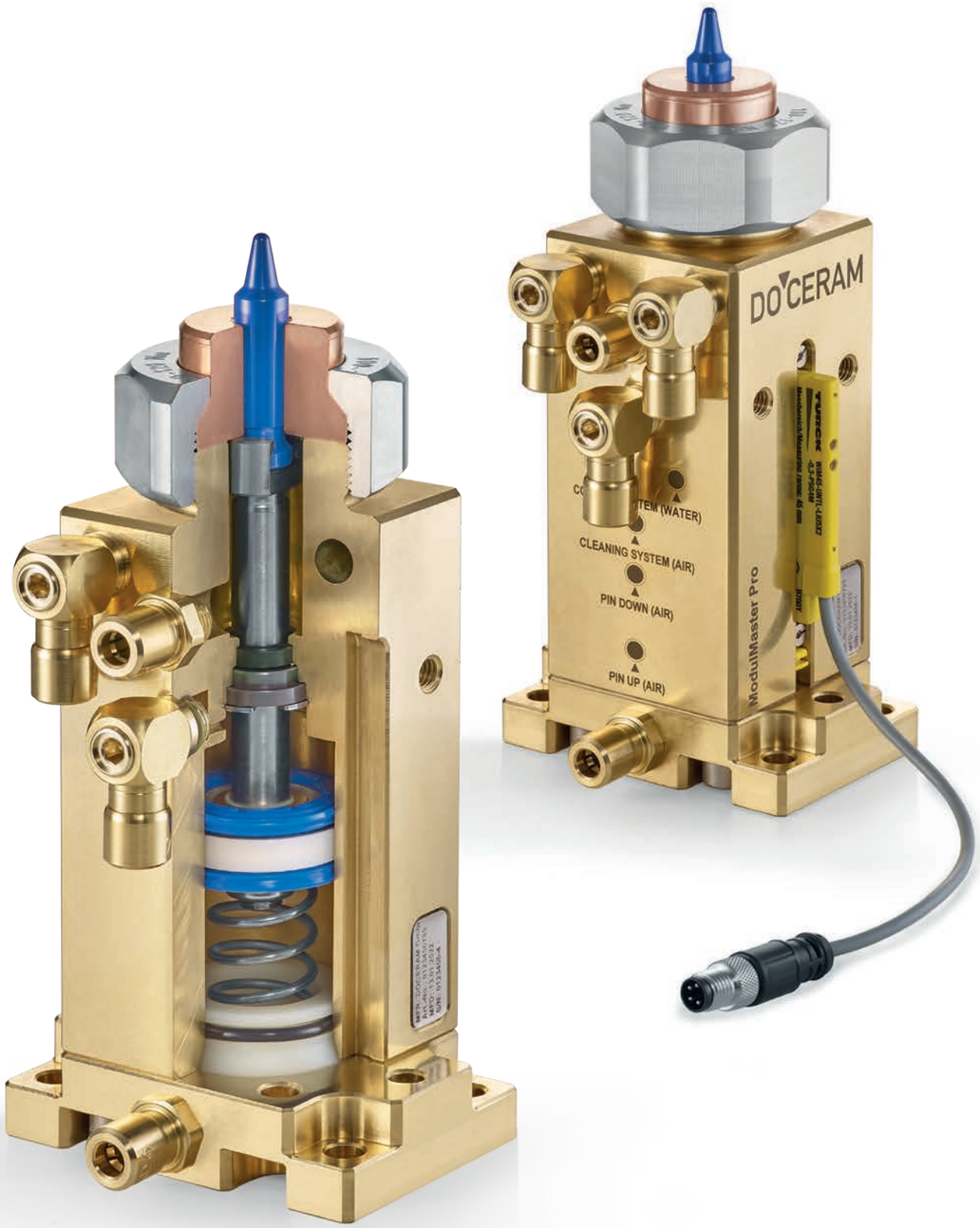
The **ModulMaster Pro** welding device is equipped as standard with a Turck* analogue sensor. This sensor is characterised by the fact that it is not sensitive to external magnetic fields.

The **ModulMaster Pro** welding device can also be optionally equipped with a Balluff** digital sensor for easy end position detection.

A sequence control is required for the integration of the sensor technology. If your system does not have its own PLC, you will also find information about our CRU-2 compact control system in this brochure. This compact control system is compatible with all standard resistance welding machines.

The following process errors, amongst others, can be avoided with the ModulMaster Pro Type N sensor technology:





** Hans Turck GmbH & Co. KG, Mülheim an der Ruhr (Germany)*
*** Balluff GmbH, Neuhausen (Germany)*

ModulMaster Pro Type S

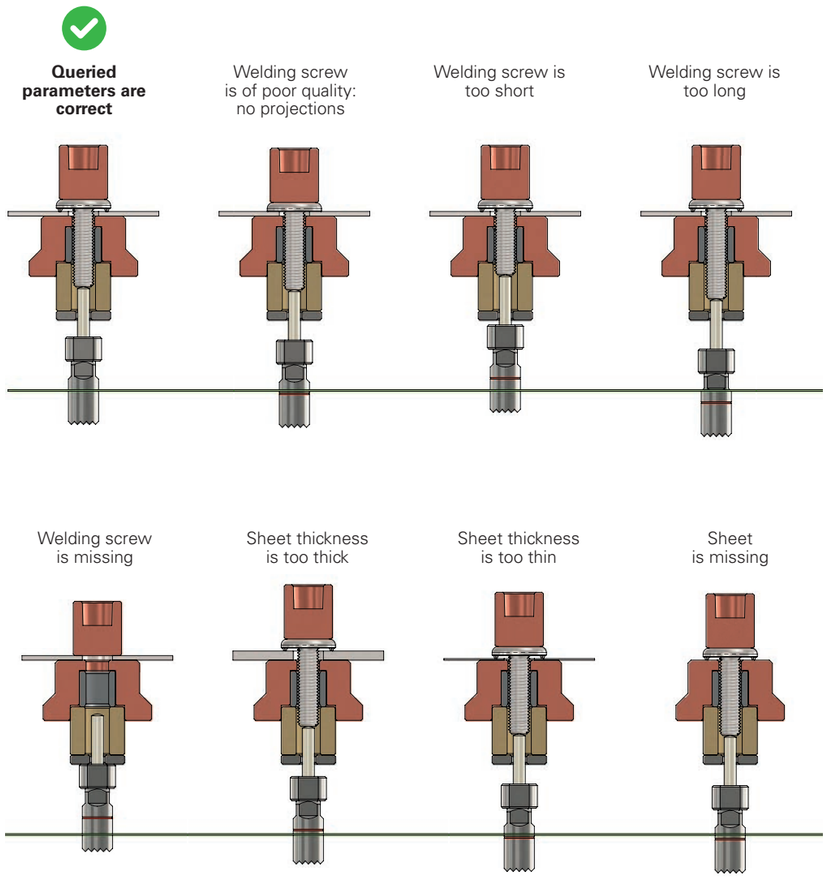
THE EXPERT FOR WELDING BOLTS AND SCREWS

The advantages of the new **ModulMaster** can also be used when welding screws and bolts. Here too, the integrated path measurement offers additional quality assurance. The welding process is only triggered if the specified parameters are correct.

A large number of possible error patterns can be detected and avoided before the welding is carried out. The proven **DOCERAM** centring sleeve made of Volcera® high-performance ceramic with a suitable change electrode is specifically available to the ModulMaster Pro Type S.

The **ModulMaster Type S** welding device is supplied as standard with a sensor for connection to a sequence control. If a welding machine is available without a sequence control, this brochure contains further information about our **ModulMaster** compact control system.

The following process errors, amongst others, can be avoided with the ModulMaster Pro Type S sensor technology:



COMPACT CONTROL SYSTEM FOR MODULMASTER PRO

THE CONTROL SYSTEM THAT REDUCES WASTE

The CRU-2 compact control system checks the correct position of nuts and the mechanical function of the **ModulMaster Pro**, such as pin retraction. The CRU-2 contains electrical and pneumatic elements to control and monitor up to two **ModulMaster Pro**:

- SIEMENS S7 PLC*
- Analog inputs for the nut detection sensors
- Digital inputs for component detection and the signal for starting the sequence
- Pneumatic valves to move the pin (up/down) and for the cleaning air
- Maintenance unit including pressure regulator and filter to feed in the compressed air
- SIEMENS HMI touch panel for operation

The CRU-2 is intended for use on resistance welding systems that do not have their own sequence control. In order for the CRU-2 to perform its function, intervention is needed in the sequence of the projection welding system.

The underlying sequence of resistance pressure welding is used to do this on all projection welding systems.

Welding machines that are suitable for the application of our CRU-2 are equipped with a pneumatic welding cylinder. It is normal that the preselected force of the welding cylinder is determined by means of a pressure switch. A 24 VDC switching signal reports to the welding current control when the corresponding pressure is reached.

The CRU-2 intervenes in this signal sequence. The pressure contact is interrupted and only released when the **ModulMaster Pro** sensor technology reports the correct configuration.

Once the welding sequence has been started, the basic function of the **ModulMaster Pro** runs in parallel. The pin is then retracted after the welding. At the end of the welding and after removing the components, the pin is returned to the starting position.

** The SIEMENS S7 PLC is a product manufactured by SIEMENS AG, Amberg (Germany)*

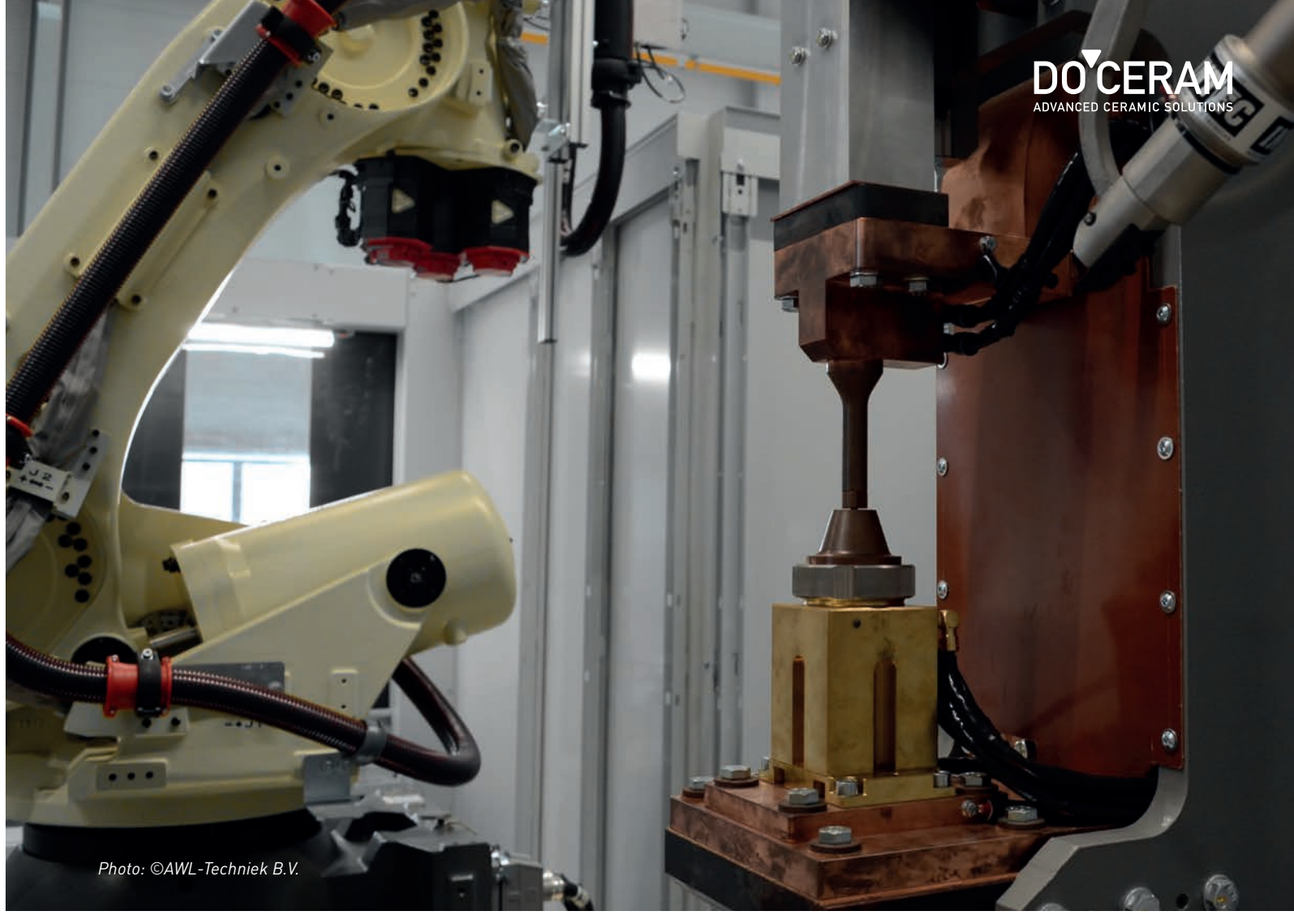


Photo: ©AWL-Techniek B.V.

OUR SPECIAL SOLUTIONS: TAILORED TO YOUR APPLICATION

All products in the ModulMaster product range can be individually tailored to your process. We have already worked with our customers to develop and implement many special solutions for their production plants.

For example, special solutions are recommended when:

- Angled plates have to be welded
- Restricted installation space is available
- Greater stability is required
- A higher current transmission needs to be ensured

The situations listed are examples of the results from an application consultation. If you also want to overcome complex challenges in your welding process, we will be glad to assist you as a competent partner.

DOCERAM
ADVANCED CERAMIC SOLUTIONS

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