

REPUBLIC OF TÜRKİYE
İDEAL TRANSFORMATÖR SAN. ve TİC. LTD. ŞTİ



**FOR THE RECONSTRUCTION OF THE ELECTRICAL
INFRASTRUCTURE OF THE SYRIAN ARAB REPUBLIC
STRATEGIC COOPERATION AND INVESTMENT PROPOSAL**

Prepared for Submission to the Presidency of the Syrian Arab Republic

Prepared by

Ideal Transformer
Ideal Transformatör Nüve Makine İmalat Sanayi ve Ticaret Ltd. Şti.

Şanlıurfa – Türkiye

July 2026

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CHAPTER 1

1.1 Company Profile

Introduction

This chapter presents an overview of Ideal Transformer, highlighting the company's engineering expertise, manufacturing capabilities, international experience, and commitment to delivering reliable, high-quality, and sustainable power solutions. Beyond transformer manufacturing, Ideal Transformer provides comprehensive engineering services for the development of turnkey transformer manufacturing facilities, supporting industrial growth and technology transfer in emerging markets.

Company Information

Item	Details
Company Name	Ideal Transformer
Headquarters	Şanlıurfa, Türkiye
Regional Office	Dubai, United Arab Emirates
Telephone	+90 532 381 87 63
E-mail	satis@idealtransformer.com
Product Scope	Distribution and Power Transformers (25 kVA – 50 MVA)
Engineering Scope	Design, installation, commissioning, and machinery supply for turnkey transformer manufacturing plants

Company Overview

Ideal Transformer is a professional engineering and manufacturing company specializing in the design, production, and supply of oil-immersed distribution and power transformers ranging from 25 kVA to 50 MVA. Built upon a strong engineering foundation and a commitment to international quality standards, the company delivers reliable, efficient, and customized transformer solutions for power utilities, industrial facilities, renewable energy projects, and infrastructure developments.

In addition to transformer manufacturing, Ideal Transformer possesses extensive expertise in the design, establishment, and commissioning of complete transformer manufacturing facilities. The company provides fully integrated turnkey solutions covering factory layout engineering, production process planning, manufacturing line configuration, machinery and equipment supply, installation supervision, testing laboratory setup, commissioning, and operational training.

With experienced engineers and modern manufacturing capabilities, Ideal Transformer supports utilities, EPC contractors, industrial investors, government institutions, and energy developers in establishing efficient, scalable, and internationally compliant transformer production facilities. Every project is developed with a focus on engineering excellence, operational efficiency, product quality, and long-term sustainability.

To strengthen regional project execution and provide closer customer support, Ideal Transformer operates its primary manufacturing facilities in Türkiye together with a regional sales office in Dubai, United Arab Emirates, while maintaining international manufacturing and assembly capabilities for selected overseas projects. This operational structure enables the company to respond efficiently to regional requirements, facilitate technology transfer, and successfully deliver complex industrial and energy infrastructure projects across international markets.

1.2 Mission

Our mission is to deliver reliable, efficient, and internationally compliant transformer solutions that support the sustainable development of electrical infrastructure worldwide. Through advanced engineering, high-quality manufacturing, and continuous innovation, we aim to provide products and services that meet the evolving needs of utilities, industrial facilities, and energy projects.

Beyond manufacturing, we are committed to transferring technical knowledge and engineering expertise by developing turnkey transformer manufacturing facilities, empowering local industries, strengthening national production capabilities, and contributing to long-term economic development. By building lasting partnerships based on trust, quality, and technical excellence, we strive to create sustainable value for our customers, partners, and the communities we serve.

1.3 Vision

Our vision is to become a globally recognized engineering and manufacturing partner in the power and energy sector by delivering innovative, sustainable, and high-performance transformer solutions that contribute to the development of resilient electrical infrastructure worldwide.

We aspire to play a leading role in supporting national energy development initiatives through advanced manufacturing technologies, engineering excellence, and the establishment of modern transformer production facilities. By promoting technology transfer, local industrial development, and international collaboration, we aim to contribute to stronger energy security, economic growth, and sustainable industrialization across emerging and developing markets.

Driven by continuous innovation, uncompromising quality, and long-term strategic partnerships, Ideal Transformer seeks to become a trusted global partner for governments, utilities, EPC contractors, and industrial investors in shaping the future of energy infrastructure.

1.4 Facilities & Manufacturing Infrastructure

Ideal Transformer operates a modern manufacturing facility in Şanlıurfa, Türkiye, covering a total area of approximately 12,000 m², including 3,000 m² of covered production space. The facility is designed for the efficient production of oil-immersed distribution and power transformers ranging from 25 kVA to 25 MVA, while also serving as a reference model for turnkey transformer manufacturing plant projects.

The production infrastructure includes high- and low-voltage winding machines, automated core cutting and stacking systems, vacuum drying and oil filling equipment, a fully equipped high-voltage testing laboratory, and modern material handling systems. With an average production capacity of 500–750 transformers per month, the factory is capable of manufacturing both standard and customized transformer solutions for utilities, industrial facilities, renewable energy projects, and infrastructure developments.

Engineering is at the core of our operations. Our experienced technical team provides electrical and mechanical design, product optimization, and customized engineering solutions to meet international standards and project-specific requirements. Continuous improvement and innovation remain key elements of our manufacturing philosophy.



Figure 1. Ideal Transformer Manufacturing Facility



Figure 2. Transformer Production Line and Manufacturing Operations

All production and testing activities are performed in-house under strict quality management procedures, ensuring compliance with IEC 60076, ISO 9001, ISO 14001, ISO 45001, and applicable EcoDesign requirements. Every transformer is subjected to comprehensive quality inspections and routine testing before delivery.

In addition to manufacturing, Ideal Transformer provides turnkey solutions for transformer manufacturing plants, including factory design, production line planning, machinery supply, installation, commissioning, workforce training, and technology transfer. This integrated capability enables the company to support governments, utilities, and industrial investors in establishing efficient and sustainable transformer manufacturing facilities.

Combining advanced production infrastructure, engineering expertise, and international project experience, Ideal Transformer is a reliable partner for power infrastructure development and industrial investment projects.

1.5 Product Portfolio

Ideal Transformer manufactures a comprehensive range of oil-immersed transformers designed to meet the requirements of power utilities, industrial facilities, renewable energy projects, and infrastructure developments. Combining advanced engineering, high-quality materials, and international manufacturing standards, the company delivers reliable and efficient transformer solutions for a wide variety of applications.

Our product portfolio includes:

- Distribution Transformers (25 kVA – 2,500 kVA)
- Power Transformers (Up to 50 MVA)
- Hermetically Sealed Transformers
- Conservator Type Transformers
- ONAN and ONAF Cooling Configurations
- Copper and Aluminum Winding Options

- Custom-Engineered Transformers designed according to project specifications and utility requirements.

Detailed technical specifications, design features, manufacturing processes, and testing procedures for each transformer category are presented in the following chapter.

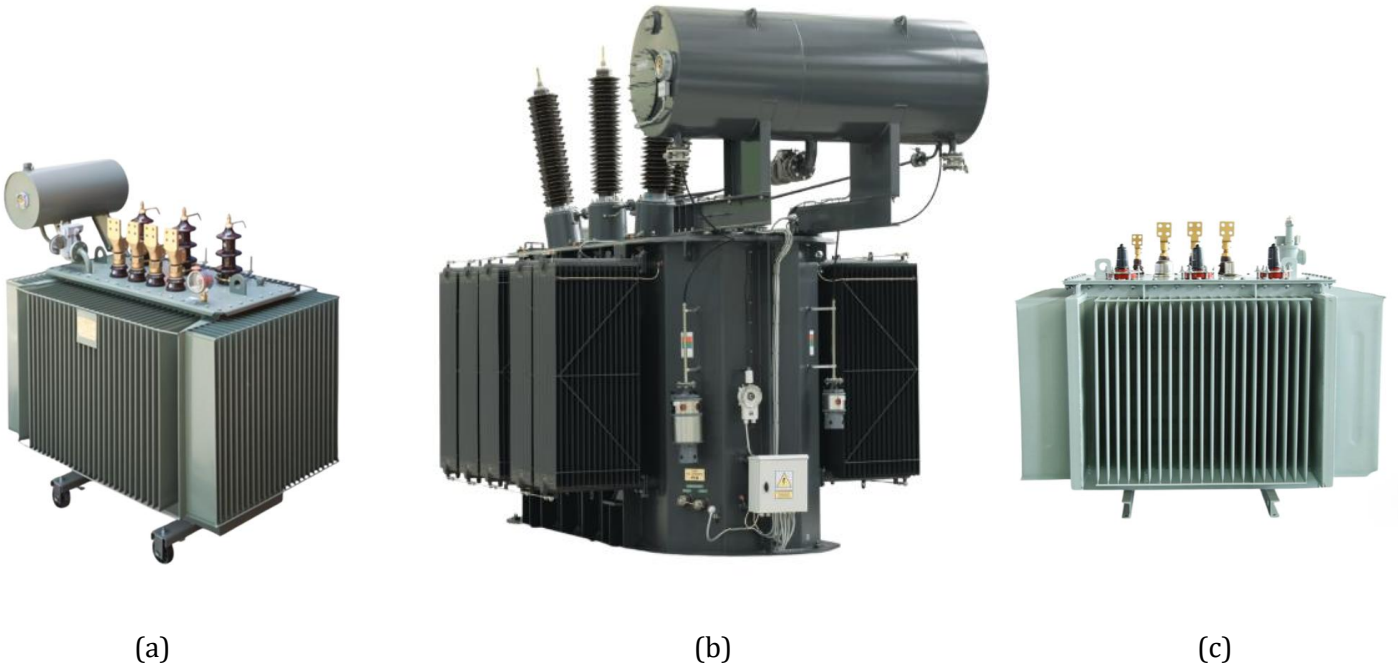


Figure 3. (a) Conservator-Type Distribution Transformer, (b) Power Transformer, (c) Hermetically Sealed Distribution Transformer

1.6 Turnkey Transformer Manufacturing Plant Solutions

In addition to transformer manufacturing, Ideal Transformer provides comprehensive turnkey solutions for the establishment of transformer manufacturing facilities. Backed by extensive engineering expertise and practical industry experience, the company delivers integrated services covering factory planning, production line design, machinery and equipment supply, installation supervision, commissioning, engineering consultancy, workforce training, and technology transfer.

Ideal Transformer has successfully completed multiple transformer manufacturing plant establishment projects, supporting clients from the initial planning stage through full operational startup. These projects reflect the company's ability to deliver efficient, scalable, and internationally compliant manufacturing facilities tailored to the specific requirements of each customer.

Selected turnkey plant establishment projects are presented below. Additional project photographs and videos are available through the reference links provided.

Project Location	Client Company	Scope of Work	Year
Baghdad, Iraq	Al Harbiya	Transformer factory installation, machinery and equipment supply, raw material export support, engineering consultancy, and technical training	2023–2024
Mazar-i-Sharif, Afghanistan	Aman Gulizar	Transformer manufacturing plant setup, machinery supply, installation supervision, commissioning support, and engineering consultancy	2024-2025

Links to videos of selected projects are provided below for reference and verification.

https://drive.google.com/file/d/1BLRtqK2XfViR1ebNcCWJYZRo3Mh_VQDT/view?usp=drive_link

https://drive.google.com/file/d/1D2_iW6RNIeOEBAmr5oWgAz_V3t6PxiHD/view?usp=drive_link

1.7 International References

Ideal Transformer has successfully supplied transformers and engineering solutions to customers across Europe, the Middle East, Central Asia, and Africa. The following table presents a selection of export projects completed for international customers and public institutions.

COUNTRY OF EXPORT	COMPANY OF EXPORT	PRODUCT OF EXPORT	QUANTITY OF EXPORT PRODUCT
GREECE	SOFTECNICA SOFINAOS L.P	500 kVA 20/0.8 kV 800 kVA/0.8 kV 1000 kVA 20/0.8 kV 1250 kVA 21/0.4 kV	30
AFGHANISTAN	HAJI GHANI SONS TRADING COMPANY	15 MVA 13.8/20 kV	1
BULGARIA	GEMINI INSTRATECH LIMITED	2000 kVA 27/0.415 kV SINGLE PHASE	2
GERMANY	BAYRAK ELEKTROECHNIK GmbH	1000 kVA 20/0.8 kV 1250 kVA 20/0.4 kV 1250 10-20/0.4 kV 1600 kVA 20/0.4 kV	10
GUINEA	GROUPE BF METRO OIL	100 kVA 15-20/0.4 kV 160 kVA 15-20/0.4 kV 400 kVA 15-20/0.4 kV 500 kVA 20-30/0.4 kV 630 kVA 20-30/0.4 kV	185
LIBYA	ENGINEERRING COMPANY FOR TECHNICAL CON.	1000 kVA 11/0.4 kV	8
TÜRKİYE	DSİ	6.3 MVA 33/6.3 kV	1

GEORGIA	L.T.D REEXPORTER	2500 kVA 33/0.4	5
TURKMENISTAN	SAHY SOLTAN H.J	630 kVA 35/0.4 kV 800 kVA 35/0.4 kV 1250 kVA 35/0.4 kV 1600 kVA 35/0.4 kV	25
CAMEROON	MDH ELECTRICITE MULTI	100 kVA 30/0.4 kV 160 kVA 30/0.4 kV	20
UKRAINE	DneprEnergotech	1000 kVA 10/0.4 kV 1600 kVA 10/0.4 kV 2500 kVA 10/0.4 kV	11
POLAND	IPTECH CO.LTD	7 MVA 15/6 kV	2
SERBIA	PC TEL	1250 kVA 20/0.8 kV	6
TÜRKİYE	LAREN ELEKTRİK İTHALAT İHRACAT SAN. LTD.ŞTİ	250 kVA 11/0.416 kV	50

Note: The table above presents selected export references. Additional project references, technical documentation, and customer recommendations can be provided upon request.

1.8 Valid Business License & Certifications

Scanned copies of our valid business license, statutory registrations, international certifications, and selected technical test reports are provided below for reference and verification.



CE DECLARATION OF CONFORMITY

İDEAL TRANSFORMATÖR NÜVE MAKİNA İMALAT SANAYİ VE TİCARET
LİMİTED ŞİRKETİ

KOÇÖREN MAH. 216. CAD. POLİMASAN SU BORU NO: 12 EYYÜBİYE-ŞANLIURFA

Description Of The Product : PRODUCTION OF TRANSFORMERS FROM 50 KVA TO 25 MVA
THAT CAN BE ADJUSTED TO VARIOUS VOLTAGE VALUES
Ürünün Tanımı : DEĞİŞİK GERİLİM DEĞERLERİNE AYARLANABİLEN 50 KVA'DAN
25 MVA'YA KADAR TRANSFORMATÖR ÜRETİMİ

Applicable EC Directives : Low Voltage Directive 2014/35/EU
Geçerli AT Direktifleri : Alçak Gerilim Yönetmeliği 2014/35/AB

Applicable Harmonised Standards : TS EN 60076-1, TS EN 60076-3, TS3989 EN 60156
Geçerli Uyumlaştırılmış Standartlar

In our delivered version, we declare that the product described below complies with the essential safety and health requirements of the
PRODUCTION OF TRANSFORMERS FROM 50 KVA TO 25 MVA THAT CAN BE ADJUSTED TO VARIOUS
VOLTAGE VALUES as put into circulation by us. This declaration will cease to be valid if the products specified above is replaced.
Tedarik edilen versiyonumuzda yukarıda açıklanan ürünün, tedariklenmiş olduğu şekilde DEĞİŞİK GERİLİM
DEĞERLERİNE AYARLANABİLEN 50 KVA'DAN 25 MVA'YA KADAR TRANSFORMATÖR ÜRETİMİ
yürürlükte olan temel güvenlik ve sağlık gerekliliklerine uygun olduğunu beyan ederiz. Yukarıda belirtilen ürünlerin değiştirilmesi
halinde bu beyan geçerliliğini yitirecektir.

Sertifika Numarası / Certificate Number : VERTA.22055716
İlk Yayın Tarihi / Certificate Issue Date : 13.10.2025
Sertifika Geçerlilik Tarihi / Certificate Validity Date : 13.10.2026
Sertifika Periyodu / Certificate Period : 1 Yıl / 1 Year



Vertacet desatın yürürlüğünde gerçek dışı ve yetkili gümrükler raporu büyük önemle dikkatle alınmalıdır. Bu
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LİMİTED ŞİRKETİ

KOÇÖREN MAH. 216. CAD. POLİMASAN SU BORU NO: 12 EYYÜBİYE-ŞANLIURFA

Description Of The Product : PRODUCTION OF TRANSFORMERS FROM 50 KVA TO 25 MVA
THAT CAN BE ADJUSTED TO VARIOUS VOLTAGE VALUES
Ürünün Tanımı : DEĞİŞİK GERİLİM DEĞERLERİNE AYARLANABİLEN 50 KVA'DAN
25 MVA'YA KADAR TRANSFORMATÖR ÜRETİMİ

Applicable EC Directives : Low Voltage Directive 2014/35/EU
Geçerli AT Direktifleri : Alçak Gerilim Yönetmeliği 2014/35/AB

Applicable Harmonised Standards : TS EN 60076-1, TS EN 60076-3, TS3989 EN 60156
Geçerli Uyumlaştırılmış Standartlar

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DEĞERLERİNE AYARLANABİLEN 50 KVA'DAN 25 MVA'YA KADAR TRANSFORMATÖR ÜRETİMİ
yürürlükte olan temel güvenlik ve sağlık gerekliliklerine uygun olduğunu beyan ederiz. Yukarıda belirtilen ürünlerin değiştirilmesi
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IQM

Sertifika/Certificate

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SANAYİ VE TİCARET LİMİTED ŞİRKETİ**

KOÇÖREN MAH. 216. CAD. POLİMASAN SU BORU NO: 12
EYYÜBİYE/ ŞANLIURFA

IQM Belgelendirme yukarıda bilgileri verilen kuruluşun **İş Sağlığı ve Güvenliği Yönetim Sistemini** değerlendirdiğini ve ilgili standardın gereklerine uygun olduğunu onaylar.
IQM Certification confirms that the above-mentioned organization has evaluated the **Occupational Health and Safety Management System** and that it complies with the requirements of the relevant standard.

ISO 45001:2018

Kapsam/Scope,

DAĞITIM VE GÜÇ TRAFOLARI, METAL MUHAFAZALI KOMPAKT TIP OG-AG DAĞITIM TRAFİ
MERKEZİ ÜRETİMİ VE SATIŞI

DISTRIBUTION AND POWER TRANSFORMERS, METAL ENCLOSED COMPACT TYPE OG-AG
DISTRIBUTION SUBSTATION PRODUCTION AND SALES

IAF ID1 Kodu/IAF ID1 Code	: 19-28-29
Sertifika No/ Certificate No	: IQM-UK-S-8480
Sertifika İlk Yayın Tarihi/ Certificate Initial Issue Date	: 16.05.2025
Sertifika Yayın Tarihi/ Certificate Issue Date	: 16.05.2025
Sertifika Geçerlilik Tarihi/ Certificate Validity Date	: 15.05.2026

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This certificate, is based on compliance with IQM rules and annual surveillance audits are successfully completed, the date of first publication valid for a period of three years. The validity of the certificate is subject to an annual depends on the surveillance audit validity status it can be checked at info@iqmglobal.com.tr.






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IQM Certification confirms that the above-mentioned organization has evaluated the **Environment Management System** and that it complies with the requirements of the relevant standard.

ISO 14001:2015

Kapsam/Scope,

DAĞITIM VE GÜÇ TRAFOLARI, METAL MUHAFAZALI KOMPAKT TIP OG-AG DAĞITIM TRAFİ
MERKEZİ ÜRETİMİ VE SATIŞI

DISTRIBUTION AND POWER TRANSFORMERS, METAL ENCLOSED COMPACT TYPE OG-AG
DISTRIBUTION SUBSTATION PRODUCTION AND SALES

IAF ID1 Kodu/IAF ID1 Code	: 19-28-29
Sertifika No/ Certificate No	: IQM-UK-E-8480
Sertifika İlk Yayın Tarihi/ Certificate Initial Issue Date	: 16.05.2025
Sertifika Yayın Tarihi/ Certificate Issue Date	: 16.05.2025
Sertifika Geçerlilik Tarihi/ Certificate Validity Date	: 15.05.2026

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FR.88-2/01.02.2021/ Rev. No: 05 Rev. Tar: 15.03.2025

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SANAYİ VE TİCARET LİMİTED ŞİRKETİ**

KOÇÖREN MAH. 216. CAD. POLİMASAN SU BORU NO: 12
EYYÜBİYE/ ŞANLIURFA

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IQM Certification confirms that the above-mentioned organization has evaluated the **Quality Management System** and that it complies with the requirements of the relevant standard.

ISO 9001:2015

Kapsam/Scope,

DAĞITIM VE GÜÇ TRAFOLARI, METAL MUHAFAZALI KOMPAKT TIP OG-AG DAĞITIM TRAFİ
MERKEZİ ÜRETİMİ VE SATIŞI

DISTRIBUTION AND POWER TRANSFORMERS, METAL ENCLOSED COMPACT TYPE OG-AG
DISTRIBUTION SUBSTATION PRODUCTION AND SALES

IAF ID1 Kodu/IAF ID1 Code	: 19-28-29
Sertifika No/ Certificate No	: IQM-UK-Q-8480
Sertifika İlk Yayın Tarihi/ Certificate Initial Issue Date	: 16.05.2025
Sertifika Yayın Tarihi/ Certificate Issue Date	: 16.05.2025
Sertifika Geçerlilik Tarihi/ Certificate Validity Date	: 15.05.2026

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SANAYİ VE TİCARET LİMİTED ŞİRKETİ**

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EYYÜBİYE/ ŞANLIURFA

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IQM Certification confirms that the above-mentioned organization has evaluated the **Customer Satisfaction Management System** and that it complies with the requirements of the relevant standard.

ISO 10002:2018

Kapsam/Scope,

DAĞITIM VE GÜÇ TRAFOLARI, METAL MUHAFAZALI KOMPAKT TIP OG-AG DAĞITIM TRAFİ
MERKEZİ ÜRETİMİ VE SATIŞI

DISTRIBUTION AND POWER TRANSFORMERS, METAL ENCLOSED COMPACT TYPE
OG-AG DISTRIBUTION SUBSTATION PRODUCTION AND SALES

Sertifika No/ Certificate No	: IQM-M-6710
Sertifika İlk Yayın Tarihi/ Certificate Initial Issue Date	: 31.01.2025
Sertifika Yayın Tarihi/ Certificate Issue Date	: 31.01.2025
Sertifika Geçerlilik Tarihi/ Certificate Validity Date	: 30.01.2026

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**GENEL MÜDÜR
GENERAL MANAGER**

IQM Uluslararası Belgelendirme Eğitim ve Gözetim Hizmetleri Ltd. Şti.
İşçilik Mah. Şenit Vınar Hüd Sok. No:3 D:2 Akşehir / İstambul
Tel: 0216 574 24 77 Faks: 0216 574 78 25 info@iqm.com.tr www.iqm.com.tr
FR.88-01.02.2021/ Rev. No: 01 Rev. Tar: 15.11.2024



Türk Akreditasyon Kurumu

AKREDİTASYON SERTİFİKASI

Deney Laboratuvarı olarak faaliyet gösteren,

İDEAL TRANSFORMATÖR NÜVE MAKİNA İMALAT SANAYİ VE TİCARET LİMİTED ŞİRKETİ

Merkez Adres: KOÇÖREN MAH. 216. CAD. POLİMASAN SU BORU NO:12 EYYÜBİYE Şanlıurfa / Türkiye

TÜRKAK tarafından yapılan denetim sonucunda TS EN ISO/IEC 17025:2017 standardına göre Ek'te yer alan kapsamlarda akredite edilmiştir.

Akreditasyon No : AB-1785-T
Akreditasyon Tarihi : 22.05.2025
Revizyon Tarihi / No : 22.05.2025 / 01

Bu Sertifika, yukarıda açık adı ve adres yazılı Kuruluşun TS EN ISO/IEC 17025:2017 Standardına, ilgili Yönetmelik ve Tebliğlere uygunluğunu sürdürmesi halinde 22.09.2027 tarihine kadar geçerlidir.

Gülden Banu Müderrisoğlu
Genel Sekreter



Türk Akreditasyon Kurumu (TÜRKAK) ISO/IEC 17025 alanında Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile çok taraflı anlaşma (MLA/MRA) imzalamıştır.

Bu belge 5070 sayılı elektronik imza kanununa göre Gülden Banu Müderrisoğlu tarafından güvenli elektronik imza ile imzalanmıştır. E-imzalı belgeyi doğrulamak için GÖİ Arayıcı kullanabilirsiniz.

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Akreditasyon Sertifikası Eki (Sayfa 1/1)
 Akreditasyon Kapsamı

 İDEAL TRANSFORMATÖR NÜVE MAKİNA İMALAT SANAYİ VE TİCARET LİMİTED ŞİRKETİ		Akreditasyon No: AB-1785-T Sertifikasyon No: 22/05/2025
Deney Laboratuvarı		
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Elektrik, Elektronik ve Bilgi Ürünleri ve Hizmetleri		
Deney Yapılan Malzemeler / Deneyler	Deney Adı	Deney Metodu (Ulusal, Uluslararası Standardlar, İçtihatlar, Yöntemler)
Güç Transformatörleri	Güç transformatörleri – Bölüm 2: Sıvya dolumlu transformatörler için sıvıdaki arızalar	TS EN 60076-2 EN 60076-2 IEC 60076-2
Yalıtım Sıvıları	Yalıtım sıvıları: Güç tesislerinde delinme gerilimi taşıyan	TS 9989 EN 60156 EN 60156 IEC 60156
Güç Transformatörleri	Güç Transformatörleri – Bölüm 1: Genel Her Bir Sıvı ile Toprak Arasındaki ve Sıvılar Arasındaki Olası Yalıtım Direncinin Ölçülmesi Beyan Geriliminin Sıfırında ve 5 kV'da Yüksek Durumdaki Kaybın ve Akımın Ölçülmesi Sargı Direncinin Ölçülmesi Gerilim Çözümleri Ölçülmesi ve Faz Kayıplarının Kontrolü Kısa Devre Empedansının ve Yüksek Kaybın Ölçülmesi Yüksek Kaybın ve Akımın Ölçülmesi Sıvıya Ulaştırılmış Transformatörler için Basınç Altındaki Sızdırma Deneyi (Sızdırma Deneyi) Çekim ve Gövde Yalıtımın Kontrolü	TS EN 60076-1, IEC 60076-1 Madde 11.1.2 (b) / 11.1.4 (b) Madde 11.1.2.2 (e) / 11.1.3 (e) Madde 11.2 Madde 11.3 Madde 11.4 Madde 11.5 Madde 11.9 Madde 11.12
Güç Transformatörleri	Güç transformatörleri – Bölüm 2: Uygulanmış Gerilim Deneyi (Aynı Kaynaklı A.A. Dayanım Gerilim Deneyi) Endüstriyel A.A. Gerilim Deneyi	TS EN 60076-3, IEC 60076-3 Madde 10 Madde 11

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CHAPTER 2

TRANSFORMER MANUFACTURING PROCESS

Ideal Transformer manufactures oil-immersed distribution and power transformers in accordance with internationally recognized engineering principles and IEC 60076 standards. Every transformer is designed to deliver high efficiency, operational reliability, and long service life under a wide range of environmental and grid conditions.

Our product portfolio includes distribution transformers with power ratings from 50 kVA to 2,500 kVA and power transformers up to 50 MVA, with higher capacities available upon project requirements. The company offers transformer solutions for voltage classes up to 36 kV for distribution applications and up to 66 kV for power transformers, supporting both standard and customized utility specifications.

All transformers are manufactured using premium-grade materials, advanced production technologies, and comprehensive quality control procedures. Depending on project requirements, transformers are available with various cooling methods, winding configurations, vector groups, insulation systems, and tap changer options, enabling reliable operation across industrial facilities, utility networks, renewable energy projects, and critical infrastructure applications.

The following sections present the complete transformer manufacturing process, illustrating each stage from engineering design and material preparation to production, testing, packaging, and final shipment.

2.1 Engineering & Transformer Design

Every transformer manufactured by Ideal Transformer begins with a comprehensive engineering and design process developed in accordance with IEC 60076 standards and customer-specific technical requirements. Our engineering team performs detailed electrical, mechanical, and thermal analyses to ensure optimum efficiency, operational safety, and long service life under various operating conditions.

2.1.1 Distribution Transformers

Our distribution transformers are designed and manufactured to provide reliable and energy-efficient performance for utility networks, industrial facilities, commercial developments, and renewable energy applications. Every design is optimized for low losses, high operational reliability, and long service life.

Technical Specifications

- Rated Power Range: 50 kVA – 2,500 kVA
- Voltage Levels: Up to 36 kV
- Frequency: 50 / 60 Hz
- Cooling System: ONAN (Standard), ONAF (Optional)
- Vector Groups: Dyn11, Dyn5, Yyn0 (or as required)
- Insulation Level: IEC 60076 Compliant

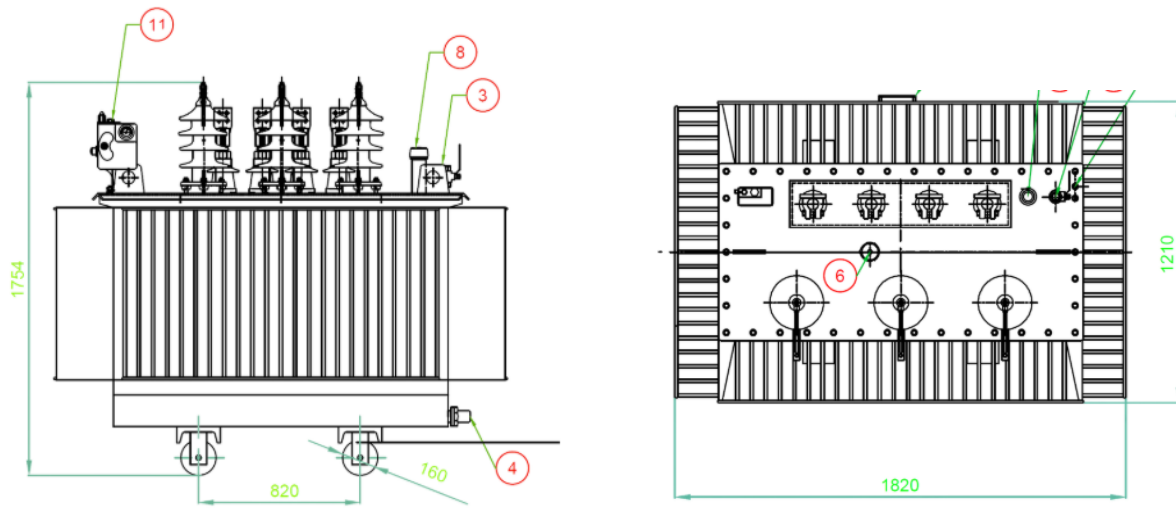


Figure 4. Distribution Transformer

2.1.2 Power Transformers

Ideal Transformer designs and manufactures medium-power transformers for transmission networks, substations, industrial plants, renewable energy projects, and critical infrastructure applications. Each transformer is individually engineered to meet project-specific technical requirements while ensuring maximum reliability and operational efficiency.

Technical Specifications

- Rated Power Range: Up to 50 MVA (Higher ratings available upon request)
- Voltage Levels: Up to 66 kV Class
- Frequency: 50 / 60 Hz
- Cooling Methods: ONAN / ONAF / OFAF / ODAF
- Vector Groups: YNd, Dyn, Yy (According to grid requirements)
- Insulation System: Oil-paper insulation designed in accordance with IEC standards
- Temperature Rise: Designed for severe climate conditions and continuous operation
- Winding Material: High-conductivity copper (Aluminum optional)
- Core Material: Premium grain-oriented silicon steel
- Tank Design: Welded steel tank with radiator or forced cooling systems
- Mechanical Strength: Enhanced short-circuit withstand capability

Available Engineering Options

- On-Load Tap Changer (OLTC)
- Off-Circuit Tap Changer
- Customized impedance design
- Noise reduction engineering
- Seismic-resistant design
- Customized HV bushings and accessories

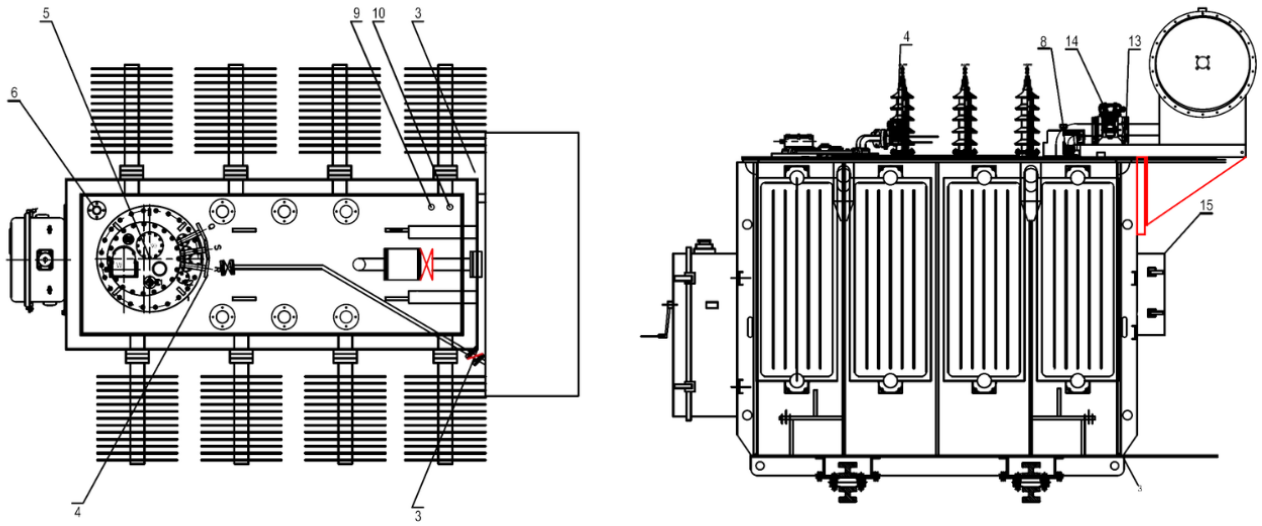


Figure 5. Power Transformer

2.2 Core Manufacturing

The transformer core is one of the most critical components affecting efficiency, losses, and overall performance. At Ideal Transformer, all transformer cores are manufactured using premium-grade cold rolled grain-oriented (CRGO) silicon steel, selected for its excellent magnetic properties and low core loss characteristics.

The manufacturing process begins with precision cutting of CRGO steel laminations using advanced core cutting machines. Each lamination is processed with high dimensional accuracy to minimize air gaps and ensure optimum magnetic flux distribution. The laminations are then carefully stacked and assembled by experienced technicians in accordance with the approved engineering drawings.

Throughout the manufacturing process, strict quality control procedures are applied to ensure precise alignment, mechanical stability, and compliance with international standards. This approach results in transformer cores with low no-load losses, reduced noise levels, and high operational reliability throughout the transformer's service life.



(a)



(b)

Figure 6. (a) Core Assembly Process, (b) Assembled Transformer Cores

2.3 LV & HV Winding

The winding process is one of the most critical stages in transformer manufacturing, directly influencing electrical performance, efficiency, and operational reliability. Ideal Transformer utilizes advanced winding machines to produce high-precision low-voltage (LV) and high-voltage (HV) windings in accordance with approved engineering designs and international standards.

Depending on customer requirements and project specifications, windings are manufactured using high-conductivity copper or aluminum conductors with high-quality insulation materials. Every winding is produced under strict dimensional and tension control to ensure mechanical strength, optimal current distribution, and excellent dielectric performance.

After winding, each coil undergoes dimensional inspection and quality verification before proceeding to the assembly stage. This ensures accurate fit, consistent manufacturing quality, and reliable long-term operation under varying electrical and environmental conditions.



(a)



(b)

Figure 7. (a) Low-Voltage (LV) Winding Process, (b) High-Voltage (HV) Winding Process

2.4 Core & Coil Assembly (Active Part Assembly)

Following the completion of the core and winding manufacturing processes, the transformer's active part is assembled with precision and care. During this stage, the low-voltage (LV) and high-voltage (HV) windings are accurately positioned onto the transformer core in accordance with the approved engineering design.

The active part is then mechanically secured using a robust clamping system to withstand mechanical stresses that may occur during transportation, installation, and service, particularly under short-circuit conditions. All electrical connections, insulation components, and structural elements are carefully installed and inspected to ensure mechanical integrity and electrical reliability.

Before proceeding to the drying process, the assembled active part undergoes comprehensive dimensional and visual inspections to verify compliance with design specifications and quality standards. This meticulous

assembly process forms the foundation for the transformer's long-term performance, operational safety, and service reliability.

2.5 Tank Manufacturing & Surface Treatment

Transformer tanks are manufactured from high-quality structural steel to provide maximum mechanical strength, corrosion resistance, and long-term operational reliability. Each tank is fabricated in accordance with approved engineering drawings and project-specific design requirements.

The manufacturing process includes precision cutting, bending, welding, and assembly operations carried out by qualified personnel using modern fabrication equipment. Following fabrication, every tank undergoes thorough dimensional inspections and leak tests to verify structural integrity and oil tightness.

To ensure long-term protection against environmental conditions, the tank surface is carefully prepared before the application of a high-performance protective coating system. The completed tank provides a durable enclosure that protects the transformer's internal components throughout its service life while meeting both operational and environmental requirements.



Figure 8. Tank Manufacturing Process,

2.6 Vacuum Drying Process

Following the assembly of the transformer's active part, the unit undergoes a controlled vacuum drying process to remove residual moisture from the insulation system. This stage is essential for achieving the required dielectric strength and ensuring the long-term reliability of the transformer.

The active part is placed inside a vacuum drying oven, where carefully controlled temperature and vacuum conditions are applied to thoroughly dry the insulation materials. This process significantly improves insulation performance, minimizes the risk of partial discharge, and enhances the transformer's operational life.

Upon completion of the drying cycle, the active part is prepared for final assembly and oil filling under controlled manufacturing conditions, ensuring optimum performance and compliance with international quality standards.



(a)



(b)

Figure 9. (a) Distribution Transformer Drying Process, (b) Power Transformer Drying Process

2.7 Final Assembly & Oil Filling

After the vacuum drying process is completed, the transformer's active part is carefully installed into the tank under controlled manufacturing conditions. All internal and external components, including bushings, tap changers, radiators, protection devices, and monitoring accessories, are assembled in accordance with the approved engineering design and project specifications.

The transformer is then filled with high-quality insulating mineral oil using a vacuum oil filling system. This process eliminates trapped air and moisture, ensuring complete insulation impregnation and maximizing dielectric performance. Oil level, sealing integrity, and all mechanical connections are thoroughly inspected before the transformer proceeds to the testing stage.

The final assembly process ensures that every transformer is fully prepared for factory acceptance testing, providing reliable operation, long service life, and compliance with international quality and safety standards.



(a)



(b)

Figure 10. (a) Power Transformer Assembly Process, (b) Distribution Transformer Assembly Process

2.8 Factory Acceptance Tests (FAT)

Before delivery, every transformer undergoes comprehensive Factory Acceptance Tests (FAT) to verify compliance with customer specifications, applicable IEC standards, and internal quality control procedures. All tests are performed by qualified engineers using calibrated testing equipment to ensure the highest levels of accuracy and reliability.

The routine testing program includes measurement of winding resistance, transformation ratio, vector group verification, insulation resistance, induced and applied voltage tests, no-load and load loss measurements, impedance voltage measurement, and leak inspection. Type tests and special tests are also performed upon customer request or project requirements.

Only transformers that successfully pass all required inspections and testing procedures are approved for shipment. This rigorous testing process ensures reliable field performance, operational safety, and long-term service under demanding operating conditions.



Figure 11. Inspection and Acceptance Testing Conducted by DABS (Afghanistan)



Figure 12. *Inspection and Acceptance Testing Conducted by State Railways (Bulgarian)*

2.9 Packing & Shipment

Upon successful completion of all inspections and Factory Acceptance Tests (FAT), each transformer is prepared for shipment in accordance with the destination, transportation method, and customer requirements. Special attention is given to packaging, handling, and loading procedures to ensure maximum protection during transit.

Depending on the project specifications, transformers are securely packed using protective coverings, wooden crates, or customized transportation solutions. All accessories, technical documentation, and spare parts are carefully identified, packaged, and included with the shipment to facilitate installation and commissioning.

With extensive experience in international logistics, Ideal Transformer has successfully delivered products to customers across Europe, the Middle East, Central Asia, and Africa. Every shipment is carefully planned and executed to ensure safe transportation, timely delivery, and full compliance with international shipping standards.



Figure 13. *Transformer Packaging and Loading Process*

CHAPTER 3

3.1 Long-Term Partnership & Commitment

Ideal Transformer is fully committed to supporting the reconstruction and modernization of the Syrian Arab Republic's power infrastructure through a long-term strategic partnership based on mutual trust, engineering excellence, and sustainable industrial development. As a Turkish manufacturer with extensive international experience in transformer production, turnkey manufacturing facilities, and power sector engineering, we are prepared to contribute not only as a supplier, but as a reliable industrial partner dedicated to creating lasting value.

Our vision extends beyond the delivery of electrical equipment. We aim to support the development of local industrial capabilities through technology transfer, engineering cooperation, technical training, and sustainable manufacturing solutions that will strengthen Syria's energy sector for future generations. By combining advanced manufacturing, international quality standards, and long-term technical support, Ideal Transformer is ready to contribute to the establishment of a resilient, efficient, and modern electrical infrastructure.

We respectfully express our willingness to cooperate with the relevant institutions of the Syrian Arab Republic and to participate in projects that will contribute to the country's economic recovery and infrastructure development. We firmly believe that a long-term partnership founded on shared objectives, technical expertise, and mutual respect will generate lasting benefits for both parties.

We sincerely appreciate your consideration and look forward to the opportunity to work together in building a stronger and more sustainable energy future for the Syrian Arab Republic.

Respectfully,

İdeal Transformatör Nüve Makine İmalat Sanayi ve Ticaret Ltd. Şti.
Şanlıurfa, Türkiye

