KARABUK UNIVERSITY IRON & STEEL INSTITUTE

History

2011

Founded

2012

Admission of Karabuk University Iron & Steel Institute Council Guideline

2013

Many laboratories start testing within MARGEM (Materials Research & Development Center)

Today

I&SI keeps conducting Its activities by gaining more strength day by day with specified missions and visions towards the University – Industry Cooperation.

MISSION & VISION

MISSION & VISION

Mission

1. Contribute to Public politics related to basic issues in Iron & Steel Industry.
2. Educate employees in Iron & Steel sector on new technologies and processes.
3. Provide information on Labor Health and Safety as well as sustainable environment.
4. Interpret on industrial data for decision makers and iron & Steel Sector. Suggest on production processes, energy efficiency, investments and global tendencies.

Vision

1. Create a platform to share difficulties in Iron & Steel Industry and other industries and seek for scientific solutions.
2. Support research on new technologies for sustainable development
3. Create public awareness on emission reduction by utilizing new technologies
4. Support use of steel based products as the most recyclable material in the world, by increasing its market share.

QUALITY MANAGEMENT

As the executives of MARGEM Laboratories, we hereby commit to effectively conduct and continuously enhance the Quality Management System with the contribution of all our staff by following the standards of TS EN ISO/IEC 17025, TURKAK guides, costumer and legal conditions.

Akreditasyon Sertifikası Eki (Sayfa 1/1)

Akreditasyon Kapsamı

TÜRKAK

KARABÜK ÜNİVERSİTESİ DEMİR ÇELİK ENSTİTÜSÜ Malzeme Araştırma Ve Geliştirme Merkezi Laboratuvarları (MARGEM)

Akreditasyon No: AB-0665-T

Revizyon No: 00 Tarih: 23 Şubat 2018

Deney Laboratuvarı

Adresi : Karabük Üniversitesi Demir Çelik Enstitüsü Demir Çelik Kampüsü 100. Yıl 78050 KARABÜK / TÜRKİYE

Tel : 0 370 433 88 33
Faks : 0 370 433 88 32
E-Posta : dce@karabuk.edu.tr
Website : www.dce.karabuk.edu.tr

Deneyi Yapılan Malzemeler / Ürünler	Deney Adı	Deney Metodu (Ulusal, Uluslararası standartlar, işletme içi metodlar)
Metalik Malzemeler	Çekme Deneyi	TS EN ISO 6892-1 TS EN ISO 6892-2 ASTM A370 TS EN ISO 4136
Metalik Malzemeler	Eğme Deneyi	TS 235-1 EN ISO 7438 ASTM A370 TS EN ISO 5173
Metalik Malzemeler	Çentik Darbe Deneyi	TS EN ISO 148-1 TS EN ISO 9016 ASTM A370
Metalik Malzemeler	Brinell Sertlik Deneyi HB 2,5/187,5	TS EN ISO 6506-1
Metalik Malzemeler	Rockwell Sertlik Deneyi	TS EN ISO 6508-1
Metalik Malzemeler	Vickers Mikro Sertlik Deneyi HV 10	TS EN ISO 6507-1
Kaynaklar	Kaynakta Kalıntı Gerilme Ölçümü	TS EN 13674-1
Metalik Malzemeler	Yorulma Deneyi	TS EN ISO 15630-1 TS 708 TS EN 13674-1 BS 4449

KAPSAM SONU

Dr. H. İbrahim ÇETİN
Genel Sekreter

TÜRK AKREDİTASYON KURUMU TURKAK 1973

I&SI-INDUSTY COOPERATION

In MARGEM Laboratories; testing and quality control, consultancy services, education of qualified human resources, performing R&D within University – Industry cooperation, developing further cooperation with other R&D centers are aimed.

17 of 28 Laboratories are presently active.

Laboratories	ACTIVE
Heat and surface treatment Lab.	√
Nano Technology Lab.	X
Refractor/Ceramics Lab.	X
Static Testing Lab.	√
Dynamic Testing Lab.	√
Machining Lab.	X
Spectral Analysis Lab.	√
Elemental Analysis Lab.	√
Energy and Environment Lab.	X
Tribology Lab.	√
Polymer Materials Lab.	X
Physics Lab.	X
Intermetallic Compounds Lab.	X
Non-destructive testing Lab.	X
Coating Lab.	X
SEM Lab.	√
XRD/XRF Lab.	√
Optic/DTA/DSC Lab.	√
Residual Stress Testing Lab.	√
Hardness Testing Lab.	√
Metallography Lab.	√
Metrology Lab.	√
Chemical Analysis Lab.	√
Powder Metallurgy Lab.	√
Mechanical Forming Lab.	X
Welding Lab.	X
Alloys Lab	√

OUR TEAM


1 Secretary General
2 Vice Directors
Director
1 Faculty Member
8 Research Assistants
5 Administrative Staff

OUR TARGET

Educate qualified human resources for Iron & Steel sector with certification and graduate programs

Serve with accredited laboratories for testing and analysis activities that are supported by quality assurance systems for Iron & Steel sector

Improve and develop product quality in Iron and Steel sector

Become a center for excellence in R&D of value added products in Iron and Steel sector, and in metal alloys

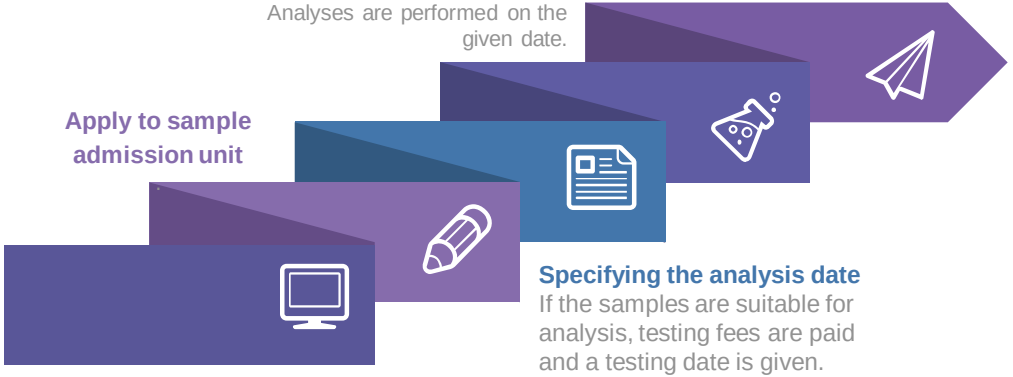
MARGEM LABORATORIES

Three-Step Sample Analysis Process

- **Fill the Analysis Request Form**
- **Get an appointment from Sampling Admissions Unit**
- **Testing of the sample on an appropriate date**

MARGEM LABORATORIES

Steps in sample analysis



Fill the relevant analysis request form

http://margem.karabuk.edu.tr/Website/formlistesi.aspx

Apply to sample admission unit

Specifying the analysis date

If the samples are suitable for analysis, testing fees are paid and a testing date is given.

Performing Analysis

Analyses are performed on the given date.

Analysis results report

Results are submitted in a technical report format

Metallography Laboratory

Metallography Laboratory

Sample preparation by using many methods as cutting, abrasion, lapping, bakeliting, and etching.

Image capturing in an optical microscope at a maximum of 2000X zooming.

Metallographic Processes ve Optical Microscopes Laboratory

STATİC Test Laboratory

Static Test Laboratory (ACCREDITED)

Tensile Test (max. 600 kN, max 1100 °C)
Compression Test (max. 250 kN, 250 °C)
Bending Test (max. 250 kN, 250 °C)

ZWICK ROELL

Fatigue Test (max. 100 kN,)
Fracture Toughness Test (max. 100 kN)
Notch Impact Test (max. 450 J, -80 °C-100 °C)

DYNAMİC Test Laboratory

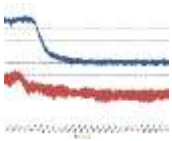
Dynamic Test Laboratory (ACCREDITED)

Tensile Test (max. 600 kN, max 1400 °C)
Compression Test (max. 100 kN)
Bending Test (max. 100 kN)

MTS (100kN Servohydraulic Dynamic Testing Device)

Fatigue Test (max. 100 kN,) (ACCREDITED)
Fracture Toughness Test (max. 100 kN)

Residual Stress Measurement Laboratory



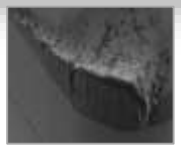
Real and safe unit strain distribution

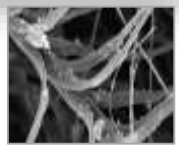
Residual stress calculations based on strain distributions

Rail residual stress measurement within EN 13674-1 standards.

Vishay Residual Stress Measurement Device

SEM Laboratory





SEM Laboratory

Receive SEM images by increasing the sample temperature up to 750^{o}C by Hot-Stage

Point, linear and map type chemical composite analysis using EDX dedector.

ZEISS ULTRA PLUS FESEM

SE2, Inlens, STEM, EsB detectors.

Coating of dielectric surfaces with Au, Au/Pt ve C usinf coating device.

XRD-XRF Laboratory

X-RAY DIFFRACTION (XRD)

-Cristal structure and phase specification of powder, bulk, thin film and metal samples.
-Non-destructive residual stress measurement
-Cristal tendency degree analysis
-High temperature analysis (25-1500 °C)
-Thin film analysis (GIXRD and XRR)
-Micro area point analysis (down to 400µ area)

XRD-XRF

X-RAY FLUORESCENCE (XRF)

Qualitative and semi quantitative analyses of all types of samples (liquid, mineral, rock, polymer, oil, petrol, soil, glass etc.) from Boron to Uranium.

Full quantitative analysis can be made for stainless and low alloy steel.

FTIR-UV-Atomic Absorbtion Laboratory

FTIR (Fourier Transform Infrared Spectroscopy)
FT-IR analysis specifies the type and property of metals.

UV-VIS (Ultraviolet Visible) Spectroscopy
UV-VIS generally used for measurement of molecules in solutions or inorganic ions and their complexes..

BRUKER-THERMO

Atomic Absorption

Utilizes flame method for chemical elemental analysis.

Spectral Analysis Laboratory







Elemental analysis of following alloys and many more;.

Cast iron
Low alloy steel
Stainless steel
Tool Steel etc.

ATLANTIS

DTA/TGA/DSC Laboratory

Differential Thermal Analysis (DTA)
Thermogravimetric Analysis (TGA)
Differential Scanning Calorimetry (DSC)

Mass loss,
Dehydration,
Quasi glass transition temperature analysis,
In metals, alloys, ceramics, glass, polymers etc.

HITACHI

Melting Point designation
Evaporation method
Phase change
Oxidation/Reduction

OTHER ACTIVE LABORATORIES

1. Heat Treatment Laboratories
2. Powder Metallurgy Laboratories
3. Tribolology Laboratory
4. Corosion and abrasion Laboratories

THANK YOU

Phone
444 0 478 - 7

Website
http://dce.karabuk.edu.tr

Symposium
International Iron and Steel Symposium

Adress
KARABÜK ÜNİVERSİTESİ
DEMİR ÇELİK
ENSTİTÜSÜ
78050 KARABÜK