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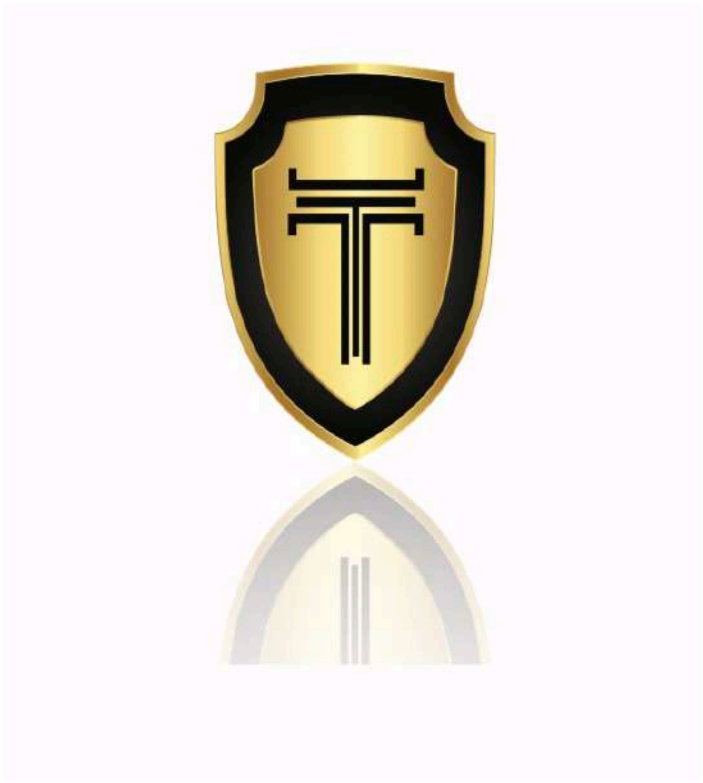

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MADENCİLİK ENERJİ SAN. VE TİC. LTD. ŞTİ.

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About US

TITAN drilling has been established as a company that provides solutions in the field of services and consulting to all companies in the sector with the aim of carrying out ground survey and decal exploration drilling activities in all Turkey and internationally.
Our company continues its activities with the aim of providing world-class (JORC, NI - 43-101) services in national and international areas by following the technological developments of our time and constantly renewing itself.
TITAN drilling aims to provide the best service to

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About US

its customers in international quality standards in order to produce the most reliable and economical solutions together with the principle of continuously increasing professional competence and increasing professional prestige to the highest levels with its modern machinery and equipment and experienced technical and engineering staff.

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Our Services

Drilling Services

* Metallic Mine Drilling
* Energy Drilling
* Precious Element Drilling
* Water Drilling-Rotary
* Air drilling-RC
* Geotechnical Drilling

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Infrastructure Services

* Pipejacking And Pipeline İnstallation (Horizontal &Vertical)

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Construction Services

*Construction Management

*Construction Reporting

* Construction Build

* Construction Design

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Reporting Services

* Reporting in UMREK approved, NI-43-101 and JORC standards
* Exploration of mineral deposits and reserve account
* Geographic Information Systems (GIS) applications
* Geological-Geotechnical Studies Based On Zoning Planning
* Geothermal field exploration and production projects and drilling decks
* Groundwater exploration and decommissioning and drilling

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* Road and railway projects
* Urban Transformation Projects
* Energy Projects
* Hydrogeological Studies
* Preparation of Environmental Impact Assessment (EIA) reports
* Consulting Services

*GROUND WORKS SERVİCES

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Mine Drilling

Rotary Drilling

Rotary-muddy drilling method is applied on floors consisting of such materials because clay, sand, gravel type materials called loose and floors can spill and collapse during drilling. In order to eliminate the drawbacks of water circulation (circulation) in distorted formations, the mud formed by the addition of various additives to provide a density and viscosity greater than water, as well as gel strength, is called “drilling mud”.

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It is necessary that these additives can remain in suspension in water for a long time. To ensure this, substances in clay and bentonite are used.
Some other substances can also be added to affect density and viscosity.

By turning a cutter and grinder drill, the broken parts in the ground are thrown out by drilling mud and the ground is drilled by moving through the gap.

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The water or drilling mud sucked out of the pool by means of the machine's pump, which transmits the rotational movement

it receives from the engine to the drill and is called a drilling tool (drilling tool), passes through the pipes and rises from the gap between the drilling tool and the well wall and rises to the decking.

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MINE DRILLING

Reverse Circulation (RC) Drilling

In cases where there are too many crevices and cracks in hard and rock formations, drilling

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circulation mud escapes from these cracks and normal circulation is not provided. In such cases, pressure air drilling is used, since Muddy drilling will not be economical. In RC drilling, the formation that will be drilled will not be suitable for destruction, the formation will not contain sticky substances such as clay, and the amount of moisture or water in the formation will not prevent cuts from being thrown out.

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In RC drilling, compressed air is used instead of drilling fluid. Designed to use mud and air, RC

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water drill rigs are useful for limestone formations that are moisture-free, dry or too cracked to provide circulation.Juliette water drill rigs are designed to use mud and air.

In other words, it is a rotary drilling method in which the cleaning process is done with air. In the RC drilling method, the mud pump is replaced by a compressor.

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Mine Drilling Wire

Line Core Drilling

In this technique, it is not necessary to remove the Tijs from the well in order to remove the core obtained as a result of the drilling process from the well. In this technique, after the inner tube is filled with core, the equipment, which is connected to a thin steel rope and called over shot(fishing line), is lowered into the well. Over

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shot captures the part located at the top of the inner tube head. When the rope is pulled out of the well, the switches close, which ensure that

the inner tube is stable inside the outer tube and does not escape backwards, and the inner tube is released. In this way, the inner tube is separated from the outer tube and removed to the head of the well.

Advantages of wire Line ucore drilling technique

1. Time and labor savings
2. Increased drilling depth
3. Decline of well ruins
4. Increase diamond drill life
5. Increase in amount of core feed
6. Increase in the percentage of coring

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Infrastructure Services

Pipejacking And Pipeline İnstallation (Horizontal &Vertical)

Pipe jacking, generally referred to in the smaller diameters as microtunnelling, is a technique for installing underground pipelines, ducts and culverts. Powerful hydraulic jacks are used to push specially designed pipes through the ground behind a shield at the same time as excavation is taking place within the shield. The method provides a flexible, structural, watertight, finished pipeline as the tunnel is excavated by Titan drilling

There is no theoretical limit to the length of individual pipe jacks although practical engineering considerations and economics may impose restrictions. Drives of several hundred metres either in a straight line or to a radius or a series of radii are readily achievable. A range of mechanical and remote control excavation systems are available. Pipes in the range 150mm to 3000mm, can be installed by employing the appropriate system. Construction tolerances are comparable with other tunnelling methods, and the pipe jacking method generally requires less overbreak than alternative systems. It provides ground support and reduces potential ground movement. Mechanical excavation methods are similar to those employed in other forms of tunnelling. Shields, excavation and face support can be provided for a wide variety of ground conditions by Titan drilling

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In order to install a pipeline using this technique, thrust and reception pits are constructed, usually at manhole positions. The dimensions and construction of a thrust

pit vary according to the specific requirements of any drive with economics being a key factor. Pit sizes will vary according to the excavation methods employed, although these can be reduced if required by special circumstances by Titan drilling

A thrust wall is constructed to provide a reaction against which to jack. In poor ground, piling or other special arrangements may have to be employed to increase the reaction capability of the thrust wall. Where there is insufficient depth to construct a normal thrust wall, for example through embankments, the jacking reaction has to be resisted by means of a structural framework having adequate restraint provided by means of piles, ground anchors or other such methods for transferring horizontal loads by Titan drilling

To ensure that the jacking forces are distributed around the circumference of a pipe being jacked, a thrust ring is used to transfer the loads. The jacks are interconnected hydraulically to ensure that the thrust from each is the same. The number of jacks used may vary because of the pipe size, the strength of the jacking pipes, the length to be installed and the anticipated frictional resistance by Titan Drilling

A reception pit of sufficient size for removal of the jacking shield is normally required at the completed end of each drive. The initial alignment of the pipe jack is obtained by accurately positioning guide rails within the thrust pit on which the pipes are laid. To maintain accuracy of alignment during pipe jacking, it is necessary to use a steerable shield, which must be frequently checked for line and level from a fixed reference. For short or simple pipe jacks, these checks can be carried out using traditional surveying equipment. Rapid excavation and remote control techniques require sophisticated electronic guidance systems using a combination of lasers and screen based computer techniques by Titan drilling

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When the pipejack or microtunnel is carried out below the water table it is usual to incorporate a headwall and seal assembly within each thrust and reception pit. The use of these items prevents ingress of ground water and associated ground loss, and retains annular lubricants. The pipe jacking technique and its components have been subject to extensive and ongoing research at a number of leading UK universities including both Oxford and Cambridge. This has included model and full scale testing of pipes and joints and the effects of lubrication and soil conditioning on the pipe jacking process by Titan drilling

This activity has been undertaken under the auspices of the Pipe Jacking Association with funding and participation provided through government research bodies, water companies and the tunnelling and pipe jacking industry by Titan drilling

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Our expertise includes but nor limited to design, construction, inspection and testing, commissioning, maintenance, in-service inspections, repairs and alterations of;

- Pipelines
- Piping
- Aboveground Storage Tanks
- Boilers and Pressure Vessels
- Separators, Heat Exchangers, Distillation Columns, Drums
- Cooling Towers, Condensers, Chemical Reactors, Process Vessels
- Process Control & Instrumentation Systems
- Drilling and Drill Sets
- Steel Structures

Our capabilities include but not limited to;

- Sourcing and Supply
- Supplier Selection and Management
- Project Management
- Construction Management
- Quality & HSE Management
- Risk Assessment and Management
- Maintenance Management
- Mechanical Integrity and Process Safety
- Inspection and Testing Services
- Calibration Services

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Pipe Jacking Referencess

***BOTAŞ 22 km -80 Inch -2021-Petroleum**
***DSİ 24 km -80 Inch -2020-Water**
*** TPO 22 km -60 Inch -2019-Petroleum**
*** Kolin Construction-21 km -80 Inch- 2018-Water**
***BP -30 km -80 Inch -2017-Petroleum**
***SHELL -25 km -60 Inch -2016-Petroleum**
*** DSİ -22 km – 80 Inch (10 km)-60 Inch (10 km)-Water -2015**
*** DSİ – 24 km – 60 Inch -2014-Water**
*** Limak Construction -21 km-40 Inch -2013-Water**
***Kalyon Construction -22 km -60 Inch – 2012-Water**

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PIPELINE CONSTRUCTION & MANAGEMENT

1. Kirklareli - Çorlu Natural Gas Pipeline, Turkey 36"-98 Km

2. Mersin Natural Gas Distribution Lines, Turkey 4"-8"-12"-"16" 35 Km

3. Hatay Natural Gas Pipeline, Turkey 36" -21 Km

4. Kahta Natural Gas Pipeline, Turkey 8"-41 Km

5. Antalya Oil Lines, Turkey 8"-32 Km

6. Çorlu-Keşan Natural Gas Pipeline, Turkey 36"- 120 Km

7. Zubair Field Development Project, 4" Flowlines, Iraq

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PIPELINE AND ENERGY GENERATION SERVICES

1. Testing of Safety Relief Valves, Atwood Southern Cross Offshore Drilling Rig, 2007

2. Rapid Engineering & Construction Ltd. - Telavi-Akhmeta Gas Pipeline, Georgia: Consultancy, Management and Supervision Services for Air Drying of 12" - 27km pipeline

3. Electro Montage Service Ltd. - Tsiteli Hidi – Marneuli Gas Pipeline, Georgia: Consultancy, Management and Supervision Services for Air Drying of 20” - 24km pipeline

4. Kurdistan Oil Export Pipeline, KRG, Iraq: Hot-tapping, Cold Pipe Cutting and Welding Services for the Installation of a 40" Ball Valve

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5. Sakhmilsadenmsheni Ltd. - East - West Gas Pipeline Rehabilitation Project (Phase Ill) KUTAISI - ABASHA Section I & II, Georgia: Consultancy, Management and Supervision Services for Air Drying of 28"- 47km Gas Pipeline

6. Sakhmilsadenmsheni Ltd. - Rehabilitation of 23km Section of Zestafoni - Kutaisi Pipeline, Georgia: Consultancy, Management and Supervision Services for Air Drying of 28"- 23km Gas Pipeline

7. Hyundai Engineering Corp. - Taza Power Plant, Kirkuk, Iraq: Hydrostatic Testing, Cleaning and Drying of 470m 10 " Fuel Line

8. Hyundai Engineering Corp. - Qudus-3 Power Plant, Baghdad, Iraq: Cleaning and Air Blowing of 540m + 470m 2 x 10" Fuel Lines

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9. KAR Construction Co. KRG, Iraq: Supervision for special crossings of 24" and 36" Gas Pipelines
10. DISI Water Pipeline Project, Amman, Jordan: Testing & Supervision of 66" - 84 km Pipeline
11. BOTAS Antalya Gas Loop Line, Turkey: Testing & Supervision of 36" - 36 km Pipeline
12. BOTAS Suluova-Havza-Vezirkoprü-Bafra Gas Pipelines, Turkey: Testing & Supervision of 36" - 110 km Pipeline
13. BOTAS Ordu-Giresun Phase III Gas Pipeline, Turkey: Testing & Supervision of 16" - 60 km Pipeline
14. BOTAS West Black Sea Natural Gas Pipeline Project, Turkey: Testing & Supervision 16" - 108 km + 14" - 17 km + 12" - 46 km Pipelines

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15. BOTAS East Black Sea Phase II Natural Gas Pipeline Project, Turkey: Testing & Supervision of 16” – 117 km + 18" - 74 km + 12” – 22 km Pipelines

OILFIELD SERVICES

1. Gulf Keystone Petroleum International – PF2 Turnaround Services, IRAQ: Provision of Maintenance, Overhaul, Alteration, RBI services for Crude Oil Stabilizer & Separators

2. Gulf Keystone Petroleum International – PF1 Turnaround Services, IRAQ: Provision of Maintenance, Overhaul, Alteration, RBI services for Crude Oil Stabilizer & Separators

3. Gulf Keystone Petroleum International – PF1 Crude Oil Tank Maintenance Services, IRAQ: Provision of Maintenance, Overhaul,

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Alteration, RBI services for Crude Oil Storage Tank

4. Gulf Keystone Petroleum International – PF1 Risk Based Maintenance Services, IRAQ: Provision of Criticality Analysis, Screening and Maintenance Management Consultancy Services

5. TUPRAŞ, Batman Refinery – 30.000 m3 Bitumen Tank Construction, TURKEY: Design, Fabrication, Erection, Inspection & Testing, Coating and Insulation of 30.000 m3 Bitumen Storage Tank including Connecting piping and auxiliaries.

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6. TUPRAŞ Kırıkkale Refinery – Polymer Modified Bitumen Plant Design Services, TURKEY: Front End Engineering Design, Basic end Detail Engineering Design Services Including Capital Investment Estimation

7. BOTAŞ Ceyhan Storage Tanks Revamp Project, TURKEY: Turnaround Planning and Estimation Study for 21 Above Ground Storage Tanks

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OTHER SERVICES

1. Anagold CSEP Expansion Project – TURKEY: Quality Management Services for Erection of 25 storage and process tanks, 40.000 WDI piping, 3 Thickeners, 900.000 Tons of steel structure and installation and commissioning of over 500 static and rotating equipment.

2. MKEK Kırıkkale Ammunition Factory – TURKEY: Risk Engineering Survey for 9 Manufacturing Shops. Cost Benefit Analysis and Risk Benefit Analysis for Process Safety Investments

3. ERDEMİR Steel Mill – TURKEY: Risk Engineering Survey for 9 Manufacturing Shops. Cost Benefit Analysis and Risk Benefit Analysis for Process Safety Investments.

4. ERDEMİR Steel Mill – TURKEY: Process Safety Audit and GAP Analysis

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5. TUPRAG Kışladağ Gold Mine Expansion Project, TURKEY: Procurement Management Services for Mine Trucks, Gyratory Crushers, Cone Crushers, Mining Scale Front End Loaders

6. DEMİRCİLER Geothermal PP Construction Project, TURKEY: NDT Services for Construction Works.

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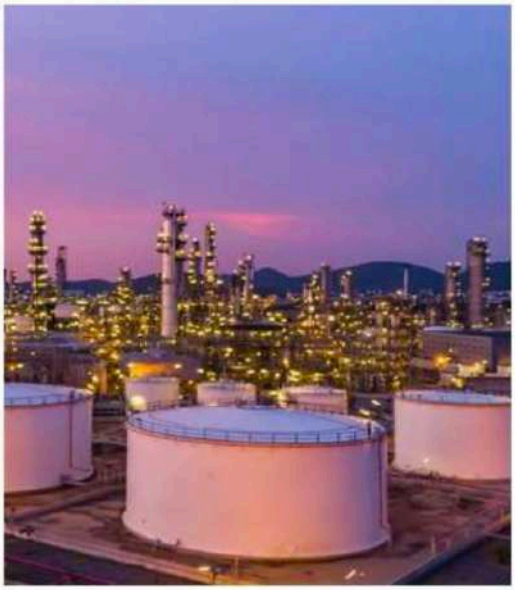
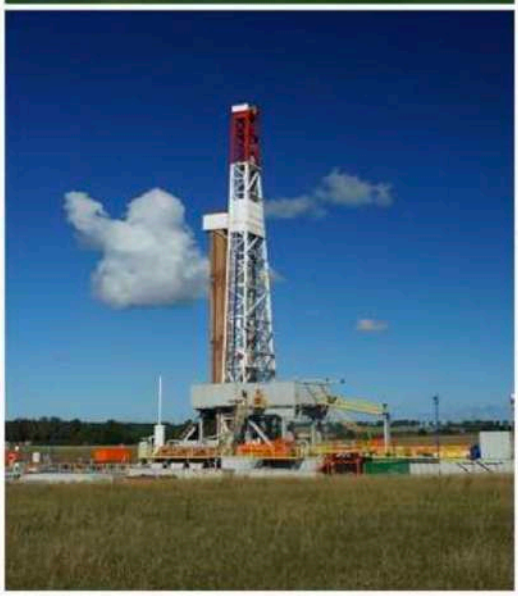
OIL & GAS SOLUTIONS

Construction – Services - Supply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CONSTRUCTION SERVICES

What are we doing?

- **Architectural & Structural Drawing - Design Of Projects**
- **Rough Works Projects**
- **Final Works Projects**
- **Mechanical Projects**
- **Electrical Projects**
- **Project Management -PRIMAVERA P6 And another PMP PROGRAMMES**

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- HIGHWAY PROJECTS
- TUNNELS PROJECT – NATM & TBM
- RAILWAY -METRO-HIGH SPEED TRAIN PROJECTS
- HIGHRISE PROJECTS
- AIRPORT PROJECTS
- MOTORWAY PROJECTS
- BUILDING PROJECTS
- OTELS &HOSPITAL PROJECTS
- NATO PROJECTS
- US EMBASSY PROJECTS
- WİND ROSE PROJECTS
- SOLAR ENERGY FIELD PROJECTS
- DAM PROJECTS
- VIADUCT -BRIDGE PROJECTS
- SUPERSTRUCTURE PROJECTS
- PREFABRICATED CAMP PROJECTS

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REFERENCES OF CONSTRUCTION

-SERBIA KULA TOWER ROUGH AND FINISHING PROJECTS – PART OF OTEL -SUBCONTRACTOR

-ATHENS US EMBASSY PROJECT -ROUGH WORKS-SUBCONTRACTOR

-DHAHRAN US EMBASSY PROJECT -ROUGH WORKS-SUBCONTRACTOR

-ROMANIA MOTORWAY PROJECTS – PART OF VIADUCTS-SUNCONTRACTOR

-POLAND 2nd WAR MUSEUM ROUGH PROJECTS -SUBCONTRACTOR

-MONTENEGRO PORTONOVI OTEL PROJECTS ROUGH WORKS OF VILLAGE PROJECTS-SUBCONTRACTOR

-CROTIA ROCK HOME PROJECTS-SUBCONTRACTOR

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-RIYADH METRO PROJECTS RAIL ,TBM TUNNELS -VIADUCT SUBCONTRACTOR
-KONYA TURKEY SOLAR ENERGY FIELD PROJECT-SUBCONTRACTOR
-İZMİR TURKEY WIN ROSE PROJECT-SUBCONTRACTOR
-KRASNODAR SMALL DAM PROJECT-SUBCONTRACTOR
-SERBIA SUPERSTRUCTURE PROJECTS-CONTRACTOR
-NIGERIA SUPERSTRUCTURE PROJECTS-CONTRACTOR
-LIBYA FACTORY PROJECT-CONTRACTOR
-TURKEY SIVAS HIGH SPEED TRAIN PROJECT-SUBCONTRACTOR
-TANZANIA -RAIL PROJECT -SUBCONTRACTOR

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-SİİRT TURKEY NATM TUNNEL PROJECT - SUBCONTRACTOR
-KRASNODAR FACTORY PROJECT-CONTRACTOR
-MOSCOW APARTMENT PROJECT - CONTRACTOR
-IRAQ APARTMENT PROJECT-SUBCONTRACTOR
-QATAR MOTORWAY PROJECTS - SUBCONTRACTOR
-QATAR REFINERY PROJECTS- SUBCONTRACTOR
-BAHRAIN BAPCO RENEVATION REFINERY PROJECT-SUBCONTRACTOR
-TENGIZ 3GI PROJECT-SUBCONTRACTOR
-AFGHANISTAN US-NATO ARMY BASE - PREFABRICATED PROJECT-CONTRACTOR

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-AFGHANISTAN WATER TANK PROJECT-SUBCONTRACTOR
-TURKEY ANKARA MOTORWAY PROJECT-SUBCONTRACTOR

In the above projects , we have worked together with our company and engineer team in the subcontractor and project management parts and are proud to complete it successfully

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Some Of The Projects We Have Completed

Turkey

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Crotıa

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Montenegro

Podgorica- 8000 m2 Masonry Projects

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Serbia

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Novisad-10.000m2-Finishing Works Project- Finised

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Kragujevac-4000 m2 - Finished

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Kraljevo-4000m2-Rough Works Project-As Finised

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NoviSad-2000m2-Roughly Works Project-Finished

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Belgrade -4000 m2 Rough Works Project-

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Serbia

TİTAN SONDAJ

Turkey

TİTAN SONDAJ

TİTAN SONDAJ

Tanzania

TİTAN SONDAJ

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Qatar

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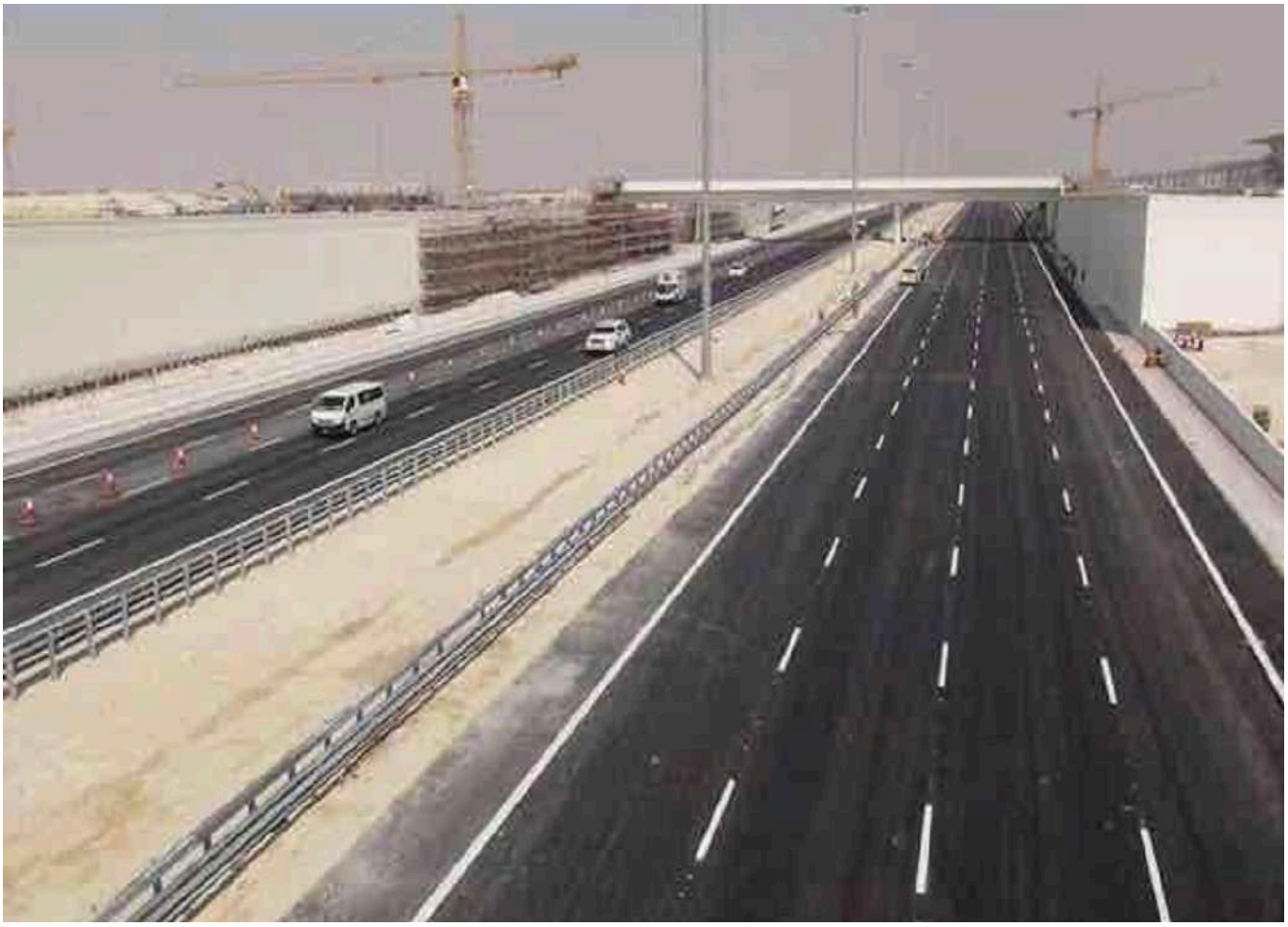
Saudi Arabia



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Russia

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Tengiz

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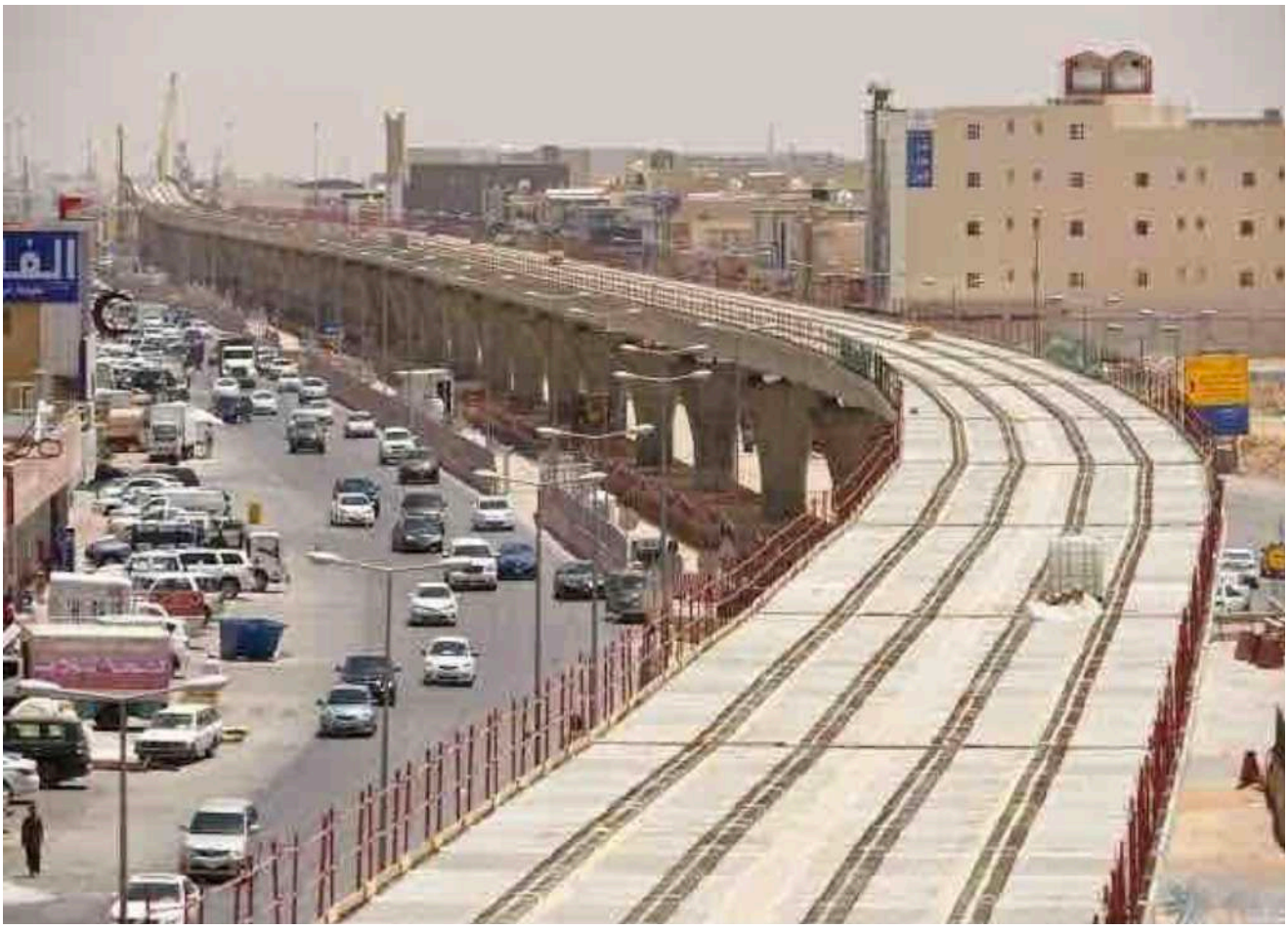

Saudi Arabia

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Poland

TİTAN SONDAJ

Romania

TİTAN SONDAJ

Saudi Arabia

Greece

TİTAN SONDAJ

Montenegro

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NIGERIA

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*Nigeria/Kontagora Technologhy School Project 3000m2

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*Nigeria/Kontagora Dormitory Building 3000m2

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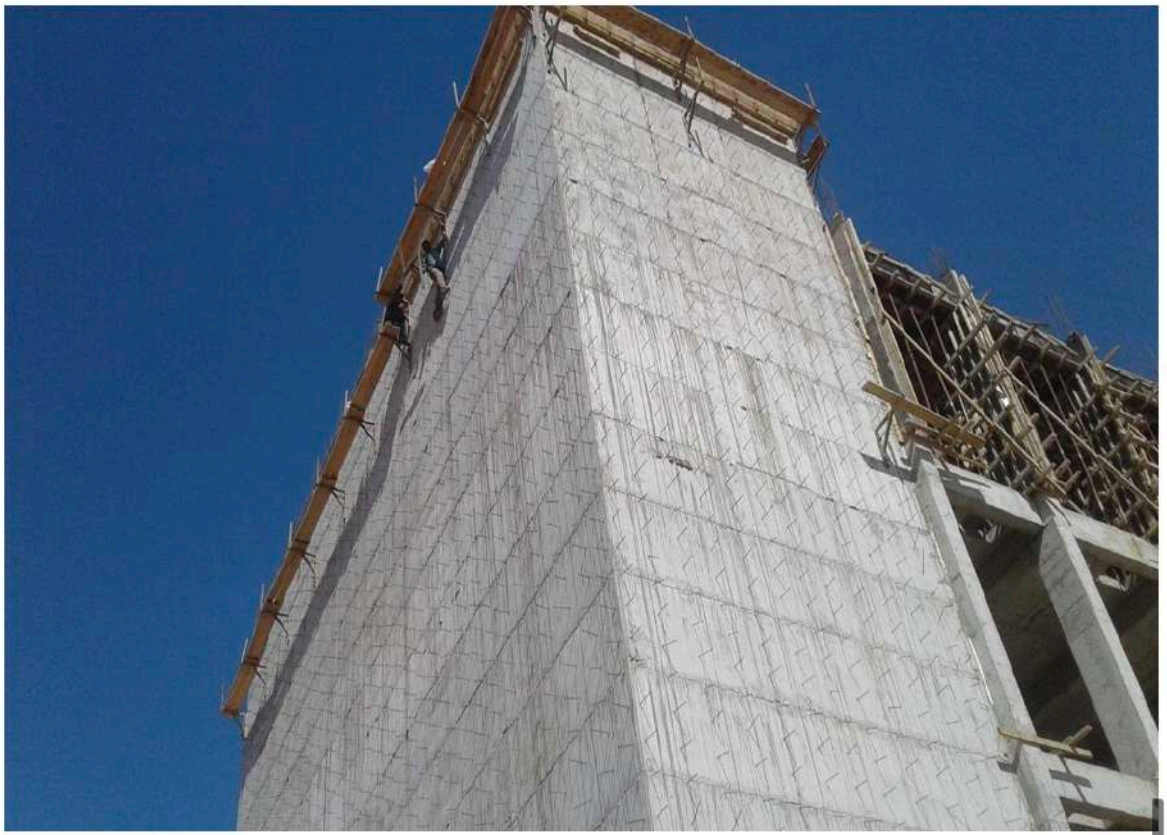
Lıbya



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*Lıbya /Mısurata Flour Factory Project 10.000 m2

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Iraq

TİTAN SONDAJ

*Iraq Gate Project 15.000 m2

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Russıa

*Krasnodar Steel Factory Office Buıldıng -6000m2

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*Moscow Apartment Project 20.000 m2

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Turkey

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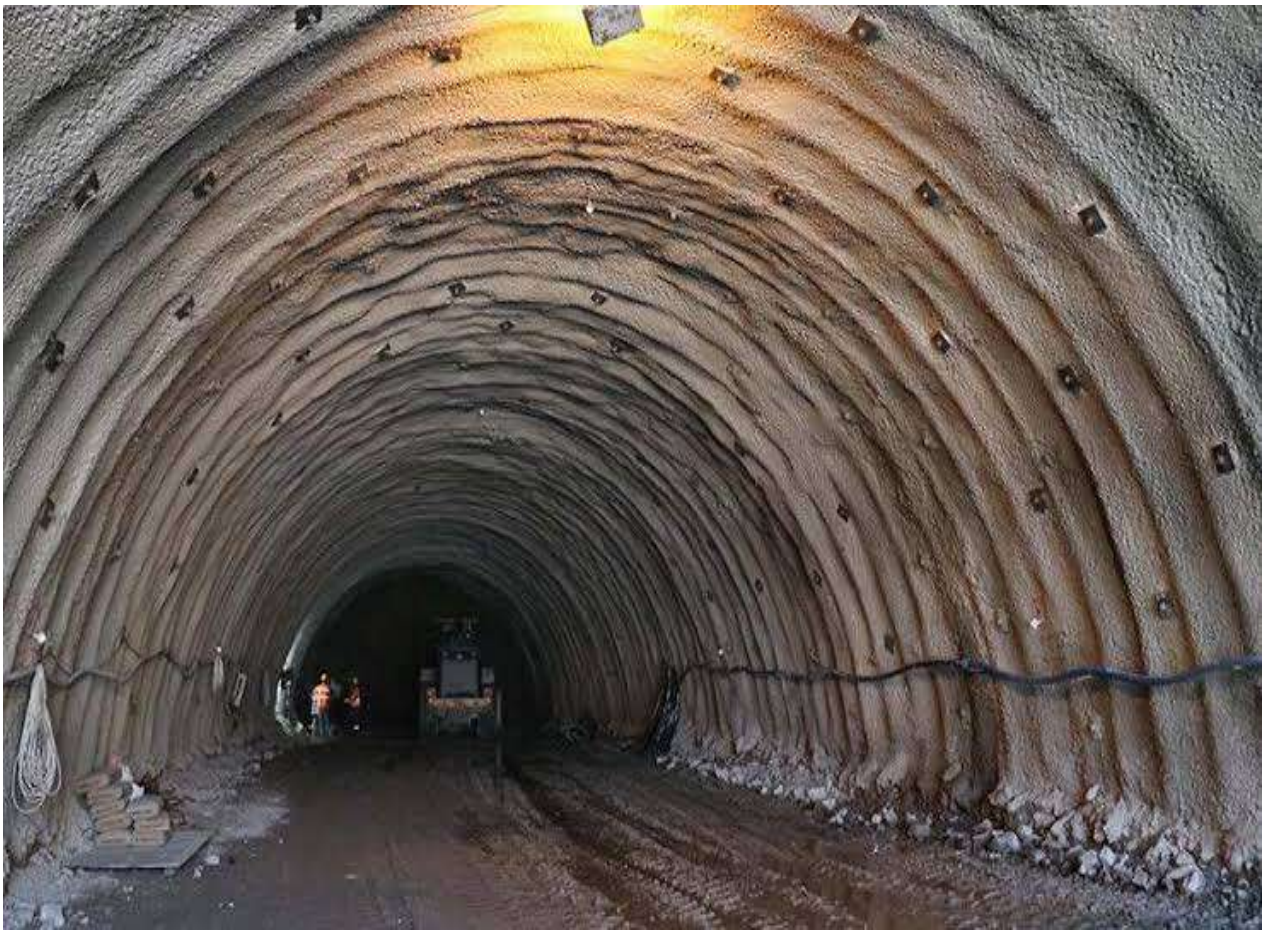

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Bahrain

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AFGHANISTAN

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REPORTING SERVICES

Under the umbrella of international Crirsco standards applicable all over the world, resource and reserve reporting practices in the UMREK , NI-43-101 and JORC standards applicable in our country are carried out in accordance with all standards by two companies based abroad with our business partnership and

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authorized Umrek Competent Persons in the country.

UMREK
Ulusal Maden Kaynak ve Rezerv Raporlama Komisyonu

CRIRSCO
COMMITTEE FOR MINERAL RESERVES INTERNATIONAL REPORTING STANDARDS

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WELL MEASURING DEVICE

It is used with Reflex brand electronic well measuring devices for well measurements. Along with valuable information, Reflex measuring devices are used as auxiliary equipment for finding and directing direction in mineral, oil and natural gas drilling, tunnel and ground drilling.
This device is more accurate and easier to use than mechanical or photographic devices. Reflex devices have measurement knowledge with no unhealthy chemicals, time-consuming film processes, or complex calculations.

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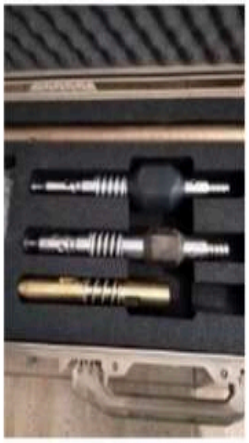

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GROUND WORKS SERVICES

GEOPHYSICAL APPLICATIONS

*** Seismic methods (refraction-reflection-MASW-REMI)**

*** Electric Resistivity (Des-tomography)**

*** IP method**

*** Magnetic Methods**

*** Microtremor Method**

*** Ground Radar Method**

*** Microgravity Method**

*** Seismic Hazard Analysis Report**

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OUR PRACTICES GEOLOGY

* Geological/Geotechnical Studies Based On Zoning Plan
* Geological Drilling Studies
* Presiometer Experiments
* Pressurized Water Test Experiments
* CPT-taper penetration experiments
* Proctor Experiments
* Sand Cone Experiments
* Ground Improvement Projects
* Injection Studies
* Preparation Of Geological Maps
* Hydrogeological Studies
* Landslide Surveys
* Road and Route studies

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GROUND STUDIES

In order to determine the floor properties on which the building, workplace, factory, warehouse and all kinds of similar structures will be built, measurements made with geophysical devices and samples taken from drilling points should be examined together and the floor parameters should be determined.

The results obtained are used in determining how to build the structure to avoid damage in a possible earthquake and in determining the behavior characteristics of the ground during an earthquake.

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GEOTHERMAL DECKING

Our country is among the few countries in the world in terms of its underground decency. Meeting the needs of energy and raw materials, which are the basis of the economy, shapes the economies of the country in proportion to the use of Natural Resources.

In this sector, where investment and operating costs play a decisive role, achieving the most efficient results in the shortest time in the most economical ways has become the most basic need of all investors.

Geothermal Energy, a reliable source of energy that is sustainable, renewable, both low-cost and environmentally friendly compared to other fossil fuels in the field of energy, is a highly preferred alternative energy source today.

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In the research of this resource, very successful results can be obtained in a short time with scientific studies. Active Earth Sciences is proud to achieve successful results in this field with its expert and experienced engineer staff, Geophysical method applications, geological field studies and geochemical analyses.

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GEOTHERMAL DECKING

In these studies, the joint application of various branches of Geosciences has become the choice of investors with its successful results in terms of time and cost.

Geological studies conducted by our company in this area; * regional and regional geological field studies

*** Determination Of Formation Of Faulting Mechanisms • Investigation Of Possible Reservoir Structures**

*** Creation Of Geological Maps**

• Geophysical studies conducted by our company in this field;

*** Microgravity Method**

*** Vertical Electric Drilling**

*** Natural Potential Method**

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*** Modeling of geophysical data and creating three-dimensional maps • geochemical studies conducted by our company in this field;**
*** Radon Gas Measurements**
*** CO2 gas measurements**
*** Taking samples from surface waters and existing wells in the field**

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DECOMMISSIONING

Turkey has a significant potential in terms of its underground wealth. Geological and geophysical surveys carried out in the fields taken by investors in order to bring this potential to the economy are the first and most important step taken on this path. The economic value of a mine site is determined as a result of the studies conducted and the amount of ore to be produced is determined by these studies.

By using scientific methods in the exploration of mineral deposits, reserves are calculated at less cost in a short time and contribute to the country's economy.

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For this purpose, as active Geosciences, we are proud of achieving successful results in the exploration of all kinds of mineral deposits and the calculation of possible reservoirs by the application of geophysical methods as well as geological field studies.

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SEISMIC METHODS

In the seismic method, the way in which elastic waves formed by a source are propagated by refraction or reflection in the ground is measured. These time-distance records are then processed with appropriate methods, creating underground models that determine the thickness and seismic wave velocities of layered environments.

Explosives and other energy sources are used to generate seismic waves, and seismometers or geophone systems are used to detect ground movement that occurs as a result. The basic seismic search technique consists of generating seismic waves and measuring the

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time required for waves going from sources to geophone decks.
Seismic methods are divided into two groups: seismic refraction (refraction) and seismic reflection (reflection) according to the beam paths followed by seismic waves emitted from the source.
In addition to seismic methods, MASW and REMI methods, which were developed to take measurements in environments with a lot of environmental noise, are also very widely used today October.

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SEISMIC REFRACTION METHOD

Areas Of Use

- In all soil surveys carried out before and after construction, in order to find engineering parameters of the floors,

* Characterizing P waves and thus determining detachability and Excavability,
* Seismic risk and seismicity studies in residential areas,
* Investigation of buried faults and landslide boundaries,
* Groundwater geometry, depth and boundary determination,
* Archaeogeophysical studies

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Seismic Reflection (Seismic Reflection) method focuses on the refraction properties of sound waves sent underground at the structure boundaries within the Earth. In the seismic refraction method, it is possible to examine the seismic velocities (hence the robustness parameters) of the geological units (layers) of the ground and the depths of these layers in detail.

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SEISMIC REFLECTION METHOD

Areas Of Use

*** Engineering structures (large buildings, dams, highways, railways, etc.) solution of possible bedrock (foundation) problems on the floors where they sit and route analysis of roads,**

*** Mapping of buried structures of archaeological value,**

*** Geothermal resource research,**

*** Investigation of deposits and geometries of coal-bearing mines,**

*** Determination of natural gas / oil resources and reserves,**

*** Detailed bathymetry and deposition of marine and stream bases (sediments) mapping,**

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*** Investigation of crustal thickness in large-scale scientific projects,**
*** Investigation of faulting and landslides**
Seismic Reflection (Seismic Reflection) method, as the name suggests, the structure boundaries and reflections of the sound waves that we give underground as a source are measured from objects inside the earth. It is one of the most important methods for creating structural / stratigraphic sections of underground.

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MASW METHOD

It is an interpretation technique used to find the S rate of data obtained in the refraction study. Physical properties of underground layers (shear modulus, elasticity modulus, non-compaction modulus, natural Tuesday period, seismic magnification, poisson ratio, etc.) is directly related to shear (S) speed. Therefore, the determination of s-velocity changes of subsurface layers is very important from the point of view of geotechnical engineering.

In recent years, the multi-channel analysis of surface waves (MASW) method has been widely used alongside the seismic refraction method in determining s-velocity changes. Especially in cases where the seismic refraction

method cannot be applied, the MASW method is seen as the only alternative method. By preserving the sequence geometry used in measurement acquisition by seismic refraction method, MASW records can be collected and greater research depth can be obtained. Other advantages of the method include fast data collection, easy data processing, and the decipherment of the low speed problem.

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REMI METHOD

Masw-active source line measurement is carried out to determine S wave rates from geophysical studies conducted within the scope of the ground research report. Surface waves have been characterized as noise in other seismic methods until recently and have been removed from the data. Later, thanks to developing technologies and software, the information carried by surface waves began to be studied.

It has been an effective way of calculating the shear wave, which is an indicator of the strength of the ground, and has played important roles in various studies. Methods

such as Remi and microtremor are effective methods used in shear wave calculations based on surface waves. But in these methods, the source is external noises (wind, traffic, etc.) because it is, the source is uncontrolled, and many difficulties are encountered in the processing phase of the received data. At this point, the multi-channel analysis of surface waves (MASW) method is used in shallow ground research.

Its biggest advantage over other methods is that the source is controlled. S wave velocity structure of the place can be determined by using active and passive welded surface wave methods. There are two steps to this. The first of these is the determination of the dispersion curve of the studied area. The aim of all surface wave methods is to obtain the

dispersion curve of the area under study. The dispersion curve is different for all methods.

MAGNETIC METHOD

Applications

*** Mineral Exploration**
*** Determination Of Fault Lines**
*** Sediment Thickness Studies**
*** Basic Rock Research**
*** Continental gliding and seabed spreads**
*** Determination of pipelines, cables and toxin wastes**
*** Unexploded Military Ammunition**
*** Abandoned oil wells**
*** Archaeological Structures**
*** Waste Areas**

In metallic mines, studies are carried out to determine the mine bed, especially with the application of magnetic method. This method

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determines the formation and extension of ore according to its magnetic properties and determines the properties at all points of the field with 3-dimensional cross-sections with maps prepared in the light of the data obtained. These studies are carried out by our company with the “G-856AX” model Proton Magnetometer produced by Geometrics.

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MICROGRAVITY METHOD

Applications

* Basin Geometry
* Regional Geological Studies * Mineral Deposits
* Underground Cavities
* Fault and fracture structures
* Base Rock Depth
* Works For Military Purposes
* Volcanic Monitoring
* Shell Studies
* Search For Embedded Structures

Determination of mineral deposits by microgravity method provides very efficient results both in terms of application and in terms of time. By this method, the necessary

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investment calculations are carried out by obtaining information about the determination of rocks with different density under the ground and the determination and extension of the possible mineral deposit. These studies are carried out by our company with the “CG-5 Autograv Gravity Meter” model device produced by Scintrex.

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IP AND RESISTIVITY METHOD

Applications

*** Geological surveys**

*** Structural research in large basins**

*** Geothermal energy and water exploration**

*** Salt water containing environments**

*** Faults and contaminated zones (in terms of salts)**

*** The thickness of the degraded and decomposed levels on the base rock • mines, disseminated and massive sulfurous ores**

• Archaeology

The IP method is an intensively applied method in metallic mineral exploration. Applications made due to changes in the electrical properties of rocks with time and

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frequency, especially sulfur ore, graphite, oil and natural gas, are used in industrial raw materials exploration. Visible resistivity values are also taken during IP measurement. In addition to IP sections, the preparation of resistivity sections contributes to the joint evaluation of the work in the field. These studies are carried out by our company with "VIP 10000" and "ELREC PRO" model devices belonging to IRIS company.

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GROUND RADAR (GPR) METHOD

Applications

* Road, Airport, dam, water channel, power plant, residential area ground surveys,
* Railway, Highway, water tunnels, tube crossings, mine gallery surveys,
* Examination of ceilings, floors and walls, restoration research,
* Discovery of ancient city, Temple, Tomb, Wall, Foundation, dehliz and similar historical remains,
* Research of industrial waste, leakage and environmental pollution,
* Old sewer, Waterway, Canal, pipe, shelter, electricity and telephone lines
discovery,

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*** Forensic and Forensic Medicine: detection of prison escape tunnels, location of bodies and mass graves,**

*** Exploration of Mines near the surface and reserve development, coal research, first aid in dents and mine accidents.**

The ground radar (GPR) method is a high-frequency electromagnetic, geophysical method used for near-surface surveys. Waves moving in the ground rise again by reflection or scattering when they encounter any object that will give an anomaly, and they are recorded as a function of time with the help of the receiving antenna, control unit and recorder on the surface.

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Although the GPR method is a method used in determining soil stratigraphy, determining geological units near the surface, it is also used in determining vessel-type mineral deposits and determining progress directions in gallery-type mineral ore enterprises.

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SEISMIC HAZARD ANALYSIS REPORTS

Applications

*** Dams, ponds for drinking water, irrigation, energy purposes • hydroelectric power plants**

*** Drinking water treatment plants and transmission lines**

*** Bridges, high structures, schools, hospitals, etc. structures**

The effect of an earthquake of any magnitude in a region in the form of damage and loss of life to structures at a certain distance is defined as an earthquake hazard.

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In order to calculate these effects, it is necessary to know the inputs such as geological, Seismological and strong ground motion, but since this information contains a lot of unknowns, seismic hazard analysis is performed with certain theoretical approaches. The aim of this report is to identify the seismic hazard that will occur as a result of the earthquake exposure of the planned project.

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SEISMIC HAZARD ANALYSIS REPORTS

*** Compilation of seismotectonic data within the area that constitutes a seismic hazard for the region**

*** Seismic source zoning in the light of the compiled seismotectonic data and determination of the maximum magnitudes that existing faults in the region can produce**

*** Correlation with earthquake records that have occurred within the region in order to select Azalea relationships that will accurately represent the seismic source region**

*** Calculation of the largest Earth motion or acceleration of the largest earthquake that can occur by deterministic calculation with selected Azalea relationship formulas**

*** Obtaining the maximum horizontal ground acceleration for the project location,**

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probability distributions of exceeding, hence annual seismic curves, taking into account the uncertainties of all parameters of interest, using software in the application of the probability method

*** Creation of response Spectra corresponding to various durations of the structure as a result of deterministic and probabilistic calculations**

*** Calculation according to the removal of alluvium at the project site in determining the earthquake behavior spectrum and preparation of spectral acceleration graphs**

*** Both the probability method and the deterministic method are the parameters that the project engineer will apply.**

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References-Ground Study

IGA airport management A.P. (CMLKK ADI PARTNERSHIP)

Istanbul New Airport (3. Airport) Terminal Building and Pier structures Geophysical Survey Report

Polymetal mining a.P.

Geophysical Surveys Of Gediktepe Waste Dam In Bigadiç District Of Balıkesir Province

MINISTRY OF JUSTICE IZMIR OPEN CRIMINAL AND ENFORCEMENT AGENCY

Geological-geotechnical survey report based on Nazim Zoning Plan of Aliaga district of Izmir province

Deerns-PROTA Engineering Co.S

Itob Turkcell data Center ground survey report in Torbalı district of Izmir province

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T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Muğla Province Educational Institution Buildings Ground Study Reports
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Aydin Province Educational Institution Buildings Ground Study Reports
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Uşak Province Educational Institution Buildings Ground Study Reports
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
PROTA engineering a.S
Üçyol-Buca Koop Metro Line Geological and geotechnical survey report
PROTA engineering a.S

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F.Altay-Narlıdere Metro Line Geological and geotechnical survey report

TÜRK TELEKOM A.P. - ASSISTT

Assistt Settlement Of Konak District Of Izmir Province Education Building Ground Study Report

T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE

Izmir Province Educational Institution Buildings Ground Study Reports

T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE

Yalova Province Educational Institution Buildings Ground Study Reports

T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE

Denizli Province Educational Institution Buildings Ground Study Reports

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T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Buildings Of The Educational Institution Of Manisa Province Ground Study Reports
Kütahya Province Educational Institution Buildings Ground Survey Reports
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Educational Institution Buildings Of Çanakkale Province Ground Survey Reports
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE
Bursa Province Educational Institution Buildings Ground Study Reports
INSITU GEOLOGY LTD. ŞTI.
Melen Dam Power Plant Building Geophysical Studies In Sakarya Province
AKER ENGINEERING LTD. ŞTI.

TİTAN SONDAJ

Geophysical Studies Of Permeable Invertebrates
INSITU GEOLOGY LTD. ŞTI.
Geophysical Surveys of Tepehan regulator and HES building of Malatya province
ENI energy A.S
Torbalı district of Izmir province solar energy panels ground Study Report
LABRIS INTERNATIONAL CONSTRUCTION LTD. ŞTI.
Bornova District Of Izmir Province Factory Construction Ground Strengthening Experiments Study Reports
People Energy A.S
Ankara province Şeferlikoçhisar District solar energy panels ground Study Report
T.C. MINISTRY OF EDUCATION-DEPARTMENT OF CONSTRUCTION AND REAL ESTATE

TİTAN SONDAJ

Balıkesir Province Educational Institution Buildings Ground Study Reports

ATAK CONSTRUCTION LTD. ŞTI.

Esen Tea Breeding Ground Study Reports In Seydikemer District Of Muğla Province

PROJECT WORKSHOP ARCHITECTURE ENGINEERING LTD. ŞTI.

Ground Survey Reports Of Cesme District Of Izmir Province

INSITU GEOLOGY LTD. ŞTI.

Geophysical studies of Nurdağı Kartaldağı RES of Gaziantep province

People Energy A.S

Solar Energy Panels Ground Study Report In Salihli District Of Manisa Province

People Energy A.S

Solar energy panels floor Survey Report in Sivrihisar District of Eskisehir province

TİTAN SONDAJ

T.C. KATIP ÇELEBI UNIVERSITY
Izmir Province Çiğli District Campus Area Wind Turbine Ground Study

LABRIS INTERNATIONAL CONSTRUCTION LTD. ŞTI.
Factory Construction Ground Survey Reports In Bornova District Of Izmir Province
HUAWEI TELECOMMUNICATIONS LTD. ŞTI.
Ground Survey Reports Of Base Stations Throughout Turkey
NORTHEL energy A.P.
Ground Survey Reports Of Wind Turbines Throughout Turkey
INSITU GEOLOGY LTD. ŞTI.
Mersin Gülnar Elmalı RES Geophysical Survey Report
BETONSA SAN. AND TIC. A.P.

TİTAN SONDAJ

Construction Of A Concrete Plant In Aliaga District Of Izmir Province Drilling Service

LABRIS INTERNATIONAL CONSTRUCTION LTD. ŞTI.

Construction of leather OSB factory in Menemen District of Izmir province ground survey reports

LABRIS INTERNATIONAL CONSTRUCTION LTD. ŞTI.

Factory Construction Ground Survey Reports In Menemen District Of Izmir Province

T.C. PRIME MINISTER TOKI

Revised Ground Study Report On Alsancak Stadium Zoning Plan In Konak District Of Izmir Province

Aegean iron and steel A.P.

Wind Power Plant drilling and ground survey report in Foca District of Izmir province

TİTAN SONDAJ

Tarish YEMTA a.P.
Grain silos and service buildings ground survey report of Bergama district of Izmir province

REFERENCES-MINING AND GEOTHERMAL

A. MINING OKSUTP. - CENTERRA GOLD
Geophysical Survey Measurements Of Microgravity Method Of Mining Sites Of Develi District Of Kayseri Province
Harvest BNO Group Mining A.P.
Krom Field Survey and reserve account of kuyceğiz District of Muğla province
GES mining a.P.
Geothermal Research In Hisarcık District Of Kütahya Province
BILFER Mining Co.P.

TİTAN SONDAJ

Elazig province Karakoçan District Chrome Field Survey and reserve account

OYASTONE a.P.

Due diligence of Turkey-wide iron mineralization

Pınarbaşı Mining Co.P.

Due Diligence Of Manganese Mineralization In Turkey

YILMAZLAR mining A.P.

Chrome Field Survey and reserve account of divriği District of Sivas province

MTS mining a.S

Mangan mineralization survey and reserve account of hafik District of Sivas province

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HUSEYINOĞULLARI a.S
Mangan mineralization survey and reserve account of sulusaray District of Tokat province
BILFER Mining Co.S
Magnetic Method Modeling Of Iron Mineralization In Kemaliye District Of Erzincan Province
MINECROM a.S
Investigation of the state of iron mineralization in Turkey
PRIVATE PROPERTY
Geothermal resource survey of Ikidegirmen village of Zara District of Sivas province
HSC Mining Co.P.

TİTAN SONDAJ

Coal mine survey and reserve account of menemen District of Izmir province

ESA mine a.S

Determination Of Metallic Mineral Mineralizations Throughout Turkey

PRIVATE PROPERTY

Geothermal Research In Ilica-Hasançelebi - Hekimhan District Of Malatya Province

PRIVATE PROPERTY

Chrome mineralization research in Gürlevik Mountain region of Zara District of Sivas province

HSC Mining Co.P.

Coal mine survey and reserve account of Torbalı district of Izmir province

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REFERENCES-SEISMIC HAZARD ANALYSIS

Various government agencies and mining companies

40 units (solid waste dam, waste storage plant and bulk Leaching Plant) Seismic Hazard Analysis Reports

DSI 2. Regional Directorate IZMIR water structures

22 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

DSI 4. Regional Directorate KONYA water structures

26 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

DSI 6. Regional Directorate ADANA water structures

14 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

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DSI 8. Regional Directorate ERZURUM water structures

38 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

DSI 10. Regional Directorate DIYARBAKIR water structures

13 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

DSI 12. Regional Directorate KAYSERI water structures

7 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

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DSI 13. Regional Directorate ANTALYA water structures
2 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 14. Regional Directorate Istanbul water structures
3 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 17. Regional Directorate Van water structures
13 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 19. Regional Directorate SIVAS water structures
24 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 21. Regional Directorate AYDIN water structures

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21 (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 23. Regional Directorate KASTAMONU water structures
9 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 25. Regional Directorate Balıkesir water structures
37 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 15. Regional Directorate Sanliurfa water structures
6 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 18. Regional Directorate Isparta water structures
35 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

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DSI 20. Regional Directorate
KAHRAMANMARAŞ water structures
13 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 22. Regional Directorate TRABZON water structures
13 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 24. Regional Directorate KARS water structures
7 units (Dam, pond and regulator) Seismic Hazard Analysis Reports
DSI 26. Regional Directorate ARTVIN water structures
3 units (Dam, pond and regulator) Seismic Hazard Analysis Reports

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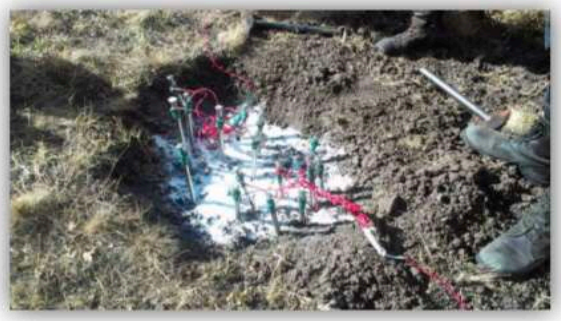

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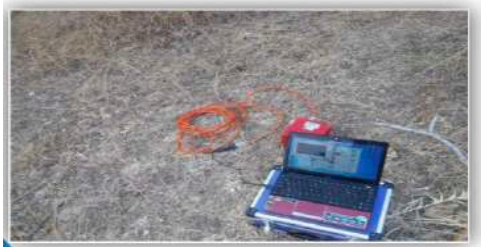

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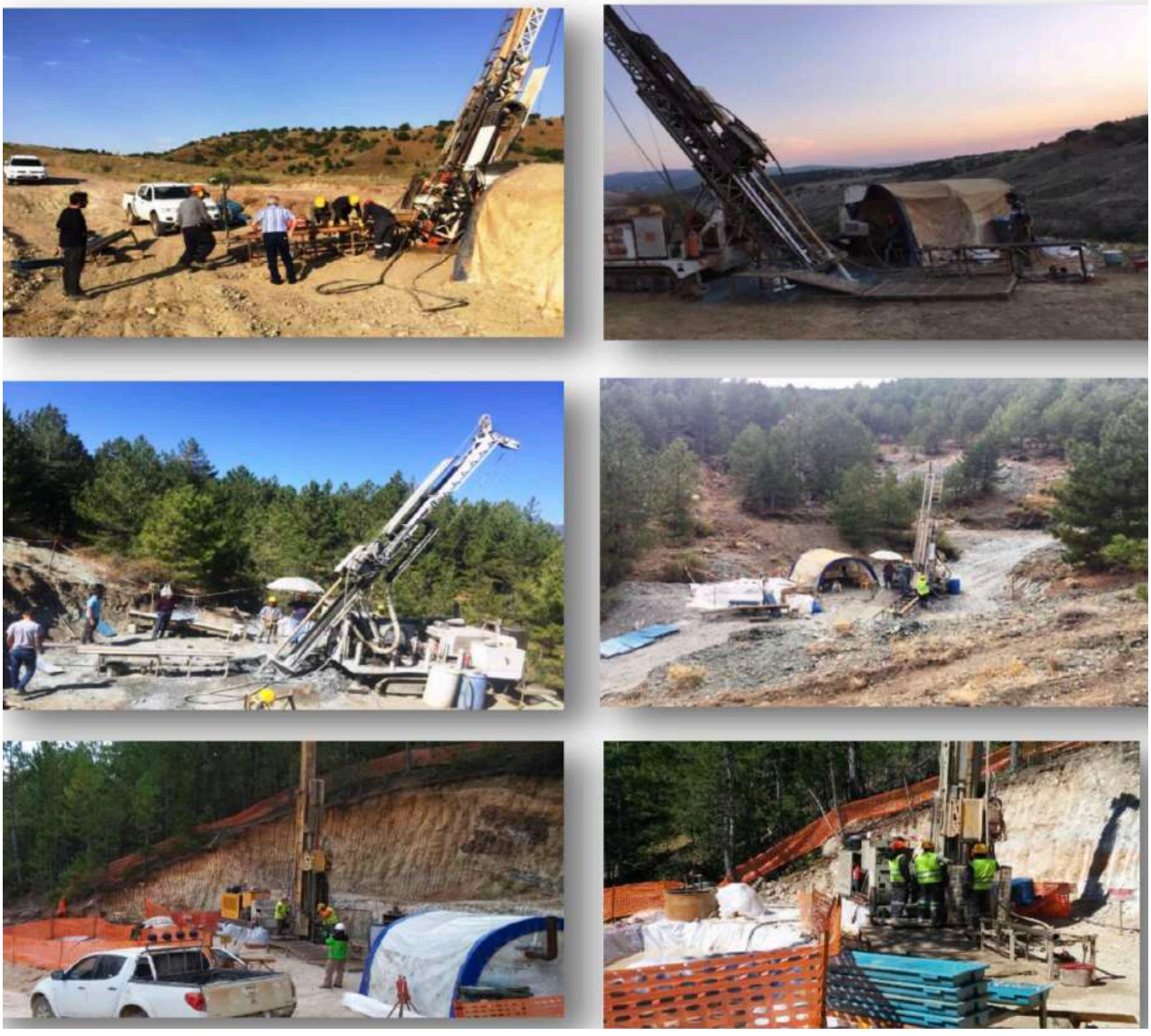

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MACHINE PARK

*4 Pieces TETRA TD-2500
*2 Pieces TETRA TD-1500
*2 Pieces DELTA D-150
*1 Pieces SOILTEC 1100
*1 Pieces ATALAY 1000
*5 Pieces NEW HOLLAND TT-65
*3 Pieces MITSUBISHI L-200 4X4
*5 Pieces DACIA DUSTER 4X4
* 2 Pieces FORD RANGER 4X4
* 1 Pieces MERCEDES X250 D 4X4
* 2 Pieces 30 TON Water Truck

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Pipejacking Equipment

* YD3500 Rock Pipe Jacking Machine
* NPT3700 Slurry Balance Shield Machine
* NPD3500 Slurry Balance Pipe Jacking Shield Machine
*TPD3500 Earth Pressure Balance Pipe Jacking Machine

Excavation-Filling Equipment

- 30 Truck
- 10 CAT DIGGER
- 20 JCB
- 10 Mobil Crane
- 10 Volvo DIGGER
- 6 PİPE CRANE
- 10 Volvo

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Other Equipments

- 6 Wagon
- 3 NATM JUMBO
- 3 Locomotive
- 1 Micro TBM
- 1 Macro TBM
- Welding Machine
- Welding Equipment

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PERSONNEL

*1 PROJECT MANAGER
* 2 PROJECT CHIEF GEOLOGIST
* 2 MS.C ENGINEER OF GEOLOGY
* 1 GEOLOGICAL ENGINEER
* 2 MINING ENGINEERS
*1 CIVIL ENGINEER
*2 MASTER ENGINEER IN GEOPHYSICS
*1 YTK SERVICE CERTIFIED ENGINEER
*1 FIELD FORMEN
* 1 MASTER'S HEAD
*22 Operators
*44 OPERATOR ASSISTANT
* 5 CAR DRIVER
* 1 LOGISTICS OFFICER

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ALL PERSONNEL WHO ARE EXPERTS IN THEIR FIELD CERTIFICATION

*FIRST AID TRAINING CERTIFICATES
*OFF-ROAD SAFE DRIVING TRAINING CERTIFICATES
*OPERATOR DOCUMENTS
*HSE, OHS TRAININGS

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MADEN SONDAJ ÇALIŞMALARI

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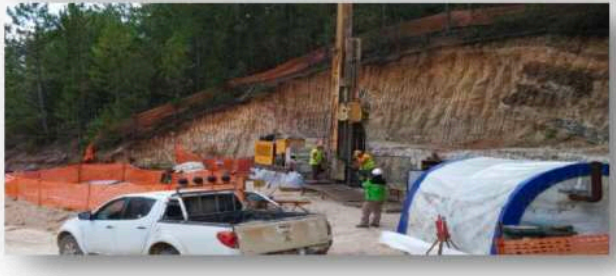
MADEN SONDAJ ÇALIŞMALARI





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REFERANSLAR

AVOD ALTIN MADENCİLİK A.Ş.
HASAT BNO GRUP MADENCİLİK A.Ş.
MTA MADEN TETKİK ARAMA GENEL MÜDÜRLÜĞÜ
ANAGOLD A.Ş.
ALACER GOLD
POLİMETAL A.Ş.
TUMAD A.Ş.
CİNER HOLDİNG
YILMADEN HOLDİNG
ALDRIDGE MINERAL A.Ş.
ÇİFTAY İNŞAAT A.Ş.
SILVER GOLD
CEMAS MADENCİLİK ENERJİ
ALSER KROM İŞLETMELERİ
BİGA BAKIR İŞLETMELERİ
KOLİN MADEN İŞLETMELERİ
ELİF MADEN
GÜMÜŞTAŞ MADENCİLİK
CENTERRA GOLD
ÖKSÜT MADENCİLİK
KARADENİZ HOLDİNG

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Mine-Chemical Material And Equipment Supply Service

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All Construction Materials

- Concrete batching plant
- Asphalt Plant
- Tower cranes and all kinds of cranes in the required tonnage*
- Desired diameter rebar
-Lattice Girding
-Portal Crane*
-Port Crane *
-Steel & Rebars

* We buy all kinds of cranes from Italy , Turkey and China

Supply Of Mineral And Chemical Products

-Karakaya Bentonite
-Caustıc Soda
-HCL
-All Mine Materials, Chemical Materials

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ASPHALT MACHINES AND EQUİPMENTS
ASPHALT PLANT
ASPHALT PLANT

CONCRETE PUMP AND PLACING BOOM
CONCRETE PUMP AND PLACING BOOM
CONCRETE PLANT, PUMP ETC.
CONCRETE PLANT
PUMP, PLACING BOOM, ETC
CONCRETE PLANT, MIXER, ETC

EXCAVATOR, LOADER, ETC
EXCAVATOR, LOADER, ETC
EXCAVATOR, LOADER, ETC
EXCAVATOR, LOADER, ETC
HYDRAULIC BREAKER

LIFT, PLATFORM, ETC.
LIFT, PLATFORM, ETC.

INDOOR, DISABLED LIFT

CLIMBING PLATFORM
AUTOMATIC SCAFFOLDING
AUTOMATIC SCAFFOLDING

SCAFFOLDING
SCAFFOLDING
SCAFFOLDING
SCAFFOLDING AND FORMWORK
SCAFFOLDING AND FORMWORK
SCAFFOLDING AND FORMWORK
SCAFFOLDING AND FORMWORK

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LIGHT TOWER AND GENERATOR
LIGHT TOWER, ETC

TRUCK, TELESCOPIC CRANE
GARBAGE TRUCK CRANE
BRIDGE CRANE
TRUCK, TELESCOPIC CRANE
TELESCOPIC PLATFORM, HYDRAULIC LIFT, ETC
TELESCOPIC CRANE, SHIP CRANE, ETC
TELESCOPIC CRANE, BOOM CRANE, ETC

CABLE
CABLE
CABLE
CABLE

CONSTRUCTION PRODUCT
CONSTRUCTION PRODUCT
CONSTRUCTION PRODUCT
CONSTRUCTION PRODUCT
CONSTRUCTION PRODUCT
PIPE, PANEL, LIGHTING PRODUCT, ETC
SANITARYWARE
STEEL BAR, CRANE RAIL, RAILWAY ACCESSORIES
CONSTRUCTION MINI CRANE, SAFETY NET, ETC

STACKER, PALLET TRUCK, FORKLIFT, ETC
STACKER, JACK, HOIST, ETC
STACKER, FORKLIFT, ETC
STACKER, FORKLIFT, ETC
STACKER, FORKLIFT, ETC
LIFT, FORKLIFT, TELEHANDLER, ETC
SCISSORS LIFT, ORDER PICKER, ETC
LIFT, FORKLIFT, TELEHANDLER, ETC
LIFT, TELEHANDLER, ETC
STACKER, FORKLIFT, ETC
LIFTING AND MOVING EQUIPMENT

CEMENT
CEMENT
CEMENT

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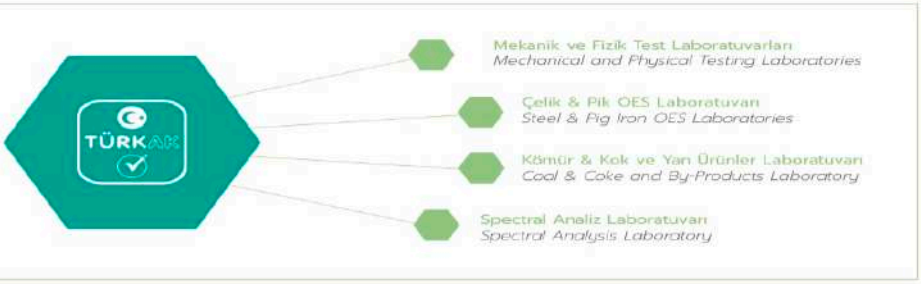
Laboratuvarlarımız
Our Laboratories

TS EN ISO/IEC 17025 standardına göre TÜRKAK tarafından akredite olan laboratuvarlarımızda mekanik ve kimyasal testler yapılmaktadır.

Ayrıca tüm laboratuvarlarımız (Mekanik ve Fizik Test Laboratuvarı, Çelik & Pik OES laboratuvarı, Kömür & Kok ve Yan Ürünler Laboratuvarı, Spectral Analiz Laboratuvarı, Numune Hazırlama ve Teknolojik Test Laboratuvarı, Makro Dağlama Laboratuvarı, Su Kimyası Analizi Laboratuvarı, Merkez Laboratuvarı) TSE Onaylı Laboratuvardır.

Chemical and mechanical tests are carried out according to TS EN ISO/IEC 17025 standards in our laboratories, which are accredited from TURKAK.

In addition, all our laboratories is approved by TSE(Mechanical & Physics Test Laboratory, Steel & Peak OES Laboratory, Coal & Coke and By-products Laboratory, Spectral Analysis Laboratory, Sample Preparation and Technological Testing Laboratory, Macro Etching Laboratory, Water Chemistry Analysis Laboratory, Central Laboratory)



Laboratuvarlarımız
Our Laboratories

AKREDİTASYON KAPSAMIMIZDAKİ TEST VE ANALİZLER
THE SCOPE OF ACCREDITATION TESTING AND ANALYSIS

- Brinell Sertlik Testi (2,5HBW187,5-10HBW3000) – TS EN ISO 6506-1
  Brinell Hardness Test (2,5HBW187,5-10HBW3000) – TS EN ISO 6506-1
- Çekme Testi (20kN-125kN) (Ortam Sıcaklığı) – TS EN ISO 6892-1
  Tensile Test (20kN-125kN)(Ambient Temperature) – TS EN ISO 6892-1
- Charpy Vuruş Testi (V Çentik, 300J) (Ortam Sıcaklığı, 0°C, -20°C) – TS EN ISO 148-1
  Charpy Impact Test (V Notch, 300 J) (Ambient Temperature, 0°C, -20°C) - TS EN ISO 148-1
- Bükme Testi - TS 708, TS EN ISO 15630-1
  Bending Test – TS 708, TS EN ISO 15630-1
- Çeliklerde İnklüzyon İçeriğinin Belirlenmesi (Metot A) – ASTM E 45
  Determining the Inclusion Content of Steel (Method A) – ASTM E 45
- Demiryolu Ray Çeliklerinde Mikroyapı İncelemesi – EN 13674-1
  Microstructure Examination of Railway Rail's Steel – EN 13674-1
- Demiryolu Ray Çeliğinde İnklüzyon İçeriğinin Belirlenmesi 13674-1
  Determining the Inclusion Content of Railway's Rail Steel – EN 13674-1
- Dekarbürizasyon Derinlik Kontrolü – EN 13674-1, ASTM E1077-14
  Decarburization Depth Measurement – EN 13674-1, ASTM E1077-14
- Maden Cevherı, Atık, Ferroalaşımlarda Elektrometrik Yöntem ile Karbon (C) Miktarı Tayini – ASTM E1915
  Standard Test Methods for Analysis of Metal Bearing Ores and Related Materials for Carbon, Sulfur and Acid-Base Characteristics – ASTM E1915
- OES Kimyasal Analizi – ASTM E 415
  OES Chemical Test – ASTM E 415
- Optik Emisyon – Spektral Analiz Deneyi – Pik Demir Karbon (C), Silisyum (Si), Manganez (Mn), Fosfor (P),Kükürt(S),Elementlerinin Tayini – ASTM E1999
  Standard Test Method for Analysis of Cast Iron by Spark Atomic Emission Spectrometry Carbon(C), Manganese(Mn), Silicon(Si),Sulfur(S),Phosphorus(P) – ASTM E 391
- Enstrümental Yöntem ile Kimyasal Analiz Karbon (C), Kükürt (S) – ASTM E1019
  Combustion Method with Chemical Test Carbon(C), Sulfur(S) – ASTM E1019
- TGA Yöntemiyle Kömür Analizi – ASTM D7582
  Coal Analysis by TGA Method – ASTM D7582
- Kömür Analizleri için Numune Hazırlama Yöntemi – ASTM D2013
  Standard Practice for Preparing Coal Samples for Analysis – ASTM D2013
- Kömür ve Kokta Karbon (C) Miktarı Alınlı Analiz Yöntemi – ASTM D5373
  Determination of Coal and Coke Lower Heating Value – ASTM D5373
- Kömür ve Kokta Toplam KÜKÜRT (S) Miktarı Tayini-Yüksek Sıcaklıklarda Tüp Fırında Yakma Yöntemi – ASTM D4239
  Test Method for Total Sulfur Using High-Temperature Tube Furnace Combustion – ASTM D4239
- Kömür ve Kokta Üst Isıl Değer Tayini – ASTM D5865
  Determination of Coal and Coke Higher Heating Value – ASTM D5865
- Kömür ve Kokta Alt Isıl Değer Tayini – ISO 1928
  Determination of Coal and Coke Lower Heating Value – ISO 1928

AKREDİTASYON KAPSAMINDA OLAN LABORATUVARLARIMIZ
OUR LABORATORIES WITHIN THE ACCREDITATION

- Mekanik ve Fizik Test Laboratuvarı
  Mechanic and Physic Laboratory
- Çelik Pik OES Laboratuvarı
  Steel Pig OES Laboratory
- Kömür, Kok ve Yan Ürünler Laboratuvarı
  Coal, Coke and By-Products Laboratory
- Spectral Analiz Laboratuvarı
  Spectral Analysis Laboratory

TSE EN ISO IEC/17025 Standartları Kapsamında Laboratuvar Onayı Alınabilecek Deney Hizmetleri
TS EN ISO IEC / 17025 Standards Scope Of Testing Services That Can Be Taken To Laboratory Confirmation

Şirketimizin; Our company;

- Mekanik ve Fizik Test Laboratuvarı Mechanics and Physics Testing Laboratory,
- Çelik & Pik OES Laboratuvarı Steel & Pig OES Laboratory,
- Numune Alma ve Teknolojik Test Laboratuvarı Sampling and Technological Test Laboratory,
- Spektral Laboratuvarı Spectral Laboratory,
- Kömür - Kok - Yan ürünler Laboratuvarı Coal - Metallurgical Coke - Byproducts Laboratory

bünyesinde yapılan 54 adet test/analiz metodunda geçerli olmak üzere TSE tarafından, "Deney Hizmeti Alınabilecek Laboratuvar Kriterlerine Uygunluk – TSE Taşeron Laboratuvarları " belgemiz vardır. has "laboratory that can be taken Test Service Criteria Conformation - TSE Subcontractor Laboratories" certificate validated by TSE for the 54 tests / analysis method

TİTAN SONDAJ

Çubuk ve Kangal Haddehanesi
Bar and Wire Rod Mill

Tanıtım Filmi
Introduction Film
http://bit.ly/krdmovie

Kardemir büyüme stratejileri kapsamında ve katma değeri yüksek ürünler üretme hedefi doğrultusunda 700.000 ton/yıl kapasiteli Çubuk ve Kangal Haddehanesi 2016 yılı itibari ile üretime başlamıştır. Yapılacak ilave yatırımlar ile üretim kapasitesinin 1.400.000 ton/yıl'a çıkarılması hedeflenmektedir.

Çubuk ve Kangal Haddehanesinde 4 ayrı nihai mamul grubunda üretim yapılmaktadır;
- Kangal, 5,5-25 mm
- Nervürlü Kangal, 5,5-25 mm
- Kalın Kangal (Garret), 20-56 mm
- Yuvarlak Çubuk, 20-100 mm
- Nervürlü Çubuk, 8-40 mm

Çubuk ve Kangal Haddehanesinde üretilecek çelik kaliteleri aşağıda belirtilmiştir.
- Düşük ve Orta Karbonlu Çelikler
- Yüksek Karbonlu Çelikler
- Civatalık, Somunluk Çelikler
- Elektrot ve Kaynak Telleri
- Öngerilmeli Beton Çelikleri (PC wires)
- Lastik Teli (Tire Cord)
- Otomat Çelikleri
- Rulman Çelikleri(BRG)

MeerDrive (Monobloc) ve PSM (Precision Sizing Mill) teknolojilerine sahip haddehanede dar çap ve ovalite toleranslarında üretim yapılabilmektedir.
- Çubuk ve Kangal Haddehanesinde üretilecek ürünlerin yarı mamulleri (kütük), sürekli döküm yöntemiyle ulusal ve uluslararası kalite standartlarında üretilmektedir.
- Nervürlü Çubuk üretimleri 6 – 12 m boya sahip paketlerde,
- Yuvarlak Çubuk üretimleri 6 – 12 m boya sahip paketlerde,
- Nervürlü Kangal üretimleri 2,1 – 2,7 ton ağırlığında olacaktır.
- Kangal üretimleri ise 2,1 – 2,7 ton ağırlığında olacaktır.

Kardemir due to growth strategies and with the goal of producing value added products, has established Bar and Wire Rod Mill which has 700.000 tons/year capacity. New mill has started production in 2016. With additional investments, production capacity will be 1.400.000 tons/year.

Bar and Wire Rod Mill has ability to produce a wide range of different final products.
- 5,5-25 mm Wire rod
- 5,5-25 mm Ribbed Wire Rod
- 20-56 mm Bar in coil (Garret)
- 20-100 mm Round Bar
- 8-40 mm Rebar

The qualities, which are going to be produced in our and Bar and Wire Rod Mill, are listed below,
- Low and medium carbon steels
- High Carbon steels (TC, SPR Steel, HRW)
- Bolts and Nuts steels (Cold Heading Steel)
- Welding Wires (WW)
- Prestressed concrete steel (PC Wires)
- Tire Cord
- Free Cutting steels (FC Steel)
- Bearing steels (BRG)

New mill has MeerDrive (Monobloc) and PSM (Precision Sizing Mill) technologies, which give ability producing in specific diameter and ovality tolerances.

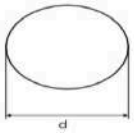
Semi products (billets) which are going to be used in Bar and Wire Rod Mill is produced by continuous casting process with international quality standards.
- Rebar in package, 6 – 12 m length
- Round bar in package, 6 – 12 m length
- Ribbed Wire rod weight between 2,1 – 2,7 tons
- Wire rod weight will be between 2,1 – 2,7 tons

Kangal
Wire Rod / Garrets (Bar in Coils)

Anma Çapı *Nominal Diameter (d)* (mm)	Çap Toleransı *Tolerance on Diameter* (mm)
5,5	±0,3
6	±0,3
6,5	±0,3
7	±0,3
7,5	±0,3
8	±0,3
8,5	±0,3
9	±0,3
9,5	±0,4
10	±0,4
10,5	±0,4
11	±0,4
11,5	±0,4
12	±0,4
12,5	±0,4
13	±0,4
13,5	±0,4
14	±0,4
14,5	±0,4
15	±0,4
15,5	±0,4
16	±0,5
16,5	±0,5
17	±0,5
17,5	±0,5
18	±0,5
18,5	±0,5
19	±0,5
19,5	±0,5
20	±0,5
21	±0,5
22	±0,5
23	±0,5
24	±0,5
25	±0,5
26	±0,6
27	±0,6
28	±0,6
29	±0,6
30	±0,6
31	±0,6
32	±0,6
33	±0,6
34	±0,6
35	±0,6
36	±0,6
37	±0,6
38	±0,6
39	±0,6
40	±0,6
41	±0,8
42	±0,8
43	±0,8
44	±0,8
45	±0,8
46	±0,8
47	±0,8
48	±0,8
49	±0,8
50	±0,8
51	±1,0
52	±1,0
53	±1,0
54	±1,0
55	±1,0
56	±1,0

Ovalite Toleransı * / Tolerance of Ovality * (mm): *Toplam çap toleransının %70'i 80% of the total tolerance on the diameter.*

* Aynı kesittaki maksimum ve minimum çap arasındaki fark



Boyut Standardı
Dimension Standart
TS EN 10017
TS EN 10108
Müşteri talebi ile diğer boyutlar
Other dimensions according to customer's request

Kalite Standardı
Quality Standart
-
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request

Yüzey Kalitesi Standardı
Surface Quality Standart
TS EN 10221
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request

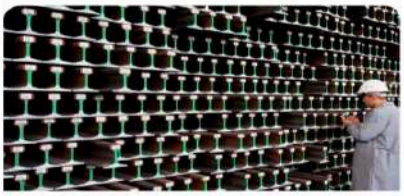
TİTAN SONDAJ

Ray ve Profil Haddehanesi
Rail & Profile Rolling Mill

Şirketimiz, Türkiye ve bölge ülkeler arasındaki tek ray ve ağır profil üreticisidir. Bu amaçla kurulmuş olan 450.000 ton/yıl kapasiteli Ray-Profil Haddehanemiz 2007 yılında işletmeye alınmıştır.

İleri teknoloji ile donatılmış olan tesisimizde en az seviye 2 kullanıcı sertifikasına sahip operatörler görev yapmaktadır. Tesiste, uluslararası standartlarda 12-75 m arası (46-60 kg/m) rayların yanı sıra R350 HT sertleştirilmiş raylar ile 60R1, 60R2 ve 59R2 oluklu ray üretimleri gerçekleştirilmektedir. Avrupa'da sadece birkaç ray üreticisinin sahip olduğu HPC belgesine de sahip olan şirketimiz, Ray-Profil Haddehanesinde geometrik kontrollerin yapıldığı lazer, yüzey kontrollerinin yapıldığı girdap akımları ve iç kontrollerin yapıldığı ultrasonik test ünitelerinden oluşan modern bir test merkezi bulunmaktadır. Şekil ve ölçü kontrollerinin online lazer sistemi ile yapıldığı bu tesiste, milimetrenin yüzde biri hassasiyetle üretim gerçekleştirilerek, %98 kalite oranı ile çalışılmaktadır.

Şirketimiz ağır profil üretiminde de ülkemizin tek üreticisidir. IPE, NPI, NPU, HEA ve HEB tiplerinde profil üretimi, eşitkenar ve çeşitkenar köşebentler, ø 220 mm'ye kadar kalın yuvarlaklar ve maden direkleri üretimi gerçekleştirilen şirketimizde NPI tip profillerde 500 mm, NPU tip profillerde 400 mm, HEA ve HEB tip profillerde 500 mm, IPE tip profilde ise 550 mm genişliğe kadar üretim yapılmaktadır. Halen 20-80 mm kalınlıkta ve 200-405 mm genişlikte platina üretimi de gerçekleştirilen tesiste devam eden yatırımımızla birlikte 520 mm platina üretimi yapılarak kullanıcıların hizmetine sunulacaktır.



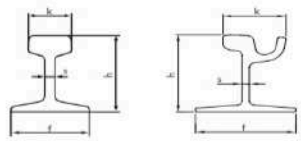
Our company is the only manufacturer of rail and heavy profile in Turkey and regional countries. Our Rail-Profile Rolling Mill which has the capacity of 450.000 tons / year, has been commissioned for this purpose in 2007.

At our facility equipped with advanced technology, operators with at least level 2 user certificates are employed. In addition to the 12-75 m (46-60 kg / m) rails in international standards, R350 HT hardened rails and 60R1, 60R2 and 59R2 corrugated rails are produced at the facility. Our company, which also has the HPC certificate owned by only few rail manufacturers in Europe, has a modern test center consists of test units for laser where geometrical controls are performed in Ray-Profile Rolling Mill, eddy currents where surface controls are made, and ultrasonic test units for internal controls. In this facility, where the shape and size controls are made with the online laser system, we are working with 98% quality ratio by carrying out the production with an accuracy of one percent of the millimeter.

Our company is the only producer of our country in heavy profile production. Our company, where profile production in IPE, NPI, NPU, HEA and HEB types, equal and unequal angles, thick rounds up to ø 220 mm and mine poles are produced, manufactures up to 500 mm NPI type profiles, 400 mm NPU type profiles, 500 mm HEA and HEB type profiles, and 550 mm IPE type profiles. With the ongoing investment at the facility, where 20-80 mm thick and 200-405 mm wide platina is also produced, 520 mm platina will be produced and offered to the users.

Demiryolu Rayları
Railway Rails

Ölçü, Tolerans ve Statik Parametreler
Size, Tolerance and Static Parameters



SERTLEŞTİRİLMİŞ RAYLAR
Müşteri talebine göre R350HT kalitesinde üretim yapılabilmektedir.

HAD HARDENED RAILS
R350HT quality can be produced according to customer needs.

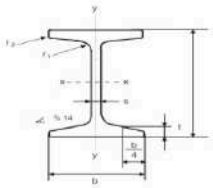
Demiryolu Rayı Tipi *Railway Rail Types*	h (mm)	Tolerans *Tolerance*		f (mm)	Tolerans *Tolerance*		k (mm)	Tolerans *Tolerance*		r (min)	Tolerans *Tolerance*		G (kg/m)
		X_{profil}	Y_{profil}		X_{profil}	Y_{profil}		X_{profil}	Y_{profil}		X_{profil}	Y_{profil}	
33 E1 – EN13674-4 – 33,47 kg/m	134	+ 0,5 / - 1,0		105	+ 1,5 / - 1,0		58	+ 0,8 / - 0,5		11	+ 1,0 / - 0,5		33,47
46 E3 – EN 13674-1 – 46,27 kg/m	145	± 0,5	+ 0,5 / - 1,0	134	± 1,0	+ 1,5 / - 1,0	62	± 0,5	+ 0,6 / - 0,5	15	+ 1,0 / - 0,5	+ 1,0 / - 0,5	46,27
49 E1 – EN 13674-1 49,39 kg/m	149	± 0,5	+ 0,5 / - 1,0	125	± 1,0	+ 1,5 / - 1,0	67	± 0,5	+ 0,6 / - 0,5	14	+ 1,0 / - 0,5	+ 1,0 / - 0,5	49,39
UIC49 – UIC 860.0 – 49,43 kg/m	149	± 0,5		125	± 1,0		67	± 0,5		14	+ 1,0 / - 0,5		49,43
50 E4 – EN 13674-1 – 50,17 kg/m	152	± 0,5	+ 0,5 / - 1,0	125	± 1,0	+ 1,5 / - 1,0	70	± 0,5	+ 0,6 / - 0,5	15	+ 1,0 / - 0,5	+ 1,0 / - 0,5	50,17
UIC 50 – UIC 860.0 – 50,46 kg/m	152	± 0,5		125	± 1,0		70	± 0,5		15	+ 1,0 / - 0,5		50,46
R50 P50 – GOST R 51685-2000 – 51,90 kg/m	152	+ 0,6 / - 0,5	+ 0,8 / - 0,5	132	± 0,8	± 1,0	72	± 0,4	± 0,5	16	± 0,4	+ 0,8 / - 0,5	51,90
54 E4 – EN 13674-1 – 54,31 kg/m	154	± 0,5	+ 0,5 / - 1,0	125	± 1,0	+ 1,5 / - 1,0	67	± 0,5	+ 0,6 / - 0,5	16	+ 1,0 / - 0,5	+ 1,0 / - 0,5	54,31
UIC54 – UIC 860.0 – 54,43 kg/m	159	± 0,5		140	± 1,0		70	± 0,5		16	+ 1,0 / - 0,5		54,43
54 E1 – EN 13674-1 – 54,77 kg/m	159	± 0,5	+ 0,5 / - 1,0	140	± 1,0	+ 1,5 / - 1,0	70	± 0,5	+ 0,6 / - 0,5	16	+ 1,0 / - 0,5	+ 1,0 / - 0,5	54,77
60 E2 – EN 13674-1 – 60,03 kg/m	172	± 0,6	+ 0,6 / - 1,1	150	± 1,0	+ 1,5 / - 1,0	72	± 0,5	+ 0,6 / - 0,5	16,5	+ 1,0 / - 0,5	+ 1,0 / - 0,5	60,03
60 E1 – EN 13674-1 – 60,21 kg/m	172	± 0,6	+ 0,6 / - 1,1	150	± 1,0	+ 1,5 / - 1,0	72	± 0,5	+ 0,6 / - 0,5	16,5	+ 1,0 / - 0,5	+ 1,0 / - 0,5	60,21
UIC 60 – UIC 860.0 – 60,34 kg/m	172	± 0,6		150	+ 1,0 / - 1,1		72	± 0,5		16,5	+ 1,0 / - 0,5		60,34
59 R2 – EN 14811 (Oluklu Ray - Grooved Rail) – 58,20 kg/m	180	± 1,5		180	+ 1,0 / - 3,0		55,83	± 1,0		12	+ 1,0 / - 0,5		58,20
60 R1 – EN 14811 (Oluklu Ray - Grooved Rail) – 60,59 kg/m	180	± 1,5		180	+ 1,0 / - 3,0		56	± 1,0		12	+ 1,0 / - 0,5		60,59
60 R2 – EN 14811 (Oluklu Ray - Grooved Rail) – 59,75 kg/m	180	± 1,5		180	+ 1,0 / - 3,0		55,83	± 1,0		12	+ 1,0 / - 0,5		59,75

TİTAN SONDAJ

I Profiller
I Profiles

Boyut Standardı
Dimension Standart
TS EN 10024
Müşteri talebi ile diğer boyutlar
Other dimensions according to customer's request

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request



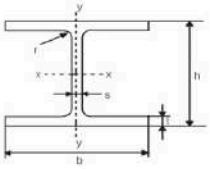
Anma Ölçüsü *Nominal Size* NPI	Boyutlar ve Toleranslar *Dimensions & Tolerances*									Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Yüzey Alanı *Surface Area*	Eğme Eksenleri İçin *For Bending Axises*						S_x	S_y
													x-x			y-y				
	h		b		s		t	r_1	r_2	F (cm^2)	G (kg/m)	S (m^2/m)	I_x cm^4	W_x cm^3	i_x cm	I_y cm^4	W_y cm^3	i_y cm	cm^3	cm
160	160	± 2,0	74	± 1,5	6,3	-0,5/-1,0	9,5	+2/-1	6,3	3,8	22,8	17,9	0,575	935	117	6,40	54,7	14,8	1,55	68	13,7
180	180	± 2,0	82	± 2,0	6,9	-0,5/-1,0	10,4	+2,5/-1,5	6,9	4,1	27,9	21,9	0,640	1450	161	7,20	81,3	19,8	1,71	93,4	15,5
200	200	± 2,0	90	± 2,0	7,5	+0,7/-1,5	11,3	+2,5/-1,5	7,5	4,5	33,4	26,2	0,709	2140	214	8,0	117	26,0	1,87	125	17,2
220	220	± 3,0	98	± 2,0	8,1	+0,7/-1,5	12,2	+2,5/-1,5	8,1	4,9	39,5	31,1	0,775	3060	278	8,8	163	33,1	2,03	163	18,9
240	240	± 3,0	106	± 2,5	8,7	+0,7/-1,5	13,1	+2,5/-1,5	8,7	5,2	46,1	36,2	0,884	4250	354	9,59	221	41,7	2,20	206	20,6
260	260	± 3,0	113	± 2,5	9,4	+0,7/-1,5	14,1	+2,5/-1,5	9,4	5,5	53,3	41,9	0,906	5740	442	10,4	288	51,0	2,32	257	22,3
280	280	± 3,0	119	± 2,5	10,1	+1,0/-2,0	15,2	+2,5/-1,5	10,1	6,1	61,0	47,9	0,966	7590	542	11,1	364	61,2	2,45	316	24,0
300	300	± 3,0	125	± 2,5	10,8	+1,0/-2,0	16,2	+2,5/-1,5	10,8	6,5	69,0	54,2	1,03	9800	653	11,9	451	72,2	2,56	381	25,7
320	320	± 3,0	131	± 3,0	11,5	+1,0/-2,0	17,3	+2,5/-1,5	11,5	6,9	77,7	61,0	1,09	12510	782	12,7	555	84,7	2,67	457	27,4
340	340	± 3,0	137	± 3,0	12,2	+1,0/-2,0	18,3	+2,5/-1,5	12,2	7,3	86,7	68,0	1,15	15790	923	13,5	674	98,4	2,80	540	29,1
360	360	± 3,0	143	± 3,0	13,0	+1,0/-2,0	19,5	+2,5/-1,5	13,0	7,8	97,0	76,1	1,21	19610	1090	14,2	818	114,0	2,90	638	30,7
380	380	± 3,0	149	± 3,0	13,7	+1,0/-2,0	20,5	+2,5/-2	13,7	8,2	107,0	84,0	1,27	24010	1260	15,0	975	131,0	3,02	741	32,4
400	400	± 3,0	155	± 3,0	14,4	+1,0/-2,0	21,6	+2,5/-2	14,4	8,6	118,0	92,4	1,33	29210	1460	15,7	1160	149,0	3,11	857	34,1
450	450	± 4,0	170	± 3,0	16,2	+1,0/-2,0	24,3	+2,5/-2	16,2	9,7	147,0	115,0	1,48	45810	2040	17,7	1730	203,0	3,43	1200	38,2
500	500	± 4,0	185	± 3,0	18,0	+1,0/-2,0	27,0	+2,5/-2	18,0	10,8	179,0	141,0	1,63	68740	2750	19,6	2480	268,0	3,72	1620	42,4

I : **Alanı ikinci momenti** *Second-moment of area*
W : **Kesit modülü** *Section modulus*
i : **Atalet yarıçapları (sit olduğu eğme eksenlerine göredir)** *Radius of gyration (subscript x and y denoting the relevant axis)*
S_x : **Yarım kesitin statik momenti** *Moment of first order of half the cross section*
$S_x=S_y$: **Basma ve çekme merkezleri arasındaki mesafe** *Distance between centers of compression and tension.*
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır *Section, weight, surface area and statical values are calculated according to the values in the table.*

HEA Profiller
HEA Profiles

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü *Nominal Size* HE A	Boyutlar ve Toleranslar *Dimensions & Tolerances*								Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Yüzey Alanı *Surface Area*	Statik Parametreler *Static Parameters*						S_x	S_y
												x-x			y-y				
	h		b		s		t	r	F (cm^2)	G (kg/m)	S (m^2/m)	I_x cm^4	W_x cm^3	i_x cm	I_y cm^4	W_y cm^3	i_y cm	cm^3	cm
120	114	-3/-2	120	-4/-2	5,0	±0,7	8,0	+2/-1	12,0	25,3	19,9	0,577	606	106	4,89	231	38,5	3,02	59,7	10,1
140	133	-3/-2	140	-4/-2	5,5	±0,7	8,5	+2/-1	12,0	31,4	24,7	0,794	1030	155	5,73	389	55,6	3,52	86,7	11,9
160	152	+3/-2	160	-4/-2	6,0	±0,7	9,0	+2/-1	15,0	38,8	30,4	0,906	1670	220	6,57	616	76,9	3,98	123,0	13,6
180	171	+3/-3	180	-4/-2	6,0	±0,7	9,5	+3/-1	15,0	45,3	35,5	1,02	2510	294	7,45	925	103,0	4,52	163,0	15,5
200	190	+4/-2	200	-4/-2	6,5	±0,7	10,0	-2,5/-1,5	18,0	53,8	42,3	1,14	3690	389	8,28	1340	134,0	4,98	215,0	17,2
220	210	+4/-2	220	-4/-4	7,0	±1,0	11,0	-2,5/-1,5	18,0	64,3	50,5	1,26	5410	515	9,17	1950	178,0	5,51	284,0	19,0
240	230	+4/-2	240	-4/-4	7,5	±1,0	12,0	-2,5/-1,5	21,0	76,8	60,3	1,37	7760	675	10,10	2770	231,0	6,00	372,0	20,9
260	250	+4/-2	260	-4/-4	7,5	±1,0	12,5	+2,5/-1,5	24,0	86,8	68,2	1,48	10450	836	11,0	3670	282,0	6,50	460,0	22,7
280	270	+4/-2	280	-4/-4	8,0	±1,0	13,0	+2,5/-1,5	24,0	97,3	76,4	1,60	13670	1010	11,9	4760	340,0	7,00	556,0	24,6
300	290	+4/-2	300	-4/-4	8,5	±1,0	14,0	+2,5/-1,5	27,0	112,0	88,3	1,72	18260	1260	12,7	6310	421,0	7,49	692,0	26,4
320	310	+4/-2	300	-4/-4	9	±1,0	15,5	-2,5/-1,5	27,0	124,0	97,6	1,76	22930	1480	13,6	6990	466,0	7,49	814,0	28,2
340	330	+4/-2	300	-4/-4	9,5	±1,0	16,5	+2,5/-1,5	27,0	133,0	105,0	1,79	27690	1680	14,4	7440	496,0	7,46	925,0	29,9
360	350	+4/-2	300	-4/-4	10	±1,5	17,5	+2,5/-1,5	27,0	143,0	112,0	1,83	33090	1890	15,2	7890	526,0	7,41	1040,0	31,7
400	390	+4/-2	300	-4/-4	11	±1,5	19	+2,5/-1,5	27,0	159,0	125,0	1,91	45070	2310	16,8	8560	571,0	7,34	1280,0	35,2
450	440	+5/-3	300	-4/-4	11,5	±1,5	21	+2,5/-2,0	27,0	178,0	140,0	2,01	63720	2900	18,9	9470	631,0	7,29	1610,0	39,6
500	490	+5/-3	300	-4/-4	12	±1,5	23	+2,5/-2,0	27,0	198,0	155,0	2,11	86970	3550	21,0	10370	691,0	7,24	1970,0	44,1

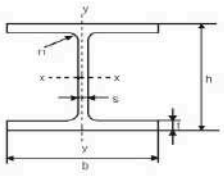
I : **Atalet momenti** *Moment of Inertia*
W : **Kesit modülü** *Section modulus*
i : **Atalet yarıçapları (sit olduğu eğme eksenlerine göredir)** *Radius of gyration (subscript x and y denoting the relevant axis)*
S_x : **Yarım kesitin statik momenti** *Moment of first order of half the cross section*
$S_x=S_y$: **Basma ve çekme merkezleri arasındaki mesafe** *Distance between centers of compression and tension.*
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır *Section, weight, surface area and statical values are calculated according to the values in the table.*

TİTAN SONDAJ

HEB Profiller
HEB Profiles

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



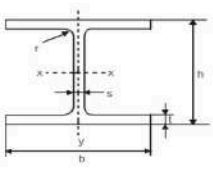
Anma Ölçüsü Nominal Size HEB	Boyutlar ve Toleranslar Dimensions & Tolerances								Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters				
												x-x			y-y	
	h		b		s	t		r	F (cm²)	G (kg/m)	S (m²/m)	I_x cm⁴	W_x cm³	i_x cm	W_y cm³	i_y cm
100	100	-3/-3	100	+1/-3	6,5	±0,7	11,0	+2,5/-1,5	12,0	26,0	20,4	450	89,9	4,18	167	2,54
120	120	-3/-3	120	+1/-3	6,5	±0,7	11,0	+2,5/-1,5	12,0	34,0	26,7	864	144	5,04	318	3,06
140	140	-3/-2	140	+1/-2	7,0	±1,0	12,0	+2,5/-1,5	12,0	43,0	33,7	1510	216	5,93	733	3,98
160	160	-3/-2	160	+1/-2	8,0	±1,0	13,0	+2,5/-1,5	15,0	54,3	42,6	2490	311	6,78	1110	4,05
180	180	-3/-2	180	+1/-2	8,5	±1,0	14,0	+2,5/-1,5	15,0	65,3	51,2	3830	426	7,66	1551	4,87
200	200	+0/-2	200	+1/-2	9,0	±1,0	15,0	+2,5/-1,5	18,0	78,1	61,3	5700	570	8,54	2000	5,07
220	220	+0/-2	220	+1/-4	9,5	±1,0	16,0	+2,5/-1,5	18,0	91,0	71,5	8090	736	9,43	2580	5,59
240	240	+0/-2	240	+1/-4	10,0	±1,5	17,0	+2,5/-1,5	21,0	106,0	83,2	11260	938	10,3	3270	6,08
260	260	+0/-2	260	+1/-4	10,0	±1,5	17,5	+2,5/-1,5	24,0	118,0	93,0	14920	1150	11,2	3950	6,58
280	280	+0/-3	280	+1/-4	10,5	±1,5	18,0	+2,5/-1,5	24,0	131,0	103,0	19270	1380	12,1	4210	7,89
300	300	+0/-2	300	+1/-4	11,0	±1,5	19,0	+2,5/-1,5	27,0	149,0	117,0	25170	1680	13,0	5710	7,38
320	320	+0/-2	300	+1/-4	11,5	±1,5	20,5	+2,5/-2,0	27,0	161,0	127,0	30820	1930	13,8	6150	7,57
340	340	+0/-2	300	+1/-4	12	±1,5	21,5	+2,5/-2,0	27,0	171,0	134,0	36660	2160	14,6	6460	7,53
360	360	+0/-2	300	+1/-4	12,5	±1,5	22,5	+2,5/-2,0	27,0	181,0	142,0	43190	2400	15,5	6760	7,49
400	400	+0/-2	300	+1/-4	13,5	±1,5	24	+2,5/-2,0	27,0	198,0	155,0	57680	2880	17,1	7210	7,40
450	450	-5/-3	300	+1/-4	14	±1,5	26	+2,5/-2,0	27,0	218,0	171,0	79890	3550	19,1	7810	7,33
500	500	-5/-3	300	+1/-4	14,5	±1,5	28	+2,5/-2,0	27,0	239,0	187,0	107200	4290	21,2	8420	7,27

I : Alanın ikinci momenti *Second moment of area*
W : Kesit modülü *Section modulus*
i : Atalet yarıçapları (ait olduğu eğme eksenlerine göredir) *Radius of gyration (subscript x and y denoting the relevant axis.)*
S_x : Yarım kesitin statik momenti *Moment of first order of half the cross section*
S_x=I_x/S_x : Basınç ve çekme merkezleri arasındaki mesafe *Distance between centers of compression and tension*
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. *Section, weight, surface area and statical values are calculated according to the values in the table*

HEM Profiller - Geniş I Profiller / Takviyeli
HEM Profiles - Wide I Profiles / Reinforced

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü Nominal Size HEM	Boyutlar ve Toleranslar Dimensions & Tolerances								Kesit Alanı Section	Birim Kütle Unit Mass	Yüzey Alanı Surface Area	Statik Parametreler Static Parameters						S_x	S_x
												x-x			y-y				
	h		b		s	t		r	F (cm²)	G (kg/m)	S (m²/m)	I_x cm⁴	W_x cm³	i_x cm	I_y cm⁴	W_y cm³	i_y cm	cm³	cm
120	140	+3/-1	126	+6/-2	12,5	±1,5	21,0	+2,5/-2,0	12,0	66,4	52,1	0,738	3026	288	5,51	703	112	3,25	175	11,5
140	160	+3/-2	146	+6/-2	13,0	±1,5	22,0	+2,5/-2,0	12,0	80,6	63,2	0,857	2290	411	6,39	1140	157	3,77	247	13,3
160	180	+3/-1	166	+6/-2	14,0	±1,5	23,0	+2,5/-2,0	15,0	971	76,2	0,970	5106	566	7,25	1760	212	4,26	337	15,1
180	200	+6/-3	186	+6/-2	14,5	±1,5	24,0	+2,5/-2,0	15,0	113,0	88,9	1,09	7486	748	8,13	2580	277	4,77	443	16,9
200	220	+6/-2	206	+6/-2	15,0	±1,5	25,0	+2,5/-2,0	18,0	1210	103,0	1,20	10640	967	9,00	3650	354	5,27	568	18,7
220	240	+6/-2	226	+6/-4	15,5	±1,5	26,0	+2,5/-2,0	18,0	1480	117,0	1,32	14600	1220	9,93	5010	444	5,79	710	20,6
240	270	+6/-2	248	+6/-4	18,0	±1,5	32,0	+2,5/-2,5	21,0	200,0	157,0	1,46	24290	1800	11,00	8150	657	6,39	1060	22,9
260	290	+6/-2	268	+6/-4	18,0	±1,5	32,5	+2,5/-2,5	24,0	220,0	172,0	1,57	31310	2160	11,90	10450	780	6,90	1260	24,8
280	310	+6/-2	288	+6/-4	18,5	±1,5	33,0	+2,5/-2,5	24,0	240,0	189,0	1,69	39550	2550	12,80	13150	914	7,40	1480	26,7
300	340	+6/-2	310	+6/-4	21,0	±2,0	39,0	+2,5/-2,5	27,0	303,0	238,0	1,83	59200	3480	14,00	19400	1250	8,00	2040	29,0

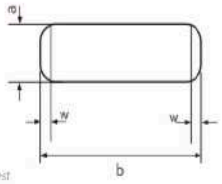
I : Atalet momenti *Moment of inertia*
W : Kesit modülü *Section modulus*
i : Atalet yarıçapları (ait olduğu eğme eksenlerine göredir) *Radius of gyration (subscript x and y denoting the relevant axis)*
S_x : Yarım kesitin statik momenti *Moment of first order of half the cross section*
S_x=I_x/S_x : Basınç ve çekme merkezleri arasındaki mesafe *Distance between centers of compression and tension*
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizelgede gösterilen boyutlara göre hesaplanmıştır. *Section, weight, surface area and statical values are calculated according to the values in the table*

TİTAN SONDAJ

Platinalar
Platinas

Boyut Standardı
Dimension Standart
DIN 59200

Kalite Standardı
Quality Standart
EN 10025-1/2
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request



Nominal Et Kalınlığı *Nominal Thickness*		Sapma Değerleri *Tolerances*	
≥ mm	≤ mm	A Sınıf *Class A*	B Sınıf *Class B*
20	25	+ 0,9	+ 1,1
		- 0,5	- 0,3
25	30	+ 1,0	+ 1,3
		- 0,6	- 0,3
30	40	+ 1,1	+ 1,5
		- 0,7	- 0,3
40	50	+ 1,1	+ 1,7
		- 0,9	- 0,3
50	60	+ 1,2	+ 1,9
		- 1,0	- 0,3
60	80	+ 1,6	+ 2,3
		- 1,0	- 0,3
80		+ 3,0	+ 3,7
		- 1,0	- 0,3

* Tolerans sınıfı, sipariş aşamasında belirtilmelidir
** The tolerance class must be specified at the ordering stage*

Nominal Kalınlık *Nominal Thickness* a mm	Maks. W, Sapması *Max. W, Deviation*	
	Normal Sapma *Normal Deviation*	Daraltılmış Sapma *Reduced Deviation*
≤ 13	2,0	0,5
13 - 18	3,0	0,75
> 18	3,5	0,9

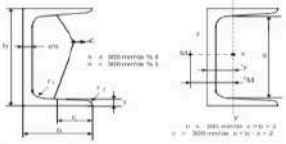
Nominal Genişlik *Nominal Width*		Maksimum Kalınlık Değişimi *Maximum Thickness Variation*
≥ mm	≤ mm	
150	500	0,5

TİTAN SONDAJ

NPU Profiller
NPU Profiles

Boyut Standardı
Dimension Standart
TS EN 10279

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



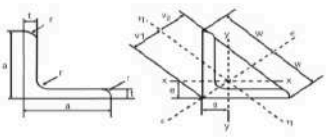
Anma Ölçüsü *Nominal Size* (NPU)	Boyutlar ve Toleranslar *Dimensions & Tolerances*								Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Yüzey Alanı *Surface Area*	Eğme Eksenleri için *For Bending Axises*						S_x [2] cm^3	S_y [2] cm	y-y Ekseni Uzaklığı *Axis Distance*	X_M [5]
												x-x			y-y					e_y cm	
	h	b	s		t [1]		r_1	r_2	F (cm^2)	G (kg/m)	U (m^2/m)	J_x cm^4	W_x cm^3	i_x cm	J_y cm^4	W_y cm^3	i_y cm				
120	120	± 2,0	55	± 2,0	7,0	± 0,5	9,0	-0,5	11,0	4,5	17,0	13,4	0,434	364	60,7	4,62	43,2	11,1	1,59	36,3	10,0	1,50	3,03
140	140	± 2,0	60	± 2,0	7,0	± 0,5	10,0	-0,5	10,0	5,0	20,4	16,0	0,489	605	86,4	5,45	62,7	14,8	1,75	51,4	11,8	1,75	3,37
160	160	± 2,0	65	± 2,0	7,5	± 0,5	10,5	-1	10,5	5,5	24,0	18,8	0,546	925	116	6,21	85,3	18,3	1,89	68,8	13,3	1,84	3,56
180	180	± 2,0	70	± 2,0	8,0	± 0,5	11,0	-1	11,0	5,5	28,0	22,0	0,611	1350	150	6,95	114	22,4	2,02	89,6	15,1	1,92	3,75
200	200	± 2,0	75	± 2,0	8,5	± 0,5	11,5	-1	11,5	6,0	32,2	25,3	0,661	1910	191	7,70	148	27,0	2,14	114	16,8	2,01	3,94
220	220	± 3,0	80	± 2,0	9,0	± 0,5	12,5	-1	12,5	6,5	37,4	29,4	0,718	2690	245	8,48	197	33,6	2,30	146	18,5	2,14	4,20
240	240	± 3,0	85	± 2,0	9,5	± 0,5	13,0	-1	13,0	6,5	42,3	33,2	0,775	3600	300	9,22	246	39,6	2,42	179	20,1	2,23	4,39
260	260	± 3,0	90	± 2,0	10,0	± 0,5	14,0	-1	14,0	7,0	48,4	37,9	0,834	4820	371	9,99	317	47,7	2,56	221	21,8	2,36	4,66
280	280	± 3,0	95	± 2,0	10,0	± 0,5	15,0	-1	15,0	7,5	53,3	41,8	0,890	6280	448	10,9	399	57,2	2,74	256	23,6	2,53	5,02
300	300	± 3,0	100	± 2,0	10,0	± 0,5	16,0	-1,5	16,0	8,0	58,8	46,2	0,950	8030	535	11,7	495	67,8	2,90	316	25,4	2,70	5,41
320	320	± 3,0	100	± 2,0	14,0	± 0,7	17,5	-1,5	17,5	8,75	75,8	59,5	0,982	10870	679	12,1	597	80,6	2,81	413	26,3	2,60	4,82
350	350	± 3,0	100	± 2,0	14,0	± 0,7	16,0	-1,5	16,0	8,0	77,3	60,6	1,05	12840	734	12,9	570	75,0	2,72	459	28,6	2,40	4,45
380	380	± 3,0	102	± 2,5	13,5	± 0,7	16,0	-1,5	16,0	8,0	80,4	63,1	1,11	15766	829	14,0	615	78,7	2,77	507	31,1	2,38	4,58
400	400	± 3,0	110	± 2,5	14,0	± 0,7	18,0	-1,5	18,0	9,0	91,5	71,8	1,18	20350	1020	14,9	846	102	3,04	618	32,9	2,65	5,11

1) Müsaade edilen ara: toleransı, ağırlık toleranslarıla sınırlandırılmıştır. *Allow (s) tolerance is limited weight tolerances.*
2) J : **Atalet Momenti** *Moment of inertia*
W : **Mukavemet momenti** *Moment of resistance*
I : **Atalet yarıçapları, ait olduğu eğme eksenlerine göredir** *Radius of gyration, subscripts x and y denoting the relevant axis*
3) S_x : **Yarım kesitin statik momenti** *Moment of first order of half cross section*
4) S_x / S_y : **Basma ve çekme orta noktaları uzaklıkları** *Distance between centres of compression and tension*
5) X_M **M kesme merkezinin y-y eksenine olan uzaklığı** *Distance of share centre M from y-y axis*

Eşkenar Köşebentler
Equal Angels (Leq)

Boyut Standardı
Dimension Standart
EN 10056

Kalite Standardı
Quality Standart
EN 10025-1 / 2



Anma Ölçüsü *Nominal Size* (Leq)	Boyutlar ve Toleranslar *Dimensions & Tolerances*					Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Ağırlık Merkezinden Uzaklık *Distance From Center of Gravity*			Eksenlerin Kesit Özellikleri *Section Specifications of Axises*								
											x-x = y-y			u-u		v-v			
	a		t		r	F (cm^2)	G (kg/m)	$c_x = c_y$ cm	c_x cm	c_x cm	$I_x = I_y$ cm^4	$r_x = r_y$ cm^3	$z_x = z_y$ cm^3	I_u cm^4	r_u cm	I_v cm^4	r_v cm	Z_v cm^3
120×120×10	120	± 3,0	10	± 0,75	13,0	23,2	18,2	3,31	8,49	4,69	313	3,67	36,0	497	4,63	129	2,36	27,5
120×120×12	120	± 3,0	12	± 1,00	13,0	27,5	21,6	3,40	8,49	4,80	368	3,65	42,7	584	4,60	152	2,35	31,6
130×130×12	130	± 3,0	12	± 1,00	14,0	30,0	23,6	3,64	9,19	5,15	472	3,97	50,4	750	5,00	194	2,54	37,7
150×150×10	150	± 3,0	10	± 0,75	16,0	29,3	23,0	4,03	10,60	5,71	624	4,62	56,9	990	5,82	258	2,97	45,1
150×150×12	150	± 3,0	12	± 1,00	16,0	34,8	27,3	4,12	10,60	5,83	737	4,60	67,7	1170	5,80	303	2,95	52,0
150×150×15	150	± 3,0	15	± 1,00	16,0	43,0	33,8	4,25	10,60	6,01	898	4,57	83,5	1430	5,76	370	2,93	61,6
160×160×15	160	± 4,0	15	± 1,00	17,0	46,1	36,2	4,49	11,30	6,35	1100	4,88	95,6	1750	6,15	453	3,14	71,3
180×180×16	180	± 4,0	16	± 1,20	18,0	55,4	43,5	5,02	12,70	7,11	1680	5,51	130,0	2690	6,96	679	3,50	95,5
180×180×18	180	± 4,0	18	± 1,20	18,0	61,9	48,6	5,10	12,70	7,22	1878	5,49	145,0	2980	6,92	768	3,52	106,6
200×200×16	200	± 4,0	16	± 1,20	18,0	61,8	48,5	5,52	14,10	7,81	2340	6,16	162,0	3720	7,75	980	3,94	123,0
200×200×18	200	± 4,0	18	± 1,20	18,0	69,1	54,3	5,60	14,10	7,92	2600	6,13	181,0	4150	7,75	1050	3,90	133,0
200×200×20	200	± 4,0	20	± 1,20	18,0	76,3	59,9	5,68	14,10	8,04	2858	6,11	199,0	4530	7,70	1170	3,92	146,6
200×200×24	200	± 4,0	24	± 1,20	18,0	90,6	71,1	5,84	14,10	8,26	3330	6,06	235,0	5280	7,64	1380	3,90	167,0

J : **Atalet momenti** *Moment of inertia*
Z : **Kesit modülü** *Section modulus*
r : **Jiresyon yarıçapı (X,YU ve V eksenlerdir)** *Radius of gyration(X,YU ve V axises)*

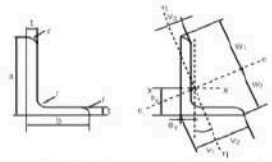
TİTAN SONDAJ

TİTAN SONDAJ

Çeşitkenar Köşebentler
Unequal Angels (Luneq)

Boyut Standardı
Dimension Standart
EN 10056

Kalite Standardı
Quality Standart
EN 10025-1 / 2



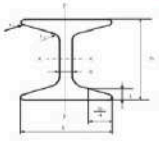
Anma Ölçüsü Nominal Size (Luneq)	Boyutlar ve Toleranslar Dimension and Tolerances						Kesit Alanı Section	Birim Kütle Unit Mass	Ağırlık Merkezinden Uzaklık Distance From Center of Gravity				Eksenlerin Kesit Özellikleri Section Specifications of Axises								V - V Eksenlerinin Eğimi Slope of Axes
													x-x			y-y			u-u		v-v	
	a		b		t	r	F (cm²)	(kg/m)	c_x cm	c_y cm	c_u cm	c_v cm	I_x cm⁴	r_x cm	z_x cm³	I_y cm⁴	r_y cm	z_y cm³	I_u cm⁴	r_u cm	I_v cm⁴	r_v cm	Tan α
120×80×8	120	±3.0	80	±2.0	8	± 0.75	15	15,5	12,2	3,83	1,87	8,23	4,23	228	3,82	27,5	80,8	2,28	13,2	260	4,10	46,5	1,74	0,437
120×88×10	120	±3.0	80	±2.0	10	± 0.75	15	19,1	15,0	3,92	1,95	8,19	4,31	278	3,88	34,1	98,1	2,26	16,2	317	4,07	56,8	1,72	0,435
120×80×12	120	±3.0	80	±2.0	12	± 1.0	15	22,7	17,8	4,00	2,03	8,15	4,20	323	3,77	40,4	114	2,24	19,1	371	4,04	66,7	1,71	0,431
125×75×8	125	±3.0	75	±2.0	8	± 0.75	15	15,5	12,2	4,14	1,68	8,44	4,20	247	4,09	29,6	67,6	2,09	11,6	274	4,21	40,9	1,63	0,360
125×75×10	125	±3.0	75	±2.0	10	± 0.75	15	19,1	15,0	4,23	1,76	8,39	4,17	302	3,97	36,5	82,1	2,07	14,3	334	4,18	49,9	1,61	0,357
125×75×12	125	±3.0	75	±2.0	12	± 1.0	15	22,7	17,8	4,31	1,84	8,33	4,15	354	3,95	43,2	95,5	2,05	16,9	391	4,15	58,5	1,61	0,354
135×65×8	135	±3.0	65	±2.0	8	± 0.75	15	15,5	12,2	4,78	1,34	8,79	3,95	291	4,34	33,4	45,2	1,71	8,75	307	4,45	29,4	1,38	0,245
135×65×10	135	±3.0	65	±2.0	10	± 0.75	15	19,1	15,0	4,88	1,42	8,72	3,91	356	4,31	41,3	54,7	1,69	10,8	375	4,43	35,9	1,37	0,243
150×75×9	150	±3.0	75	±2.0	9	± 0.75	12	19,6	15,4	5,26	1,57	9,82	4,50	455	4,82	46,7	77,9	1,99	13,1	483	4,96	50,2	1,60	0,261
150×75×10	150	±3.0	75	±2.0	10	± 0.75	12	21,7	17,0	5,31	1,61	9,79	4,48	501	4,81	51,6	85,6	1,98	14,5	531	4,95	55,1	1,60	0,261
150×75×12	150	±3.0	75	±2.0	12	± 1.0	12	25,7	20,2	5,40	1,69	9,72	4,44	588	4,76	61,3	99,6	1,97	17,1	623	4,92	64,7	1,59	0,258
150×75×15	150	±3.0	75	±2.0	15	± 1.0	12	31,7	24,9	5,52	1,81	9,63	4,40	713	4,75	75,2	119	1,94	21,0	753	4,88	78,5	1,58	0,252
150×90×10	150	±3.0	90	±2.0	10	± 0.75	12	23,2	18,2	5,00	2,04	10,1	5,03	531	4,80	53,3	146	2,51	21,0	591	5,05	88,3	1,95	0,360
150×90×12	150	±3.0	90	±2.0	12	± 1.0	12	27,5	21,6	5,08	2,12	10,1	5,00	627	4,77	63,3	171	2,49	24,8	694	5,02	104	1,94	0,356
150×90×15	150	±3.0	90	±2.0	15	± 1.0	12	33,9	26,6	5,21	2,23	9,98	4,98	761	4,74	77,7	205	2,46	30,4	841	4,98	126	1,93	0,354
150×100×10	150	±3.0	100	±2.0	10	± 0.75	12	24,2	19,0	4,81	2,34	10,3	5,29	553	4,79	58,2	196	2,87	25,9	637	5,13	114	2,17	0,436
150×100×12	150	±3.0	100	±2.0	12	± 1.0	12	28,7	22,5	4,89	2,42	10,2	5,28	651	4,76	64,8	231	2,85	30,7	749	5,11	134	2,16	0,436
200×100×10	200	±4.0	100	±2.0	10	± 0.75	15	29,2	23,0	6,93	2,01	13,2	6,95	1220	5,46	93,2	210	2,68	26,3	1290	6,35	135	2,15	0,262
200×100×12	200	±4.0	100	±2.0	12	± 1.0	15	34,8	27,3	7,03	2,10	13,1	6,90	1440	6,43	111	247	2,67	31,3	1530	6,33	159	2,14	0,262
200×100×15	200	±4.0	100	±2.0	15	± 1.0	15	43,0	33,75	7,16	2,22	13,0	5,84	1758	6,4	137	299	2,64	38,5	1864	6,59	193	2,12	0,260
200×150×12	200	±4.0	150	±3.0	12	± 1.0	15	40,8	32,0	6,08	3,61	13,9	7,14	1650	6,36	119	803	4,44	70,5	2030	7,04	439	3,25	0,552
200×150×15	200	±4.0	150	±3.0	15	± 1.0	15	50,5	39,6	6,21	3,73	13,9	7,13	2022	6,33	147	979	4,40	86,9	2476	7,00	525	3,23	0,551

I : **Atalet momenti** *Moment of Inertia*
Z : **Kesit modülü** *Section modulus*
r : **İrasyon yarıçapı (X,VU ve V eksenlerdir)** *Radius of gyration(X,U and V axises)*

GI ve TH Maden Direkleri
GI and TH Sections for Mine Support

Boyut Standardı
Dimension Standart
DIN 21541

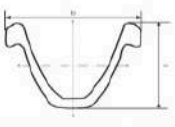
Kalite Standardı
Quality Standart
EN 10025-1 / 2



Kesiti Section GI	Boyutlar ve Toleranslar Dimensions & Tolerances										Eğim Slope	Kesit Alanı Section	Birim Kütle Unit Mass	Statik Parametler Static Parameters					
														x-x			x-y		
	h mm		b mm		s mm		t mm		r1	r2	%	F (cm²)	G (kg/m)	I_x cm⁴	W_x cm³	i_x cm	I_y cm⁴	W_y cm³	i_y cm
GI 110	110	±2.0	84	±1.5	10,0	±0.6	14,0	-1.0	14,0	5,0	33,0	31,1	24,5	570	103	4,28	103	24,5	1,82
GI 140	140	±2.0	110	±1.5	12,0	±0.7	19,0	-1.5	17,0	8,0	33,0	31,0	41,6	1568	227	5,47	305	57,3	2,44

Boyut Standardı
Dimension Standart
DIN 21530

Kalite Standardı
Quality Standart
EN 10025



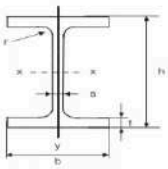
Kesiti Section TH	Boyutlar ve Toleranslar Dimensions & Tolerances							Kesit Alanı Section	Birim Kütle Unit Mass	Statik Parametler Static Parameters			
										x-x		x-y	
	H mm		B mm		b mm	h1	h2	F (cm²)	G (kg/m)	W_x cm³	I_x cm	W_y cm³	I_y cm
70/29	124,0	±2.0	150	±1.5	44,0	33,0	15,0	37,9	29,0	94	616	102	775
91/34	170,5	±3.0	171	±1.5	51,0	34,0	15,0	43,1	33,8	118	991	141	1205

TİTAN SONDAJ

IPE Profiller - Orta Geniş I Profiller / Takviyeli
IPE Profiles - Mid Wide I Profiles / Reinforced

Boyut Standardı
Dimension Standart
TS EN 10034

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



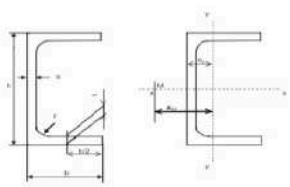
Anma Ölçüsü *Nominal Size* (IPE)	Boyutlar ve Toleranslar *Dimension and Tolerances*								Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Yüzey Alanı *Surface Area*	Statik Parametreler *Static Parameters*						Sx	Sy
	h		b		s		t	r				x-x			y-y				
									F	G	U	I_x	W_x	ix	I_y	W_y	iy	cm³	cm
	mm		mm		mm		mm	mm	(cm²)	(kg/m)	(m²/m)	cm⁴	cm³	cm	cm⁴	cm³	cm		
IPE A 120	112,6	-3/-2	64	-4/-1	3,8	±0,7	5,1	+1,5/-0,5	7,9	11,02	0,472	257	44	4,83	22,4	7,00	1,42	-	-
IPE 120	120	-3/-2	64	-4/-1	4,4	±0,7	6,3	+1,5/-0,5	7,0	13,20	0,475	318	53	4,90	27,7	8,65	1,45	30,4	10,5
IPE A 140	137,4	-3/-2	73	-4/-1	3,8	±0,7	5,6	+1,5/-0,5	7,0	13,39	0,547	435	63	5,70	35,4	9,68	1,63	-	-
IPE 140	140	-3/-2	73	-4/-1	4,7	±0,7	6,9	+2,0/-1,0	7,0	16,40	0,551	541	773	5,74	44,9	12,3	1,65	44,2	12,3
IPE A160	157	-3/-2	82	-4/-1	4,0	±0,7	5,9	+1,5/-0,5	9,0	16,18	12,7	0,629	669	88	6,53	54,4	13,3	1,83	-	-
IPE 160	160	-3/-2	82	-4/-1	5,0	±0,7	7,4	+2,0/-1,0	9,0	20,10	15,8	0,633	869	109	6,58	68,3	16,7	1,84	61,9	14,0
IPE A180	177	-3/-2	91	-4/-1	4,3	±0,7	6,5	+2,0/-1,0	9,0	19,56	15,4	0,694	1061	120	7,37	81,5	18,0	2,05	-	-
IPE 180	180	-3/-2	91	-4/-1	5,3	±0,7	8,0	+2,0/-1,0	9,0	23,90	18,8	0,698	1320	146	7,42	101	22,2	2,05	93,2	15,8
IPE A 200	197	-4/-2	100	-4/-1	4,5	±0,7	7,0	+2,0/-1,0	12,0	22,41	17,6	0,764	1591	162	8,43	117	22,4	2,23	-	-
IPE 200	200	-4/-3	100	-4/-1	5,6	±0,7	8,5	+2,0/-1,0	12,0	28,50	22,4	0,768	1940	194	8,26	142	28,5	2,24	110	12,6
IPE A 220	217	-4/-2	110	-4/-1	5,0	±0,7	7,7	+2,0/-1,0	12,0	26,68	22,4	0,843	2317	214	9,25	171	31,2	2,48	-	-
IPE 220	220	-4/-3	110	-4/-1	5,9	±0,7	9,2	+2,0/-1,0	12,0	33,40	26,2	0,848	2770	252	9,11	205	37,3	2,48	143	19,4
IPE A 240	237	-4/-2	120	-4/-2	5,2	±0,7	8,3	+2,0/-1,0	15,0	31,31	26,2	0,918	3290	278	9,69	240	40,0	2,68	-	-
IPE 240	240	-4/-2	120	-4/-2	6,2	±0,7	9,8	+2,0/-1,0	15,0	39,10	30,7	0,922	3890	324	9,97	284	47,3	2,69	183	21,2
IPE A 270	267	-4/-2	135	-4/-2	5,5	±0,7	8,7	+2,0/-1,0	15,0	39,20	30,7	1,017	4917	368	11,2	356	53,0	3,02	-	-
IPE 270	270	-4/-2	135	-4/-2	6,6	±0,7	10,2	+2,5/-1,5	15,0	45,90	36,1	1,040	5790	429	11,2	420	62,2	3,02	242	21,9
IPE A 300	297	-4/-2	150	-4/-2	6,1	±0,7	9,2	+2,0/-1,0	15,0	46,56	36,5	1,156	7173	483	12,4	515	69,2	3,34	-	-
IPE 300	300	-4/-2	150	-4/-2	7,1	±1,0	10,7	+2,5/-1,5	15,0	53,88	42,2	1,16	8360	557	12,5	604	80,5	3,35	334	26,6
IPE A 330	327	-4/-2	160	-4/-2	6,5	±0,7	10	+2,5/-1,5	18,0	54,70	43,0	1,25	10220	626	12,7	685	85,6	3,54	-	-
IPE 330	330	-4/-2	160	-4/-2	7,5	±1,0	11,5	+2,5/-1,5	18,0	62,60	49,1	1,25	11770	713	12,7	788	98,5	3,55	402	29,3
IPE A 360	357,6	-4/-2	170	-4/-2	6,6	±0,7	11,5	+2,5/-1,5	18,0	64,09	50,2	1,35	13520	812	14,5	944	111	3,84	-	-
IPE 360	360	-4/-3	170	-4/-2	8,0	±1,0	12,7	+2,5/-1,5	18,0	72,70	57,1	1,35	16270	904	15,0	1043	123	3,79	510	31,9
IPE A 400	397	-4/-2	180	-4/-2	7,0	±1,0	12	+2,5/-1,5	21,0	73,10	57,4	1,46	20290	1022	16,7	1164	130	4,00	-	-
IPE 400	400	-4/-2	180	-4/-2	8,6	±1,0	13,5	+2,5/-1,5	21,0	84,50	66,3	1,47	23130	1160	16,5	1320	146	3,95	654	35,8
IPE A 450	447	-5/-3	190	-4/-2	7,6	±1,0	13,1	+2,5/-1,5	21,0	85,60	67,2	1,60	29760	1331	18,7	1502	158	4,19	-	-
IPE 450	450	-5/-3	190	-4/-2	9,4	±1,0	14,6	+2,5/-1,5	21,0	98,80	77,6	1,61	33740	1500	18,5	1680	176	4,12	851	35,2
IPE A 500	497	-5/-3	200	-4/-2	8,4	±1,0	14,5	+2,5/-1,5	21,0	101,0	79,4	1,74	42930	1728	20,6	1933	194	4,38	-	-
IPE 500	500	-5/-3	200	-4/-2	10,2	±1,5	16,0	+2,5/-1,5	21,0	116,0	90,7	1,74	48200	1928	20,4	2140	214	4,31	1100	43,9
IPE A 550	547	-5/-3	210	-4/-2	9,0	±1,5	15,7	+2,5/-1,5	24,0	117,0	92,1	1,88	55960	2143	21,6	2432	232	4,55	-	-
IPE 550	550	-5/-3	210	-4/-2	11,1	±1,5	17,2	+2,5/-1,5	24,0	134,0	106,0	1,88	67120	2440	22,4	2670	254	4,45	1390	48,2
IPE A 600	597	-5/-3	220	-4/-4	10,2	±1,5	18,1	+2,5/-1,5	24,0	137,0	108,0	2,01	82920	2778	24,6	3116	283	4,77	-	-
IPE 600	600	-5/-3	220	-4/-4	12,0	±1,5	19,0	+2,5/-1,5	24,0	156,0	123,0	2,01	92080	3070	24,3	3390	308	4,66	1760	52,6

I : Atalet momenti Moment of Inertia
W : Kesit modülü Section modulus
i : Atalet yarıçapları (alt olduğu eğme eksenlerine göredir) Radius of gyration (subscript x and y denoting the relevant axis)
S_x : Yarım kesitin statik momenti Moment of first order of half the cross section
S_x=S_y : Basma ve çekme merkezleri arasındaki mesafe Distance between centers of compression and tension
Kesit, ağırlık, toplam yüzey alanları ile statik değerler çizilecek çizgilerin boyutlara göre hesaplanmıştır. Section, weight, surface area and statical values are calculated according to the values in the table.

Paralel Flanşlı U Profiller (UPE / UAP)
Parallel Flange U Profiles (UPE / UAP)

Boyut Standardı
Dimension Standart
TS EN 10279

Kalite Standardı
Quality Standart
TS EN 10025-1 / 2



Anma Ölçüsü *Nominal Size* (UPE)	Boyutlar ve Toleranslar *Dimensions & Tolerances*									Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Yüzey Alanı *Surface Area*	Statik Parametreler *Static Parameters*						S_x cm³	S_y cm	Boyut *Dimensions*	
													x-x			y-y						
	h mm		b mm		s mm		t * mm		r₁ mm	F (cm²)	G (kg/m)	U (m²/m)	I_x cm⁴	W_x cm³	i_x cm	I_y cm⁴	W_y cm³	i_y cm			e cm	x_M cm
80	80	± 2,0	50	± 1,5	4,0	± 0,50	7,0	-0,5	10	10,1	7,90	0,343	107	26,8	3,26	25,5	8,0	1,59	15,6	6,67	1,82	3,71
100	100	± 2,0	55	± 2,0	4,5	± 0,50	7,5	-0,5	12	12,5	9,82	0,402	207	41,4	4,07	38,3	10,6	1,75	24,0	8,62	1,91	3,92
120	120	± 2,0	60	± 2,0	5,0	± 0,50	8,0	-0,5	12	15,4	12,1	0,460	364	60,6	4,86	55,5	13,8	1,90	35,2	10,3	1,98	4,12
140	140	± 2,0	65	± 2,0	5,0	± 0,50	9,0	-0,5	12	18,4	14,5	0,520	600	85,6	5,71	78,8	18,2	2,07	49,4	12,1	2,17	4,54
160	160	± 2,0	70	± 2,0	5,5	± 0,50	9,5	-0,5	12	21,7	17,0	0,579	911	114	6,48	107	22,6	2,22	65,8	13,9	2,27	4,78
180	180	± 2,0	75	± 2,0	5,5	± 0,50	10,5	-1,0	12	25,1	19,7	0,639	1350	150	7,34	144	28,6	2,39	86,5	15,7	2,47	5,18
200	200	± 2,0	80	± 2,0	6,0	± 0,50	11,0	-1,0	13	29,0	22,8	0,697	1910	191	8,11	187	34,5	2,54	110	17,4	2,56	5,41
220	220	± 3,0	85	± 2,0	6,5	± 0,50	12,0	-1,0	13	33,9	26,6	0,756	2680	244	8,90	247	42,5	2,70	141	19,1	2,70	5,70
240	240	± 3,0	90	± 2,0	7,0	± 0,50	12,5	-1,0	15	38,5	30,2	0,813	3600	300	9,67	311	50,1	2,84	173	20,8	2,79	5,91
270	270	± 3,0	95	± 2,0	7,5	± 0,50	13,5	-1,0	15	44,8	35,2	0,892	5250	389	10,80	401	60,7	2,99	225	23,3	2,89	6,14
300	300	± 3,0	100	± 2,0	9,5	± 0,50	15,0	-1,0	15	56,6	44,4	0,968	7820	522	11,80	538	75,6	3,08	307	25,5	2,89	6,03
330	330	± 3,0	105	± 2,5	11,0	± 0,70	16,0	-1,5	18	67,8	53,2	1,043	11010	667	12,70	682	89,7	3,17	396	27,8	2,90	6,00
360	360	± 3,0	110	± 2,5	12,0	± 0,70	17,0	-1,5	18	77,9	61,2	1,121	14830	824	13,80	844	105	3,29	491	30,2	2,97	6,12
400	400	± 3,0	115	± 2,5	13,5	± 0,70	18,0	-1,5	18	91,9	72,2	1,218	20980	1050	15,10	1050	123	3,37	631	33,2	2,96	6,04

1) Müsaade edilen t(+) toleransı, ağırlık toleransı ile sınırlandırılmıştır. *t(+) tolerance is limited weight tolerances*
I : Atalet momenti *Moment of inertia*
W : Kesit modülü *Section modulus*
i : Eksenin yarıçapı *Radius of gyration*
S_x : Yarım kesitin statik momenti *Moment of first order of half the cross section*
S_x=I_x:S_y : Basma ve çekme merkezleri arasındaki mesafe *Distance between centers of compression and tension*
x_M : Kesme merkezinin (M) y-y eksenine mesafesi *Distance of shear centre (M) from y-y axis*

TİTAN SONDAJ

Demiryolu Tekeri Üretim Tesisi
Railway Wheel Production Plant

Demiryolu Tekeri Üretim Tesisimiz 200.000 adet/yıl teker üretim kapasitesine sahiptir. Tesisimizde 700 mm den 1250 mm ye kadar olan çaplarda yük vagonu, yolcu vagonu, YHT vagonu, hafif raylı sistem ve lokomotif tekerlerinin EN 13262+A2 standartlarına uygun olarak üretimi yapılmaktadır.

Demiryolu Tekeri Üretim Tesisimizde aşağıdaki tabloda belirtilen ürünler üretilebilmektedir.

- **Yük Vagonu Tekeri** : 920 mm
- **Yolcu Vagonu Tekeri** : 920 mm
- **YHT Vagonu Tekeri** : 920 mm
- **Hafif Raylı Sistem Tekeri** : 840 mm
- **Lokomotif Tekeri** : 1016 - 1100 mm

Üretim süreci kütük hazırlama, kütük ısıtma, dövme ve haddeleme, ısıl işlem, CNC işleme, test ve muayene adımlarından oluşmaktadır.

Demiryolu Tekeri Üretim Tesisin de üretilecek ürünlerin yarı mamulleri (kalın yuvarlak) istenen çelik kalitesinde (ER7) vakumla gaz giderme işleminden geçirilerek sürekli döküm yöntemiyle ulusal ve uluslararası kalite standartlarında üretilmektedir.

Üretimi yapılacak nihai mamullerin (Teker) özellikleri aşağıda belirtilmiştir.

Çap : 700 - 1250 mm
İspit Genişliği : 80 - 175 mm
Göbek Uzunluğu : 110 - 350 mm

Tesisimizde ilk olarak Ø 920 mm çapın da yan sayfada teknik özellikleri verilen yük vagonu tekerinin üretimi yapılmaktadır.

Our railway wheel production plant has capacity of 200.000 wheels in a year. Wheels for freight wagon, passenger car, high speed train, light rail system and locomotives with diameters from 700 mm to 1250 mm produce according to EN 13262+A2 standards.

Products in table below produce in our facility.

- **Freight Wagon Wheel** : 920 mm
- **Passenger Wagon Wheel** : 920 mm
- **HST Wagon Wheel** : 920 mm
- **Light Rail System Wheel** : 840 mm
- **Locomotive Wheel** : 1016 - 1100 mm

Production process contains billet preparation, billet heating , forging and rolling , heat treatment , CNC machining , test and inspection.

Round bars for products of railway wheel production plant are produced with degassing with vacuum process and continious casting method with requested steel grade (ER7) in national and international quality standards.

Properties of finished products (wheels) will be produced are shown below.

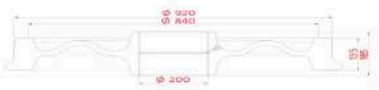
Çap : 700 - 1250 mm
İspit Genişliği : 80 - 175 mm
Göbek Uzunluğu : 110 - 350 mm

Specifications of firstly produced freight wagon wheels with 920 mm diameter are side of page.

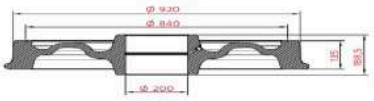
Demiryolu Tekeri
Railway Wheels

Kalite Standardı
Quality Standart
EN 13262+A2

Çelik Kalitesi
Steel Grade
ER7

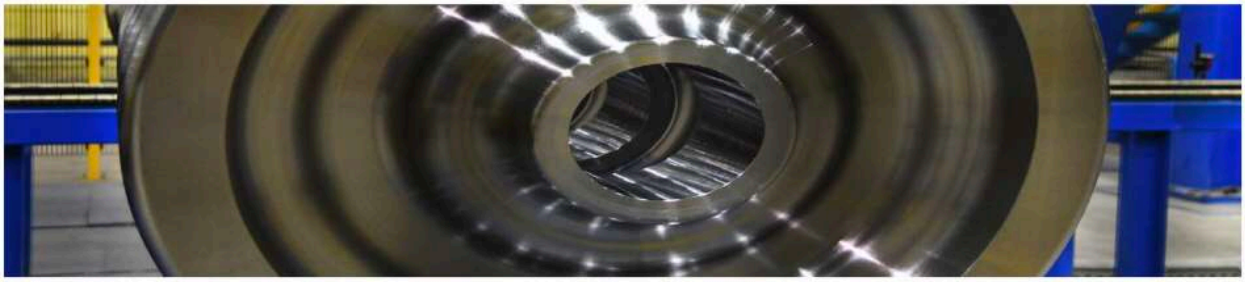


BA 004



BA 318

Teker Tipi *Wheel Type*	Ürün *Product*	Dış Çap Kapsamı *Tread Diameter* (mm)	İspit Genişliği *Rim Width* (mm)	Çelik Kalitesi *Steel Grade*	Standart *Standard*	Aks Yükü *Axle Load* (t)
BA 004	Yük Vagonu *Freight Wagon*	920	135	ER7	EN 13262+A2	23,5
BA 318	Yük Vagonu *Freight Wagon*	920	135	ER7	EN 13262+A2	23,5



TİTAN SONDAJ

Kontinü Haddehane
Continuous Rolling Mill

1965 yılında ülkemizin inşaat sektöründeki ihtiyacını karşılamak üzere beton çeliği üretimi için 400.000 ton/yıl kapasite ile kurulan Kontinü Haddehane, 2005 yılında yapılan modernizasyon ile 675.000 ton/yıl üretim yapacak kapasiteye ulaşmıştır.

Üretim süreci,

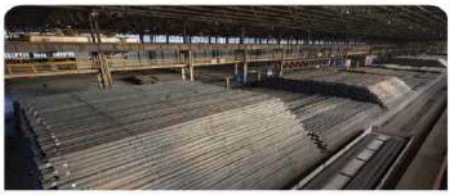
- **Kütük Isıtma,**
- **Haddeleme,**
- **QTB (Tempcore),**
- **Soğutma Izgarası,**
- **Paketleme,**
- **İstifleme**

adımlarından oluşur.

2005 yılından itibaren QTB (tempcore) hattının da devreye alınmasından sonra sismik kalite inşaat çeliğinin üretilebilirliği sağlanmıştır. Kontinü Haddehanede çap 12-40 mm arasında;

- **TS 708 standardı;**
  - B420C
  - B500C
  - B500B
- **GOST R 52544-2006 standardı;**
  - A600C
  - A500C

kalitelerinde üretim yapılmaktadır.



The Continuous Rolling Mill, which was established in 1965 with a capacity of 400,000 tons / year for concrete steel production to meet the needs of our country in the construction sector, has reached a capacity of 675,000 tons / year with the modernization made in 2005.
The production process consists of the following steps:

- **Billet Heating,**
- **Rolling,**
- **QTB (Tempcore),**
- **Cooling Grill,**
- **Packaging,**
- **Stowing**

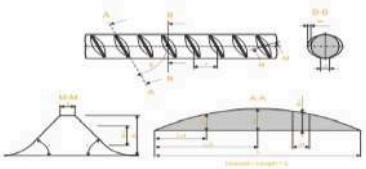
After the commissioning of the QTB (tempcore) line as of 2005, seismic quality construction steel production has been possible. In the Continuous Rolling Mill, production is made in the following qualities between 12-40 mm in diameter;

- **TS 708 standard;**
  - B420C
  - B500C
  - B500B
- **GOST R 52544-2006 standard;**
  - A600C
  - A500C

Nervürlü - Beton Donatı Çelikleri
Rebar - Reinforcing Steels of Concrete

Boyut Standardı
Dimension Standart
TS 708

Kalite Standardı
Quality Standart
TS 708



Nervür Ölçü ve Toleransları
Rib Dimension and Tolerance

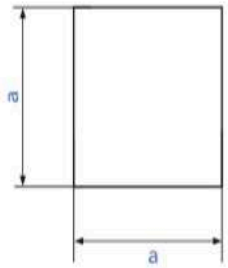
Nervür Çapı *Rib Diameter* (d)	Boyuna Nervür (Fitil) Yüksekliği *Longitudinal Rib Height* Max	Enine Nervür Yüksekliği *Latitudinal Rib Height* (h)	Enine Nervür Aralığı *Latitudinal Rib Space* (c)	Nervür Eğimi Aralığı *Latitudinal Rib Inclination Space* (β)
8	1,20	0,24-1,10	3,2-9,6	35°-75°
10	1,50	0,30-1,50	4,0-12,0	35°-75°
12	1,80	0,36-1,80	4,8-14,4	35°-75°
14	2,10	0,42-2,10	5,6-16,8	35°-75°
16	2,40	0,48-2,40	6,4-19,2	35°-75°
18	2,70	0,54-2,70	7,2-21,6	35°-75°
20	3,00	0,60-3,00	8,0-24,0	35°-75°
22	3,30	0,66-3,30	8,8-26,4	35°-75°
25	3,75	0,75-3,75	10,0-30,0	35°-75°
26	3,90	0,78-3,90	10,4-31,2	35°-75°
28	4,20	0,84-4,20	11,2-33,6	35°-75°
30	4,50	0,90-4,50	12,0-36,0	35°-75°
32	4,80	0,96-4,80	12,8-38,4	35°-75°
34	5,10	1,02-5,10	13,6-40,8	35°-75°
36	5,40	1,08-5,40	14,4-43,2	35°-75°
38	5,70	1,14-5,70	15,2-45,6	35°-75°
40	6,00	1,20-6,00	16,8-48,0	35°-75°

TİTAN SONDAJ

Kütükler
Billets

Boyut Standardı
Dimension Standart
TS 9914
TS 9016

Kalite Standardı
Quality Standart
EN 10025
TS 708
Müşteri talebi ile diğer kaliteler
Other qualities according to customer's request



Anma Ölçüsü *Nominal Size*	Boyutlar *Dimension*	Anma Ölçüsü Toleransı *Tolerans*	Kesit Alanı *Section*	Birim Kütle *Unit Mass*	Boy* *Finished Length**	Tolerans *Tolerance*	Köşe Radyus *Corner Radius*
	a (mm)	± (mm)	S (cm^2)	G (Kg/m)	L (m)	± (mm)	R max.(mm)
100x100	100	2.5	98,76	77,53	6-12	100	12
120x120	120	2.5	142,76	112,07	6-12	100	12
130x130	130	3.0	167,76	132,76	6-12	100	12
150x150	150	3.0	223,06	180,00	6-12	100	15
170x170	170	3.0	287,05	224,05	6-12	100	15
200x200	200	3.0	398,05	310,05	6-12	100	15

TİTAN SONDAJ

Çelik Kaliteleri
Steel Qualities

Çelik Kaliteleri *Steel Qualities*	Web Adresi *Web Address*	Karekod *QR Code*
Genel Yapı Çelikleri *General Building Steels*	https://www.kardemir.com/dosyalar/k/GYC.pdf	
Bağlantı Elemanı Çelikleri *Connection Element Steels*	https://www.kardemir.com/dosyalar/k/BECK.pdf	
Karbon Çelikleri *Carbon Steels*	https://www.kardemir.com/dosyalar/k/KC.pdf	
Hasır ve Tel Çekmeye Uygun Düşük Karbonlu Çelikler *Low Carbon Steels Suitable For Wire and Wire Drawing*	https://www.kardemir.com/dosyalar/k/HTCDK.pdf	
Orta Karbonlu Çelikler *Medium Carbon Steels*	https://www.kardemir.com/dosyalar/k/OKC.pdf	
Yüksek Karbonlu Çelikler *High Carbon Steels*	https://www.kardemir.com/dosyalar/k/YKC.pdf	
Kaynak Teli ve Elektrot Çelikleri *Welding Wire and Electrode Steels*	https://www.kardemir.com/dosyalar/k/KTEC.pdf	
Nervürlü İnşaat Çelikleri *Ribbed Construction Steels*	https://www.kardemir.com/dosyalar/k/NICK.pdf	
Ön Germeli Beton Çelikleri *Pre-Stressed Concrete Wire (PC Wire)*	https://www.kardemir.com/dosyalar/k/OGBC.pdf	
Demiryolu Rayı Çelikleri *Railway Rail Steels*	https://www.kardemir.com/dosyalar/k/RCK.pdf	
Tren Tekeri Çelikleri *Train Wheel Steels*	https://www.kardemir.com/dosyalar/k/TTUCK.pdf	
Özel Çelikler *Special Steels*	https://www.kardemir.com/dosyalar/k/OCK.pdf	

Kok Ürünleri
Coke Products

Ham Katran *Crude Tar*

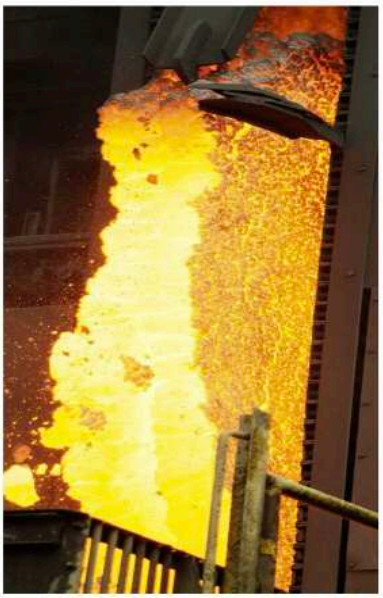
Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Kül *Ash*	%	Max. 0,05	ASTM D3415
Kükürt *Sulphur*	%	Max. 0,4	ASTM D1552
Su *Water*	%	Max. 5	TS EN 1428
Yoğunluk *Density (25 °C)*	g / cm³	Max. 1,25	TS EN ISO 3838
Toluen'de Çözülmeyen *Insoluble Toluene*	%	10	ASTM D4312
Naftalin *Naphthalene*	% Max.	Max. 8	NFT 66-029
Donma Noktası *Freezing Point*	°C	- 2 , + 2	TS 1233 ISO 3016
Alevlenme Noktası *Flash Point*	°C	85 - 125	TS EN ISO 2592
Destilasyon *Distillation*			
> 180 °C	%	0 - 2	TS 128
180 - 230 °C	%	2 - 4	
210 - 240 °C	%	8 - 10	
240 - 290 °C	%	9 - 10	
290 - 330 °C	%	6 - 10	
330 - 360 °C	%	5 - 10	
Zift *Pitch*	%	50 - 70	

Katran Boyası *Tar Paint*

Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Özgül Ağırlık (25 °C) *Specific Gravity (25 °C)*	g / cm³	1,05	TS EN ISO 3838
Kül *Ash*	%	Max. 0,5	ASTM D2415
Damıtma (Hacmen) *Distillation (Volumetric)*			
> 200 °C	%	Min. 30	TS 128
> 300 °C	%	Min. 40	
Renk *Color*		Parlak Siyah *Bright Black*	

Pres Naftalin *Pressed Naphthalene*

Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Kristallenme Noktası *Crystallization Point*	°C	78,5	TS 2063
Dış Görünüş (Silindirik Kalıp) *External View (Cylindiric Pattern)*	Çap *Diameter*	42 cm	
	Yükseklik *Height*	10 - 15 cm	



Yol Katranı (RT-2) *Road Tar (RT-2)*

Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Yoğunluk (25 °C) *Density (25 °C)*	g / cm³	1,12	TS EN ISO 3838
Viskozite (Yüzme 40 °C) *Viscosity (Float 40 °C)*	Saniye *Second*	8 - 13	ASTM D139
Su *Water*	%	Max. 2	TS EN 1428
Kalıntı Yum. Noktası *Residue Softening Point*	°C	30 - 50	TS EN 1427
Destilasyon *Distillation*			
270 °C	%	Max. 30	TS 128
270-300 °C	%	Max. 15	
Zift *Pitch*	%	55	

Yol Katranı (RT-9) *Road Tar (RT-9)*

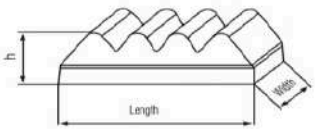
Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Yoğunluk (25 °C) *Density (25 °C)*	g / cm³	1,14	TS EN ISO 3838
Viskozite (Yüzme 32 °C) *Viscosity (Float 32 °C)*	Saniye *Second*	120 - 200	ASTM D139
Su *Water*	%	-	TS EN 1428
Kalıntı Yum. Noktası *Residue Softening Point*	°C	35 - 55	TS EN 1427
Destilasyon *Distillation*			
270 °C	%	Max. 15	TS 128
270-300 °C	%	Max. 30	
Zift *Bitumen*	%	75	
İnceltilme Süresi 10 mm *Efflux Viscometer (40/5)*	Saniye *Second*	20 - 140	TS EN 12846

Kreozot *Creosote*

Analiz *Analysis*	Birim *Unit*	Değer *Value*	Standart *Standard*
Yoğunluk (38 °C) *Density (38 °C)*	g / cm³	1,0 - 1,1	TS EN ISO 3838
Su *Water*	%	Max. 3	TS EN 1428
Kuruma Noktası *Drying Point*	(°C)	Min. 290	
Destilasyon *Distillation*			
> 205 °C	%	Max. 15	TS 128
> 230 °C	%	Max. 75	

TİTAN SONDAJ

Pikler
Pig Irons



Pik Kimyasal Analizleri (Sınıflandırılması)
Pig Chemical Analysis (Classification)

Cinsi *Type*	Si	Mn	S	C	P
K.SFERO-1	0,90 (Max.)	0,25 (Max.)	0,015 (Max.)	3,5-4,5	0,060 (Max.)
K.SFERO-2	0,90 (Max.)	0,25-0,40	0,015-0,020	3,5-4,5	0,060 (Max.)
K.SFERO-3	0,90 (Max.)	0,40-0,60	0,020-0,025	3,5-4,5	0,060 (Max.)
H1	2,01 (Min.)	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2 ÖZEL *H2 SPECIAL*	1,70-2,00	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2	1,40-1,70	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
H2 YK *H2 HS*	1,40-1,70	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)
Ç1	1,00-1,39	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
Ç1 YK *Ç1 HS*	1,00-1,39	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)
Ç2	0,99 (Max.)	0,6-1,2	0,060 (Max.)	3,5-4,5	0,200 (Max.)
Ç2 YK *Ç2 HS*	0,99 (Max.)	0,6-1,2	0,060 (Min.)	3,5-4,5	0,200 (Max.)

Çelik Kaliteleri
Steel Qualities

Çelik kaliteleri tabloları düzenli olarak güncellenmektedir. Karekodu telefonunuz ile okutarak çelik kaliteleri tablolarının en güncel haline ulaşabilirsiniz. Eğer telefonunuzda karekod okuyucu yok ise bağlantı adresi üzerinden tablonun en güncel haline ulaşabilirsiniz.

The table of steel qualities is regularly updated. You can reach the latest version of the chemical analysis by scanning the barcode with your mobile phone. If you do not have a supported mobile phone, you can reach the latest version of the steel qualities with the link provided.

TİTAN SONDAJ

MEROS Atığı (Sodyum Sülfat Na_2SO_4)
MEROS Waste (Sodium Sulfate Na_2SO_4)

Teknik Özellikleri *Technical Specifications*		
İçeriği *Content*	Tipik Değerler *Typical Values*	Yöntem *Method*
Na_2SO_4	%85,9	TS 4528:1985
Na_2CO_3	%1,5	ISO 6353/2:1983
NaCl	%7,2	ISO 6353/2:1983
NaF	%1,0	İyon Kromatografi *Ion Chromatography*
pH değeri (%5'lik çözeltide) *pH Value* *(%5 Solution)*	8,00	ISO 6353/2:1983

Metalurjik Kireç
Metallurgical Lime

Kimyasal Analiz *Chemical Analysis*	
İçeriği *Content*	Tipik Değerler (%) *Typical Values (%)*
Aktif CaO *Active CaO*	90
Toplam CaO *Total CaO*	93
Kızdırma Kaybı *Loss of Glow*	0,5
S	0,04

TİTAN SONDAJ

Kok Ürünleri
Coke Products

İlgili Standartlar
Related Standarts
DIN 59200

Amonyum Sülfat *Ammonium Sulphate*				
Analiz *Analysis*		Birim *Unit*	Değer *Value*	Standart *Standard*
Rutubet *Humidity*		%	Max. 0,5	TS 2832
Serbest Asitlik *Free Acidity*		%	Max. 0,03	TS 856
Toplam Azot *Total Nitrogen*		%	Min. 20,5	
Ebat *Size*	3,36 mm (6 Mesh)	%	0	TS 836
	0,59 mm (30 Mesh)	%	Min. 55	
	0,21 mm (70 Mesh)	%	Min. 90	
Ham Benzol *Crude Benzole*				
Analiz *Analysis*		Birim *Unit*	Değer *Value*	Standart *Standard*
Yoğunluk (25 °C) *Density (25 °C)*		g / cm³	0,900	ASTM D4052
Kükürt *Sulphur*		%	Max. 0,5	ASTM D1552
Damlama Noktası *Dropping Point*		°C	75	ASTM D850
Kuruma Noktası *Drying Point*		°C	Max. 240	
Damıtma *Distillation*	> 100 °C	%	Min. 75	
	> 120 °C	%	Min. 85	
	> 160 °C	%	Min. 93	
Görünüm *Appearance*			Berrak *Clear*	

Granüle Yüksek Fırın Cürufu
Granule Blast Furnace Slag

Teknik Özellikler
Technical Specifications

İçeriği *Content*	Tipik Değerler % *Typical Values*
Rutubet *Humidity*	7 (Stokta / *In Stock*)
Rutubet *Humidity*	13 - 14 (Havuzda az dinlenmiş / *Granulated with water spray*)
SiO_2	35,0 - 45,0
CaO	30,0 - 40,0
Al_2O_3	9,0 - 13,0
S	0,5 - 1,5
MgO	6,0 - 8,5
MnO	0,5 - 3,5
FeO	0,1 - 3,5
K_2O	0,5 - 2,0
Na_2O	0,2 - 0,6
TiO_2	0,3 - 0,7
Yığın Yoğunluğu (gr / cm³) *Bulk Density (gr / cm³)*	1,24
3.15 mm Elek Üstü *3.15 mm Over Screen*	6,89
1 mm Elek üstü *1 mm Over Screen*	51,21
1 mm Elek altı *1 mm Under Screen*	41,90
Bazite *Basicity*	0,65 - 1,10

TİTAN SONDAJ

MEROS Atığı (Sodyum Sülfat Na_2SO_4)
MEROS Waste (Sodium Sulfate Na_2SO_4)

Teknik Özellikleri *Technical Specifications*		
İçeriği *Content*	Tipik Değerler *Typical Values*	Yöntem *Method*
Na_2SO_4	%85,9	TS 4528:1985
Na_2CO_4	%1,5	ISO 6353/2:1983
NaCl	%7,2	ISO 6353/2:1983
NaF	%1,0	İyon Kromatografi *Ion Chromatography*
pH değeri (%5'lik çözeltide) *pH Value* *(%5 Solution)*	8,00	ISO 6353/2:1983

Metalurjik Kireç
Metallurgical Lime

Kimyasal Analiz *Chemical Analysis*	
İçeriği *Content*	Tipik Değerler (%) *Typical Values (%)*
Aktif CaO *Active CaO*	90
Toplam CaO *Total CaO*	93
Kızdırma Kaybı *Loss of Glow*	0,5
S	0,04

TİTAN SONDAJ

Nervürlü - Beton Donatı Çelikleri
Rebar - Reinforcing Steels of Concrete

Mekanik Özellikler
Mechanical Specifications

Tip *Type*	Düz Yüzeyli *Non-Ribbed*	Nervürlü *Ribbed*				
Sınıf *Class*	S220	S420	B420B	B420C	B500B	B500C
Akma Dayanımı *Yield Strenght Re (N/mm²)(Min.)*	220	420	420	420	500	500
Çekme Dayanımı *Tensile Strenght Rm (N/mm²)(Min.)*	340	500	-	-	-	-
Rm / Re	min. 1,20	min. 1,15	min. 1,08	≥1,15 ≤1,35	min.1,08	≥1,15 ≤1,35
Deneysel Akma Dayanımı / Karakteristik Akma Dayanımı Oranı *React./Renom. (Max)*	-	1,30	-	1,30	-	1,30
Kopma Uzaması *Elongation (Min) A₅(%)*	18	10	12	12	12	12
Maks. Yükte Toplam Uzama *Max. Load Total Elongation (Min) Agt(%)*	-	-	5	7,5	5	7,5

Anma Çapı ve Birim Kütle Toleransı
Nominal Diameter and Weight Tolerance

Anma Çapı *Nominal Diameter (d)*	Anma Kütlesi *Nominal Weight (g/m)*	Kesit Alanı *Section Area (mm²)*
8	0,395	50,3
10	0,617	78,5
12	0,888	113,0
14	1.210	154,0
16	1.580	201,0
18	2.000	254,4
20	2.470	314,0
22	2.985	380,0
25	3.850	491,0
26	4.168	531,0
28	4.830	616,0
30	5.550	706,5
32	6.310	804,0
34	7.124	907,5
36	7.986	1017,4
38	8.898	1133,5
40	9.860	1256,0

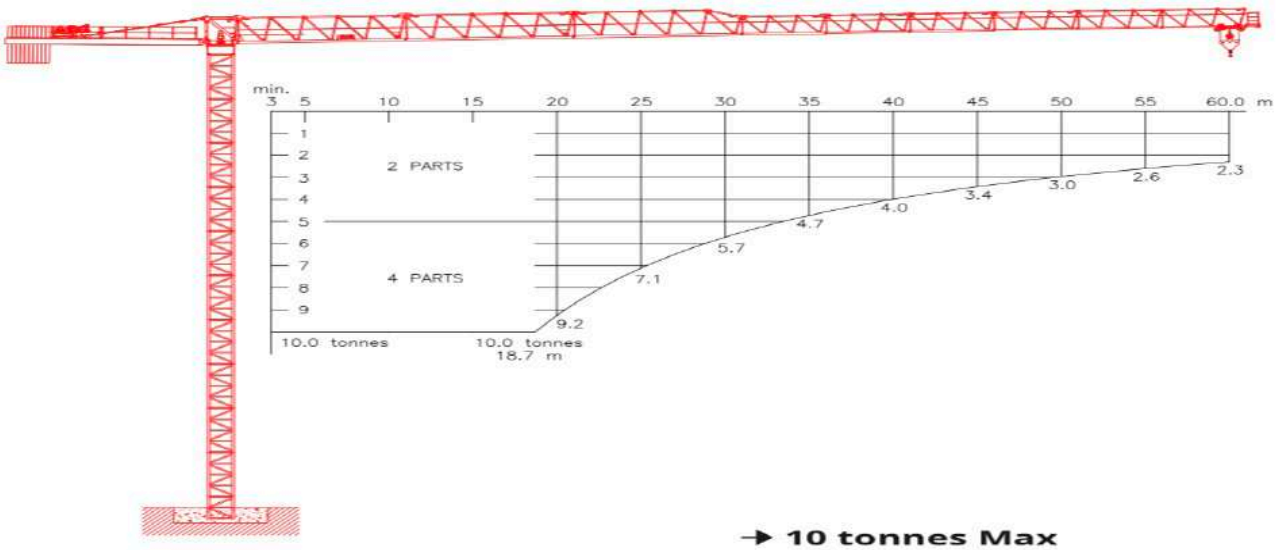
Ürün Sıcak Markalamamız
Product Hot Marking

X : **TSE 708-2016 Standardı Gereği** *TSE 708-2016 Standard Requirement*
9 : **Ülke kodu (Türkiye)** *Country Code (Turkey)*
G : **G Uygunluk belgesi sonrasında kullanılan işaret** *G Comformity Certificate Sign*
1 : **Şirketimizin kodu** (*) *Our Company Code* (*)

(*) **Belgelendirme kuruluşunun şirketimize verdiği kod. Ülkemizde ilk G uygunluk alan şirket olduğumuzdan dolayı 1 numara verilmiştir.**
It is the code given by the Certification Body to our company. Since we are the first company in our country that has the certificate of G confirmity, we are given the number 1.

X 9 G 1 -

TİTAN SONDAJ



→ 10 tonnes Max

F.E.M 1.001-HC1/A3/E3 CE

FLAT TOP TOWER CRANE

K230F

10 tonnes Max

Data sheet Version: 1.0

TİTAN SONDAJ

JIB CONFIGURATIONS

TİTAN SONDAJ

TİTAN SONDAJ

LOAD CHARTS

Radius	Jib Length													
	60.0 m		55.0 m		50.0 m		45.0 m		40.0 m		35.0 m		30.0 m	
	4 parts	2 parts	4 parts	2 parts	4 parts	2 parts	4 parts	2 parts	4 parts	2 parts	4 parts	2 parts	4 parts	2 parts
[m]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]	[kg]
14.0	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
15.0	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
16.0	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
17.0	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
18.0	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
19.0	9,820	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
20.0	9,250	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
21.0	8,740	5,000	9,800	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
22.0	8,270	5,000	9,290	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
23.0	7,850	5,000	8,820	5,000	9,910	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
24.0	7,470	5,000	8,390	5,000	9,440	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
25.0	7,110	5,000	8,000	5,000	9,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000	10,000	5,000
26.0	6,790	5,000	7,640	5,000	8,600	5,000	9,560	5,000	9,560	5,000	9,570	5,000	9,570	5,000
27.0	6,490	5,000	7,310	5,000	8,230	5,000	9,150	5,000	9,160	5,000	9,160	5,000	9,160	5,000
28.0	6,210	5,000	7,000	5,000	7,890	5,000	8,780	5,000	8,780	5,000	8,780	5,000	8,780	5,000
29.0	5,950	5,000	6,710	5,000	7,580	5,000	8,430	5,000	8,430	5,000	8,440	5,000	8,440	5,000
30.0	5,710	5,000	6,450	5,000	7,280	5,000	8,100	5,000	8,100	5,000	8,110	5,000	8,110	5,000
31.0	5,490	5,000	6,200	5,000	7,000	5,000	7,800	5,000	7,800	5,000	7,810	5,000		
32.0	5,280	5,000	5,970	5,000	6,750	5,000	7,520	5,000	7,520	5,000	7,520	5,000		
33.0	5,080	5,000	5,750	5,000	6,500	5,000	7,250	5,000	7,250	5,000	7,260	5,000		
34.0	4,900	4,900	5,550	5,000	6,280	5,000	7,000	5,000	7,000	5,000	7,010	5,000		
35.0	4,730	4,730	5,350	5,000	6,060	5,000	6,760	5,000	6,770	5,000	6,770	5,000		
36.0	4,560	4,560	5,170	5,000	5,860	5,000	6,540	5,000	6,540	5,000				
37.0	4,410	4,410	5,000	5,000	5,670	5,000	6,330	5,000	6,330	5,000				
38.0	4,260	4,260	4,840	4,840	5,490	5,000	6,140	5,000	6,140	5,000				
39.0	4,120	4,120	4,680	4,680	5,320	5,000	5,950	5,000	5,950	5,000				
40.0	3,990	3,990	4,540	4,540	5,160	5,000	5,770	5,000	5,770	5,000				
41.0	3,870	3,870	4,400	4,400	5,000	5,000	5,600	5,000						
42.0	3,750	3,750	4,270	4,270	4,860	4,860	5,440	5,000						
43.0	3,640	3,640	4,140	4,140	4,720	4,720	5,290	5,000						
44.0	3,530	3,530	4,020	4,020	4,580	4,580	5,140	5,000						
45.0	3,430	3,430	3,910	3,910	4,460	4,460	5,000	5,000						
46.0	3,330	3,330	3,800	3,800	4,340	4,340								
47.0	3,230	3,230	3,700	3,700	4,220	4,220								
48.0	3,140	3,140	3,600	3,600	4,110	4,110								
49.0	3,060	3,060	3,500	3,500	4,000	4,000								
50.0	2,970	2,970	3,410	3,410	3,900	3,900								
51.0	2,890	2,890	3,320	3,320										
52.0	2,820	2,820	3,240	3,240										
53.0	2,740	2,740	3,150	3,150										
54.0	2,670	2,670	3,080	3,080										
55.0	2,610	2,610	3,000	3,000										
56.0	2,540	2,540												
57.0	2,480	2,480												
58.0	2,420	2,420												
59.0	2,360	2,360												
60.0	2,300	2,300												

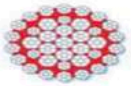
K230F
10 tonnes Max

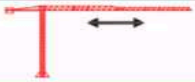
Data sheet Version: 1.0

TİTAN SONDAJ

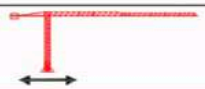
DRIVES

HOIST WINCH MOTOR 37 kW	2-PARTS		4-PARTS			
						
	Load	Max. Speed	Load	Max. Speed		
	0 - 1.0 t 1.0 - 2.0 t 2.0 - 5.0 t	100 m/min 76 m/min 38 m/min	0 - 2.0 t 2.0 - 4.0 t 4.0 - 10.0 t	50 m/min 38 m/min 19 m/min		

	HOIST DRUM		HOIST WIRE	
	CAPACITY		Diameter	15 mm
	350 m / 4 layers		Safety Factor	5
			MBL	173 kN

	TROLLEY WINCH MOTOR 4 kW			TROLLEY DRUM CAPACITY 60 m / 1 Layer
TROLLEY SPEEDS			TROLLEY WIRE	
	0 - 10 t	0 - 70 m/min	Diameter	10 mm
			Safety Factor	5
			MBL	87 kN

	SLEW DRIVE Motor 2 x 7 kW			POWER SUPPLY 400 - 480 V, 50/60 Hz
SLEW SPEEDS			Consumption	50 kVA
	0 - 10 t	0 - 0.7 rpm	Main Fuse	80 A
			Recommended Genererator Size	125 kVA

	UNDERCARRIAGE Motor 2 x 5.5kW			SUPPLY CABLE
TRAVEL SPEEDS			Cable Length	Cable Type
	0 - 10 t	0 - 20 m/min	0 - 175 m	4 x 16 mm²
			175 - 250 m	4 x 25 mm²

All motion controls are completely stepless ensuring smooth and jerk-free operation.
Creeping speed down to 0.5% of maximum speed.

All specifications shown in the tables are for the standard version of K230F. For special requirements regarding load charts or drive speeds, please contact Krøll Cranes A/S.

TİTAN SONDAJ

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