Z MAKİNA

MONTHLY NEWSLETTER

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A SUBSIDIARY OF ZETAŞ ZEMİN TEKNOLOJİSİ A.Ş. SOLETANCHE BACHY

CONTENT

Special Foundation Equipment & Machine Manufacturer

Z Makina with potential contributions to the group companies is to give examples of what Z Makina has achieved in the past and relate them to what it can accomplish in the future. With an ongoing emphasis on innovation in all phases of its design and production, Z Makina abides to its basic concept of Reliability In Action to provide ever more trustworthy products and services to a global customer base that continues to enjoy a sustained return on its investment.

Within the project duration, Z Makina;

1. Determines at a high level what needs to be accomplished and how it will be done
2. Allocates between what the project will and will not do.
3. Describes the work that must be performed to deliver a product, service or result.

01. RISER PIPES FOR DEWA PROJECT/UAE

In the scope of DEWA Water-well Project in UAE, Z Makina riser pipes are made of AISI 304L or 316L stainless steel with a low carbon content for high mechanical properties, corrosion resistance, and low thermal conductivity.

02. MECHANICAL GRAB JAWS FOR SOLETANCHE

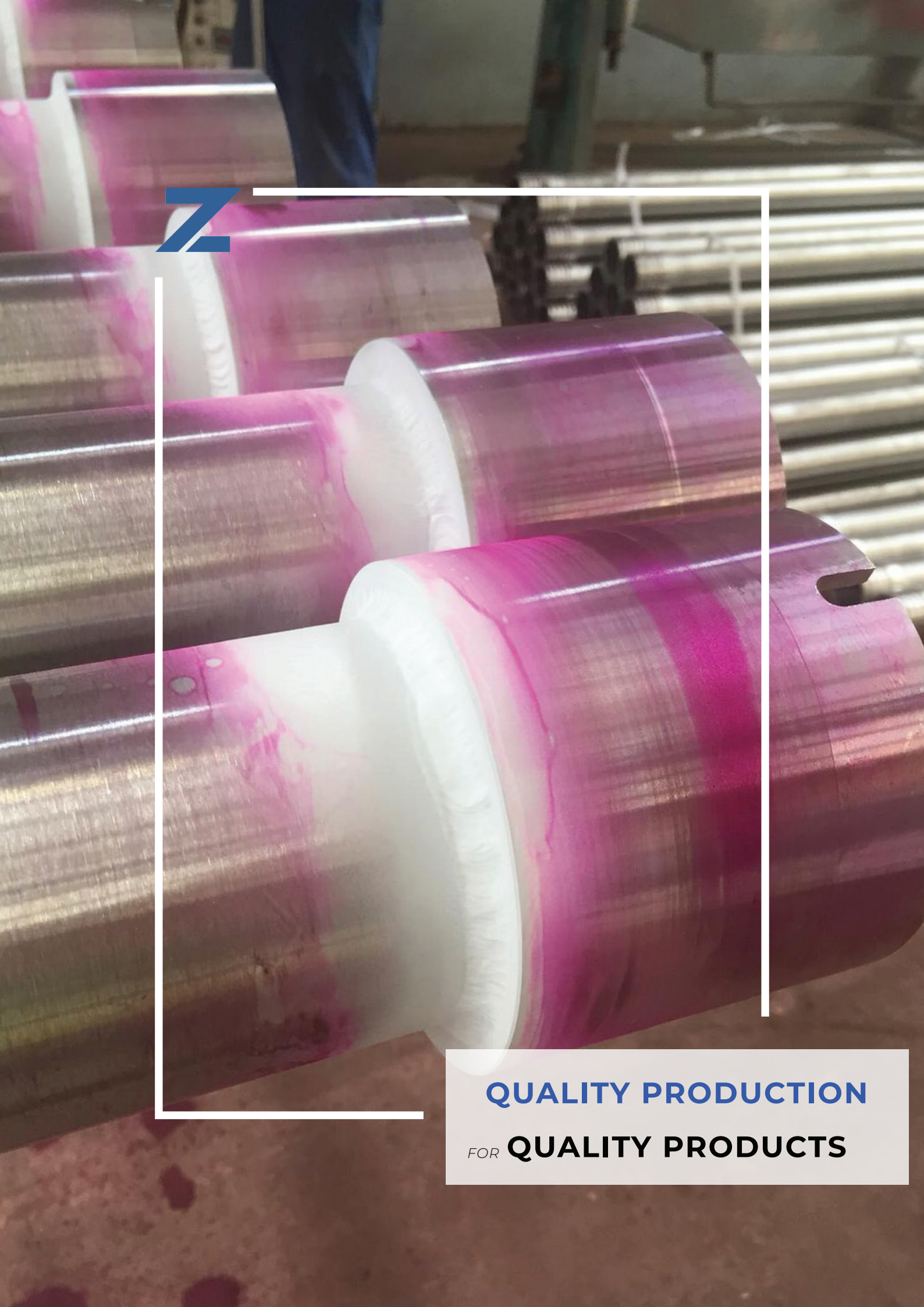
Another set of 800x3600 mechanical grab jaws manufactured for Soletanche Bachy.

03. DEEP SOIL MIXING TOOLS

Z Makina can manufacture DSM tools in required diameters and dimensions for several ground conditions. The tool set represents the 1150 mm Auger, drilling rods, rotary sleeve, DSM kelly bar, swivel and accessories.

04. BAUER TYPE HYDRAULIC GRAB JAW

With its proven production, Z Makina produced Bauer type hydraulic jaws in line with the special needs of its customers.



QUALITY PRODUCTION

FOR **QUALITY PRODUCTS**

RISER PIPES
FOR DEWA PROJECT

In the scope of DEWA Water-well Project in UAE, Z Makina riser pipes are made of AISI 304L or 316L stainless steel with a low carbon content for high mechanical properties, corrosion resistance, and low thermal conductivity.

DN 80 and DN 100 riser pipes, well head connection and pump connection adapters in various sizes and diameters, and for each size exists a variety of fittings, and accessories were manufactured depending on project requirements.

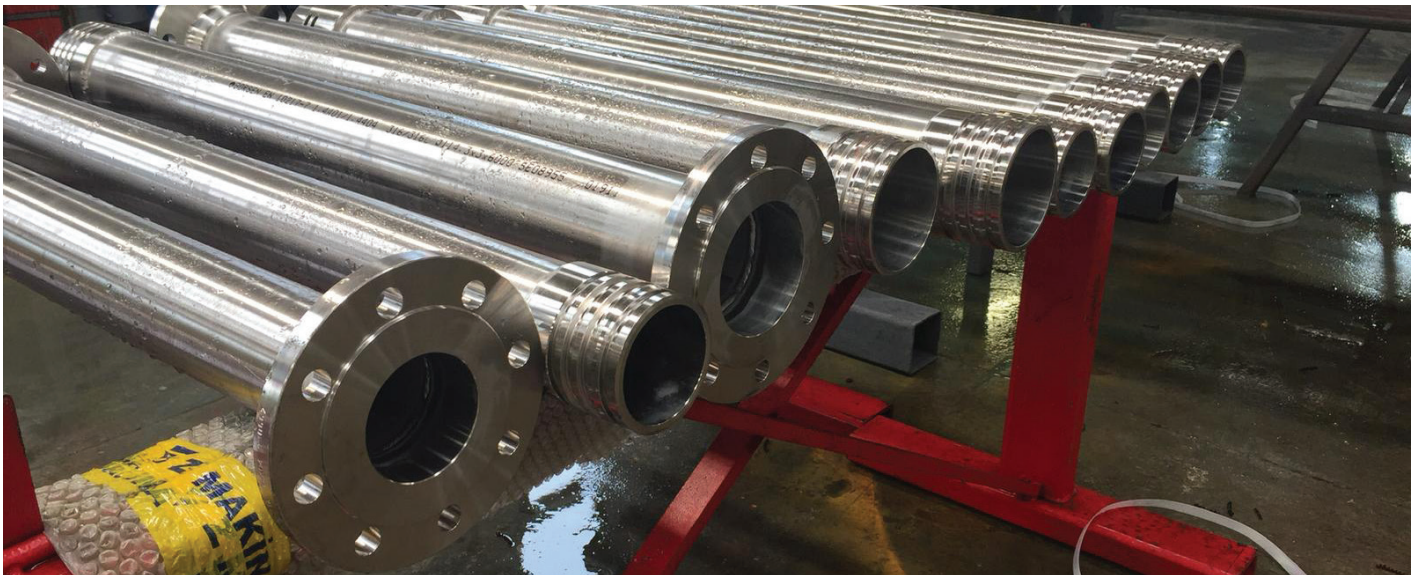
Z Makina applies gas tungsten arc welding (GTAW), also known as Tungsten Inert Gas, or TIG Welding, is a joining process used on riser pipe welding. An arc welding process, TIG welding stainless steel involves the use of an non-consumable tungsten electrode in order to deliver a weld. TIG welding is the best solution for joining stainless steel pipes and tubes.

Welding Procedure Specification was supported with PQR (Procedure Qualification Record) and WQR (Welding Qualification Record) during manufacturing.

Based on the Customer' s requirements such as geometrical characteristics (diameter, depth), pump pressure and water quality are the principal factors determining the choice of the riser pipe and the fitting type. These choices are vital, as they contribute to the productivity, longevity and sustainability of the well.

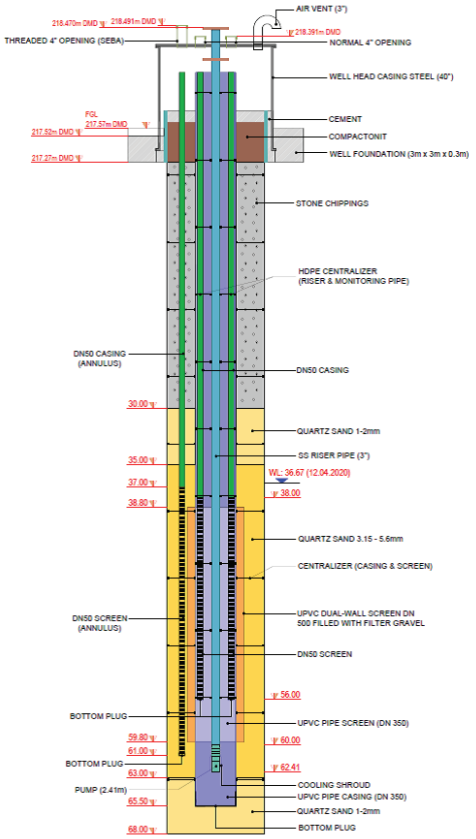
Each connection fitting has its advantages and specific features.

Surface treatment (pickling - passivation) were carried out as last step of manufacturing to produce a uniform metal oxide protective layer. This treatment provides maximum anti- corrosion protection.



Z Makina's internal procedures create a framework for efficient fabrication of welded structures subjected to fatigue, it is necessary to pass the following steps:

- Identifies critical points of the welds which set the fatigue life of the welded structure
- Develops welding procedures to optimize the fatigue properties of the weld in relation to the load conditions. This means improved properties at the weld toe or at the weld root.
- Defines appropriate weld requirements which contribute to a high focus on critical characteristics, merging best knowledge of the welding process, fatigue properties and the weld requirements
- Sets design rules for the improved welding procedures to connect the expected fatigue properties of the weld and the design limits
- Use the new requirements and design guideline to design structures which are optimized for both cost and fatigue
- The concept of design for purpose could be adopted by using the ONWELD system and focusing on quality assuring the critical weld toe based on the knowledge on how the welds in the structure are loaded which in return would result in a cost-effective quality control.



INSTALLATION

- No special tools are needed to assemble or disassemble a riser with ZSM connection.
- The O-rings are fitted to the male end, which is inserted into the female end after alignment of the anti- rotation stud and notch.
- When the ends are fully home, the flexible rods are inserted manually into the slots. When the rod reappears at the other end of the slot, the connection is complete.

SAFETY

Sealing

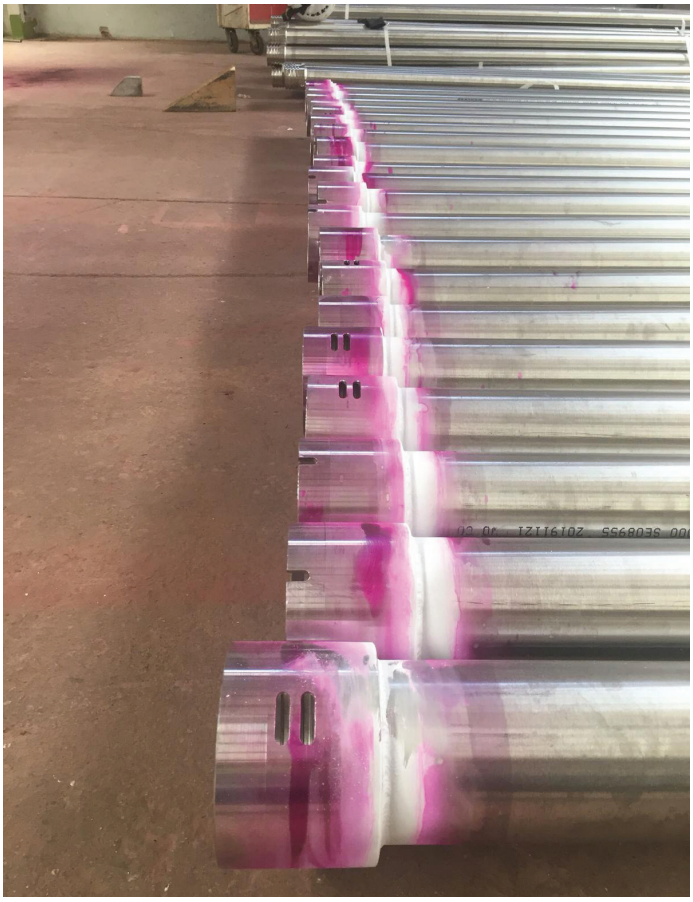
WRAS o-rings black coloured, injection moulded, nitrile rubber 'O' rings. Shore hardness 70. Tested in-radius size 1.31mm. For use with water up to 85°C.

FITTING DESIGN

- Four grooves machined around the male end
- Two O-rings to ensure water tightness and keep it clean seated in the first and fourth grooves.
- Two slots on the female end used to insert flexible rods, intended to absorb traction forces, into each intermediate groove.
- Twisting forces on pump startup and shutdown are neutralized by a stud on the male end which engages in a notch on the female end.

QUALITY
NDT Tests

At the stage of material receiving inspection : Eddy Current, Ultrasonic Test for the wall thickness of the pipes certificates are demanded from the supplier
During Welding Process : 100% of fillet weld connections were carried out by DPI tests by either Z Makina's authorized person



MANUFACTURING SPECIFICATIONS

Riser sections are usually produced in effective lengths of 6.1 m or 3.1 m.

A short pump adapter is configured according to pump connection type and dimensions (gas thread, flange, etc.). The riser outlet can also be customized to your needs.

For optimum assembly and disassembly, particular attention is paid to pipe end alignment in order to ensure parallelism. An alignment bench is employed for this purpose in riser pipe production.

MECHANICAL GRAB JAWS
FOR SOLETANCHE BACHY

Another set of 800x3600 mechanical grab jaws manufactured for Soletanche Bachy.

Z Makina, which has proved itself in the production of mechanical grab jaws, produced 2 sets of 800x3600 jaws for Soletanche Bachy.

Soletanche Bachy's own design jaws are produced with the manufacturing experience of Z Makina and sent to the end user.

DEEP SOIL MIXING TOOLS

Z Makina can manufacture DSM tools in required diameters and dimensions for several ground conditions. A customer from UK demanded a DSM set. The tool set represents the 1150 mm Auger, drilling rods, rotary sleeve, DSM kelly bar, swivel and accessories. The pilot auger shape was constructed according to a geological structure of soil.

Dipping of the mixing tool in soil with rotating speed of the auger 20-80 RPM. Drilling happens without percussions to simultaneous submission of a cement compound from the 8 units nozzles through the auger 3 of them are spare depending on the disharge pressure.

Advantages of Z Makina DSM tools :

- Absence of vibrations : can be executed in places with high concentration of constructions and in residential areas.
- Low noise : thanks to special construction of the boring drive without use of the mechanism of tooth gearing noise level is minimized.
- Productivity : high frequency of rotation of the auger increases the daily productivity of a drilling equipment. Pilot head facilitates to pass tough layers.

BAUER HYDRAULIC GRAB JAW

With its proven production, Z Makina produced Bauer type hydraulic jaws in line with the special needs of its customers.

Z Makina can manufacture and revise not only its own designs, but also the jaws of highly preferred manufacturers such as Bauer.

In line with the needs of our customer, Bauer type jaw has been produced and revised according to the customer's base machine.

WHY CHOOSE US

ADVANTAGES OF WORKING WITH Z MAKINA

In house development of proprietary datas from ZETAS for over 30 years.

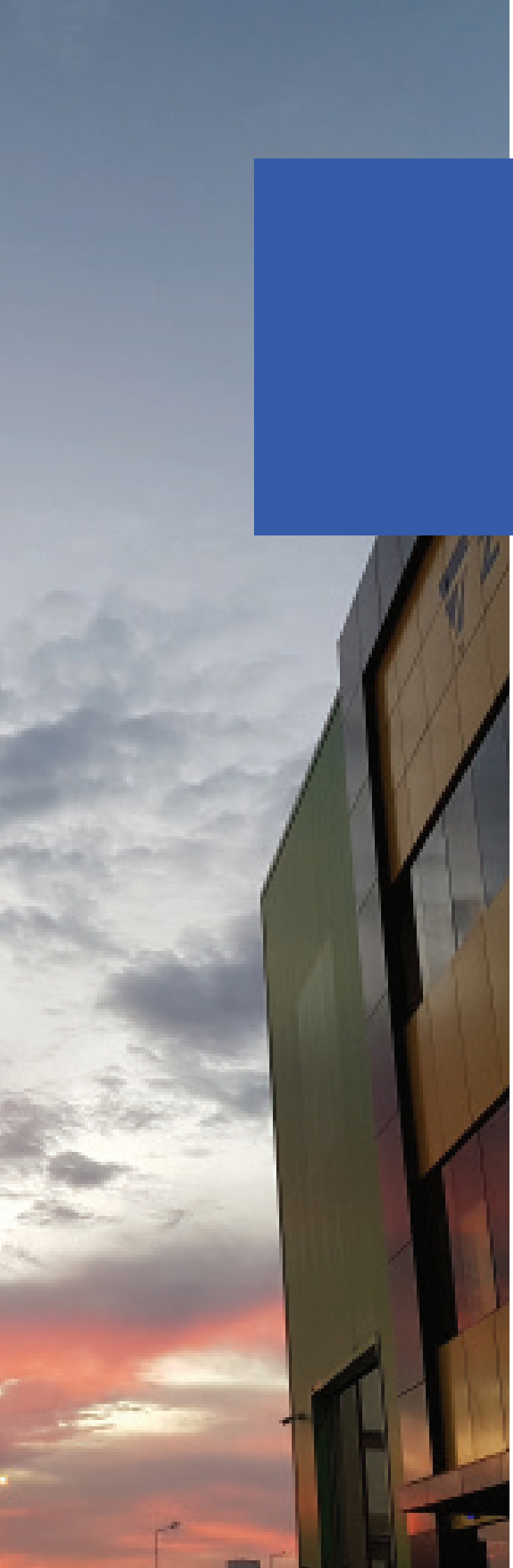
Always side of the customer and provide full support.

Management, design and field staff have experience in nearly all types of foundation applications

Fast delivery and elaborated products to all customers.

YOU HAVE A STRONG PARTNER WITH Z MAKINA

Z Makina has the experience in foundation equipment technology and innovation to provide the most economical solution that satisfies the requirements of each project, typical or unique. Z Makina, offering the exhaustive and profitable solutions. Headquartered in Kocaeli, Turkey, has expanded to meet the increasingly complex needs of the geotechnical equipment within the group companies.



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