



Ganz Transformers and Electric Rotating Machines Ltd.

ganzelectric.com



TRADITION FOR INNOVATION



Dear customers,

Ganz is one of the greatest names in T&D business worldwide and we celebrated our company's 145th anniversary in 2023.

We are proud of the fact that the equipment manufactured in our plants can be found in almost every country of the world. Ganz is a specialist, providing high quality products and unique solutions for our customers. We produce our unique products with today's modern design and technological solutions.

Ganz is committed to the net-zero greenhouse gas emissions targets set by European Union, and therefore Ganz aims to manufacture our products with the lowest possible carbon footprint. In order to achieve these goals, we launched investment programs aimed at energy production and energy efficiency at our sites and restarted steel structure production at our Szolnok site.

Ganz manufactures unique high-voltage electrical equipment – transformers, motors and generators.

Ganz Intelligent Solution brand was launched in 2022, and all of our products can be equipped with digital monitoring systems to strengthen reliability and to prevent critical system failures. Ganz has a dedicated Service department which provides all kinds of services to our clients such as delivery of spare parts, installation and commissioning, and refurbishment of existing equipment (incl. other OEM's equipment).

Customer focus and flexibility towards our customers during the execution of the projects is how we differentiate ourselves compared to other manufacturers.

"Tradition for innovation" is our company motto and Ganz is ready to support our clients with the nowadays challenges.

Best Regards,

GERGELY GÁL
Chief Executive Officer of Ganz



HISTORY

Abraham Ganz (foundry worker) was born into a Swiss Calvinist family in Unter-Embrach in 1814. In 1843, while he was working in the foundry, the cast splashed out. He became blind in one of his eyes. According to some sources he said then: "One eye is lost, but the casting was successful."

Abraham Ganz founded his own company in 1844 in Buda, which very soon became a world-renowned Hungarian centre of high-power industrial products. Despite his early death in 1867 the company remained one of the strongest manufacturing enterprises in the Austro-Hungarian Monarchy. Many famous engineers worked at Ganz Works inter alia Károly Zipernowsky, Ottó Bláthy, Miksa Déri, András Mechwart, Kálmán Kandó, Donát Bánki.

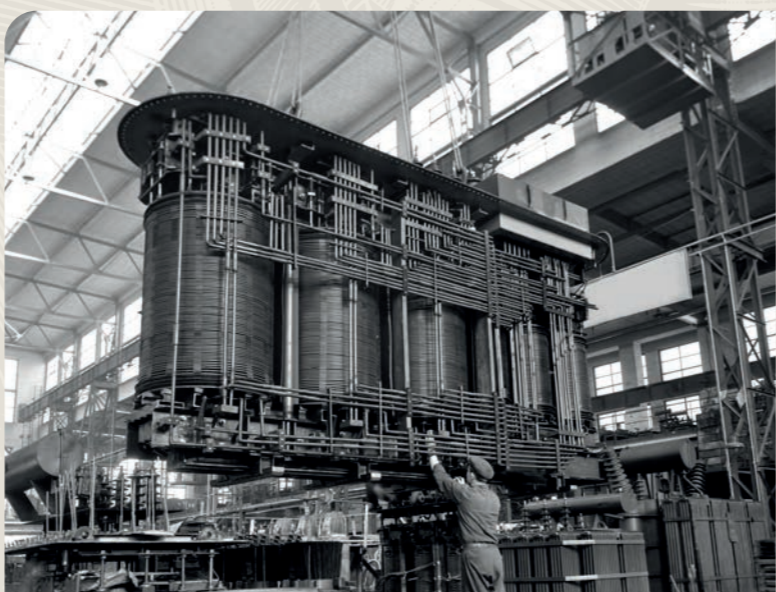


The success of the patent is shown by the fact that Edison's company was initially supplied with transformers by Ganz. The first devices were used for lighting hotels in Lucerne, theatre in Milan, and the first large power plant using this system was ordered from Ganz by the city of Rome.

Kálmán Kandó was asked by Ganz to carry out introducing domestic production of induction motors. Utilizing his previous experience, he achieved the production of three-phase induction motors in a few months. In 1894, according to Kandó's plans, the first 2,2 kW three-phase experimental motor was manufactured.

The head of the factory, András Mechwart recognized the potential of the electrical industry. In August 1878, he established the Ganz Electrical Department at 18 Kacs Street, Budapest (District II.). He made the 25-year-old Károly Zipernowsky head of the department.

The first closed core transformer was patented and exhibited by the Ganz Factory at the Hungarian National Exhibition in 1885 in Budapest, thanks to which the economical, efficient transmission and distribution of electricity over long distances was solved.



GANZ'S 145 YEARS ANNIVERSARY

In 2023, Ganz celebrated the 145th anniversary of the founding of the Electrotechnical Department of Ganz in 1878. Following the reorganisation in 2020, the company, now called Ganz Transformers and Electric Rotating Machines Ltd. is once again a leading player in the domestic and international markets for the manufacture and service of transformers, heavy-duty motors and generators.

Over the past century and a half, the company has gone from patenting the first transformer, to producing the first AC generators and the V43 electric locomotive, to ushering in a new era of intelligent transformers. The company has successfully combined historical tradition with innovation in digitalisation, launching Ganz Intelligent Solutions, a smart system for monitoring the status of transformers, in the autumn of 2022.

At the company's anniversary celebration on 14 September 2023, guests were welcomed with a diverse programme in Tápiószéle, where they could visit the transformer and rotating machine factory and the newly opened Intelligent Solutions showroom.



Throughout the day, visitors were able to attend a variety of professional workshops on the role and application of transformers and rotating machines from a sustainability perspective, as well as the company's unique service activities and Intelligent Solutions.



Nowadays

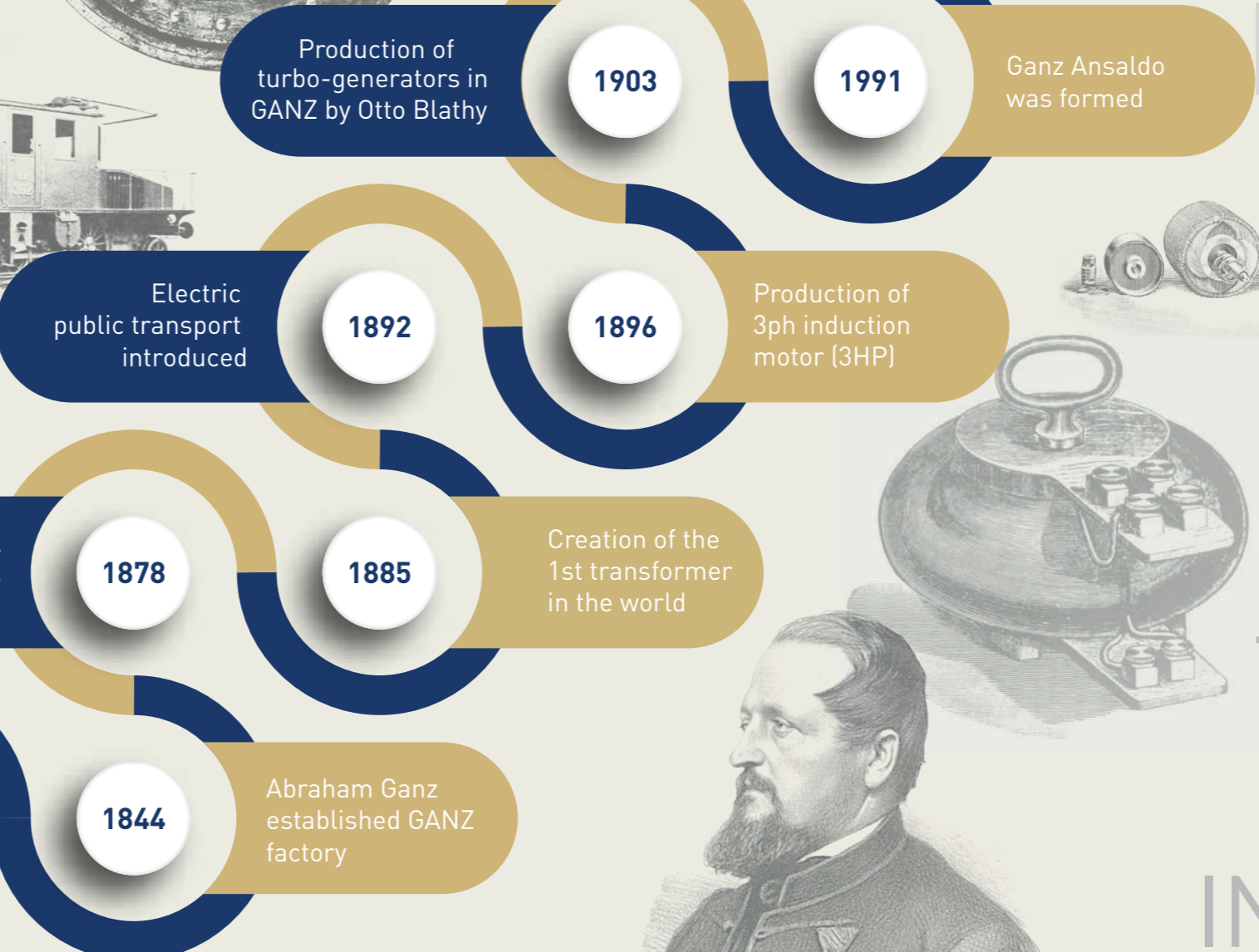
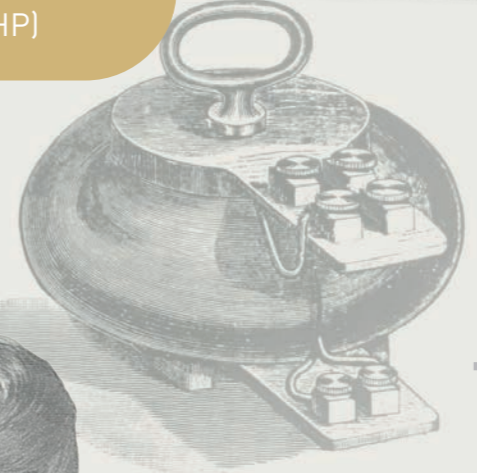
Just like the Hungarian history, Ganz and its predecessors went through many changes, difficulties and challenges. In 2020 Ganz became again a Hungarian based company and it regained the traditional name: Ganz Transformers and Electric Rotating Machines Ltd.

The main office is in Budapest, the manufacturing facility is located in Tápiószéle. More than 450 employees proudly work for Ganz looking forward to the challenges worldwide.

The company has 3 business units: Transformers, Rotating Machines and Services.

Ganz launched its own asset monitoring and digitalization brand, GANZ Intelligent Solutions in 2022, and reopened its steel structure factory in 2023.

State of art designing, manufacturing, testing and servicing equipment for different applications and sectors are provided to the customers who would like to experience the power of our exceptional attention towards them.



Smart solutions.
Strong relationships

TRADITION FOR INNOVATION



POWER TRANSFORMERS



Introduction

The power transformer business unit has a history of 140 years which starts with the well-known historical first closed magnetic circuit in 1885. The first oil cooled transformer production started in 1900.

The business unit is specialized in designing, manufacturing and testing transformers for several applications in a wide range of powers from 20 to 600 MVA on 52-800 kV voltage levels (1000 MVA for autotransformers). The power transformer business unit has experienced electrical, mechanical, test engineers and well-qualified technicians at the manufacturing site in Tápiószéle. Our customers can experience high and focused attention from the tender phase to the commissioning and site tests.

The manufacturing area extends over 11 000 m² with 240 tons of maximum crane capacity. The factory annual capacity is 12 000 MVA. On the facility site the transformers are prepared according to ISO 9001, ISO 14001 and ISO 45001.

Every transformer is individually designed to its specific requirements and applications. To further ensure the reliability of the products with optimized energy and material consumption, specially-developed methods and softwares are used as follows:

- ⌚ optimization of design in relation to labour and material costs, loss evaluation and sound level,
- ⌚ distribution of voltage stresses during lightning impulse and switching surge conditions,
- ⌚ behaviour during short-circuit conditions,
- ⌚ analysis of those areas where high electrical stresses can occur,
- ⌚ calculations of stray losses and thermal effects.

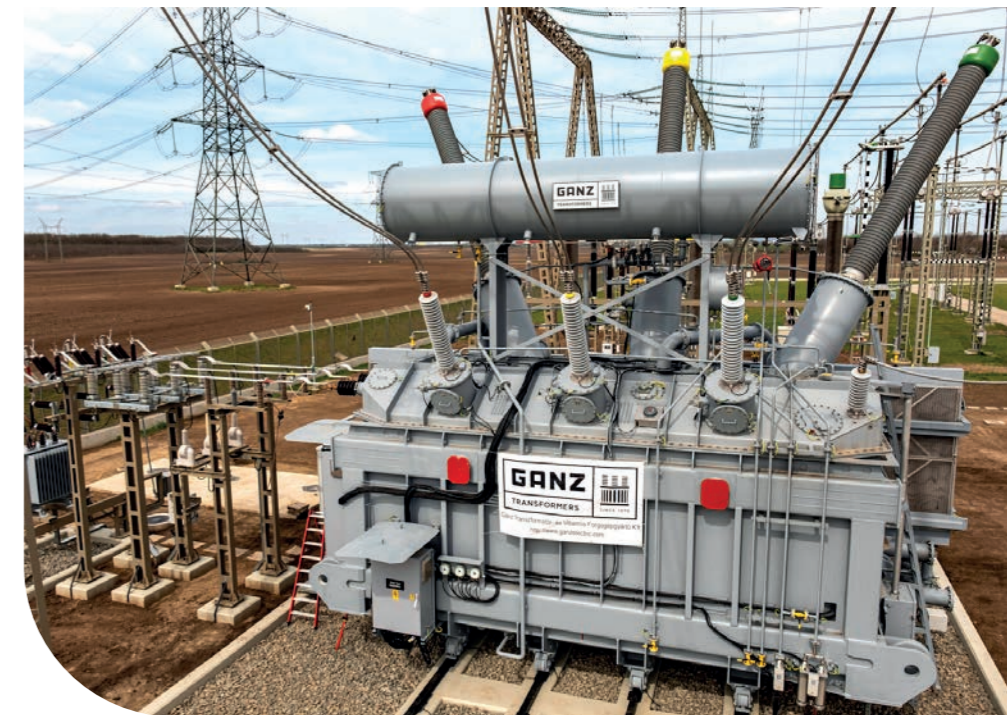


Renewables

The international energy landscape is evolving from one dominated by increasingly scarce fossil fuels with their devastating effects on Planet Earth to one in which organizations are constantly hunting for alternative forms of energy. Ganz is one of those who want to contribute to the greener future.

Ganz provides high-quality power transformers, helping its customers use electricity efficiently and increase industrial productivity with sustainability.

Alternative energy sources such as wind, the sun, biomass and others are increasingly being afforded the scrutiny they deserve. Ganz is part of this process, developing smart solutions and offering creative leadership in the field.



Year Milestone

1950	First transformer on 245 kV
1967	First transformer on 420 kV
1978	First transformer on 750 kV with rated power of 367 MVA
2002	First transformer in the world for 123 kV with ester liquid
2008	Beginning of manufacturing mobile transformers
2009-2011	765 kV, 500 MVA transformer export to Indian market
2019	Refurbishment of our 40 years old 750 kV transformers
2021	250 MVA, 400 kV autotransformers in MAVIR Substations



PRODUCTION RANGE

POWER	20 - 600 MVA
VOLTAGE	52 - 800 kV
FREQUENCY	16,7 - 60 Hz
ANNUAL CAPACITY	12 000 MVA



Capabilities

Tailor-made designs for renewables:

Ganz transformers have good experience in tailor-made designs with various fields of use (wind and solar farms, hydro and biomass plants), where the projects have challenging requirements.

Power transformers with low noise level:

Ganz can fulfil the most extreme noise requirements of German and Scandinavian markets as well.

Power transformers with low losses:

Ganz transformers can easily fulfil the Ecodesign requirements (Tier2 from 2021)

Biofluid immersed power transformers:

Biodegradable liquid is used to provide safe solutions for special requirements of fire protection, environmental safety, space limitations and cost savings.

Ganz was the pioneer for manufacturing synthetic ester filled large power transformer to the Scandinavian market, and Ganz has the design rules for the natural esters as well.

Hybrid insulation system:

Using higher thermal class insulation results in improvement in performance and total reliability. It allows more in-built power in same size and weight, or more compact units for the same power level.

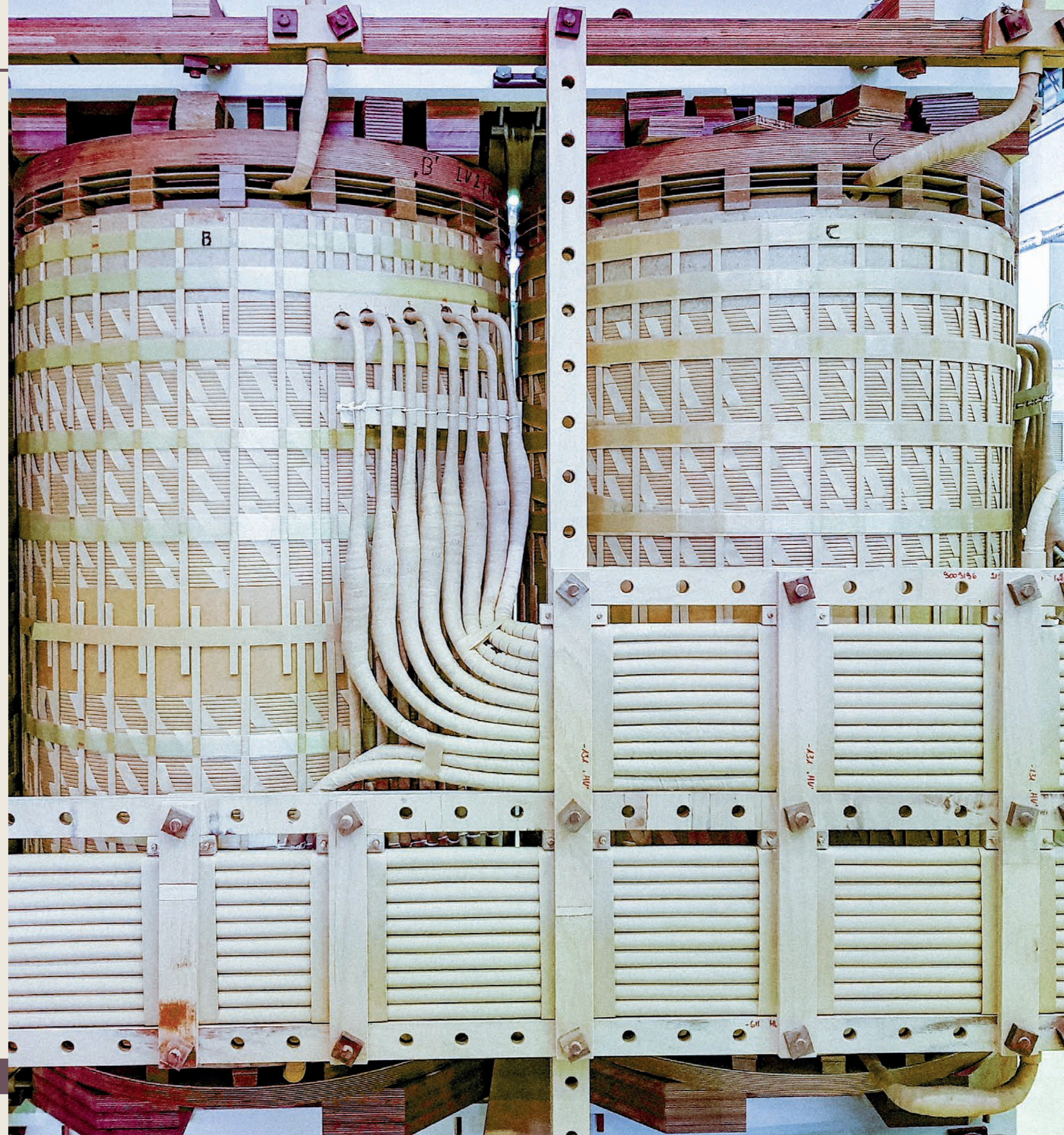
Short-circuit withstand ability:

Ganz has proven manufacturing and design technology for short-circuit withstand ability, and excellent record for short-circuit tests.

Monitoring systems:

Ganz provides customized management tools that monitor the operating conditions of transformers in order to maximize the performance and provide real-time information on desired system status points.

In addition, Ganz also offers a full range of after-sales services (installation, maintenance, refurbishment and repairs of products worldwide).





Special applications

Trackside power transformers

Trackside transformers are used to provide single-phase supplies for train overhead systems.

Transformer for mobile substation

Typical applications:

- Emergency substation in case of defects, repairs and maintenance, reduction of network redundancy
- Intermediate solution in a rapidly or unpredictably growing infrastructure, wind parks, business parks, etc.
- Standby station for projects in oil & gas exploration, mining, etc.

Total Cost of Ownership

Ganz advocates high efficiencies by using the Total Cost of Ownership (TCO) method. This combines minimum investments and maximum energy efficiency for the least ownership cost. TCO main factors:

- Purchase price,
- Cost of no load and load losses,
- Cost of commissioning,
- Lifetime and reliability,
- Maintenance cost



Transformer Test Bay

The test laboratory is located in the building of the transformer factory in a separate hall and extends over 1000 m², enabling three transformers to be tested at the same time.

Two independent three-phase test systems, high voltage AC test equipment and impulse voltage generators for LI and SI tests are available.

All routine, type and special tests according to IEC and IEEE standards can be performed

on the full product range of Ganz transformer factory (up to 600 MVA and 800 kV).

The Power Transformer Test Bay has also become a certified ISO 17025 accredited testing laboratory. The National Accreditation Authority has granted the accredited status to the test laboratory in Tápíószele for 5 years. Ganz is now able to carry out accredited laboratory and on-site testing of power transformers.





ROTATING MACHINES

Introduction

Ganz manufactures a wide range of medium and high voltage motors and synchronous generators. The scope of electric rotating machines' supply covers the full sphere of design & engineering as per the customer request, up to the local installation and commissioning supervision.

The company is specializing in the design, manufacture and testing of MV & HV asynchronous motors from 500 kW to 20 MW and synchronous generators from 1000 kVA to 70 MVA.

The electric motor range includes safe and hazardous area motors, energy efficient motors as well as motors for special applications.

2-pole synchronous generators for steam or gas turbines of power stations can be supplied from 20 MVA to 60 MVA for 50 Hz and from 23 MVA to 65 MVA for 60 Hz networks.

Ganz four- and higher pole synchronous generators operate at diesel- and hydro power stations, transformer test rooms.

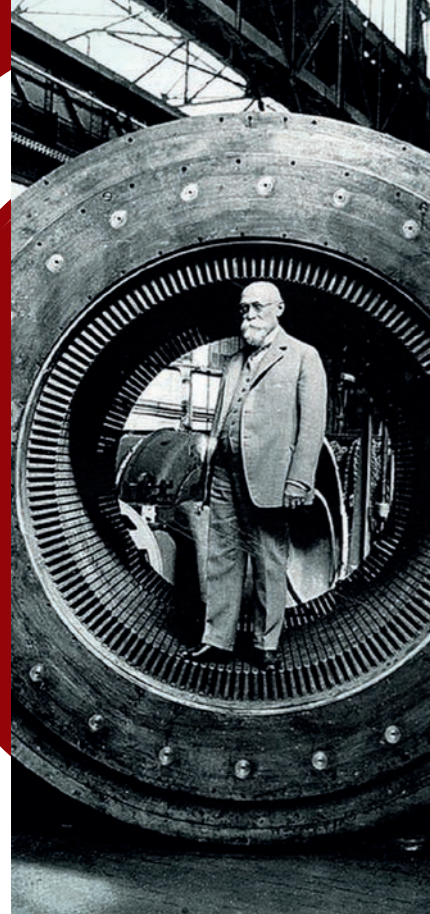
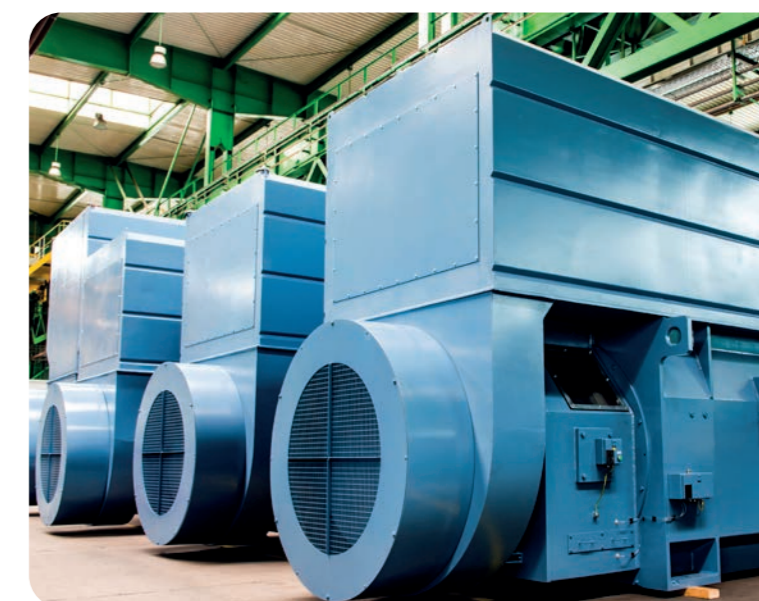
The design and manufacturing series range begins at frame 400 mm and goes up to 800 mm of series motors and generators, 900–1250 mm for high output standard rotating equipment, and even bigger frames' design and manufacturing can happen at tailor-made outputs or frame sizes.

The manufacturing area extends over 12 500 m² with a maximum crane capacity of 100 T. Special, bigger size of manufacturing tools as 50 t dynamic balance machine, VPI tank and furnace, cutting machines, presses are available, which make our company able to design and manufacture the bigger size of electric equipment.

Factory annual capacity is 400 MW.








All rotating equipment are individually routine tested. Type and special tests are also performed as per the manufacturing schedule.

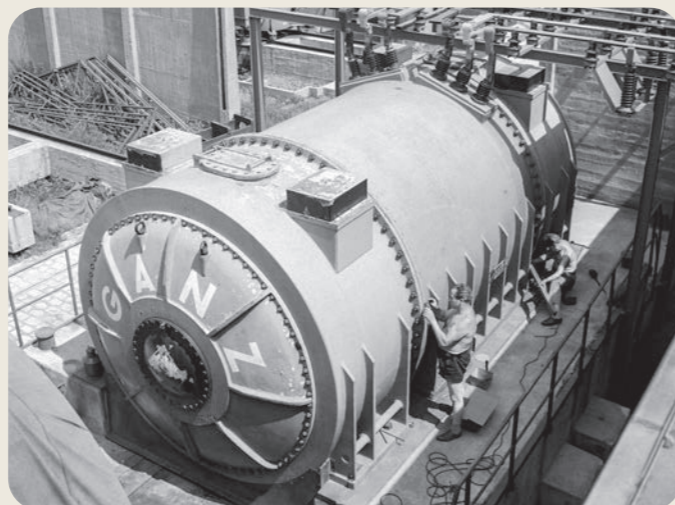
Ganz manufactures according to ISO 9001, ISO 14001 and ISO 45001.





Induction motors

-  Our motors are supplied in compliance with the applicable IEC Standards. In particular, they comply with the following standards:
 - BS 4999 (U. K.)
 - VDE 0530 – Teil 1 (Germany)
-  Upon request, motors complying with the US NEMA Standards MG.1. may also be supplied.
-  Output ratings, main fixing and coupling dimensions (frame size etc.) of motors comply with IEC Publication 72-2.
-  Our standard constructions and mounting arrangements are IM B3 or IM V1 (IM 1001 or IM 3011) according to IEC 60034-7.
-  Upon request, other versions are available for example IM B20 or IM B35 and others.
-  We produce motors for potentially explosive atmosphere with the following degrees of protection:
 - Increased safety motors: EExeb, Eexec
 - Pressurised motors: EExp
-  Special applications:
 - Synchronized asynchronous motors
 - Pole changing asynchronous motors
 - Asynchronous generator



Synchronous generators

The Synchronous Generator designs are created using latest technology and optimized using FEM/Flux plotting techniques to deliver the highest level of performance.

Our generators are of brushless or static excitation system and supplied by automatic voltage regulator unit (AVR). The AVR unit is accommodated either in the generator itself or in a separate panel.

Generator output and speed are matched to the requirements of the prime movers. The generators are designed for a power factor of 0.8 lagging as standard, which are mechanically adequate for the active-power component of their kVA rating. The operational safety and strength of the generators is verified at works by a two-minute overspeed test at 1,2 times the rated speed. In case of runaway requirement the overspeed test is carried out at the runaway speed for the required time period

The generators are available for 50 Hz or 60 Hz for rated voltage between 400 V and 15 000 V. Using a reference value setter, the generator voltage can be adjusted within a range of +/- 5% of the rated voltage. This set value is maintained by the AVR. Other frequencies & voltage adjustment ranges are available on request.

Ganz's horizontal – or vertical outline synchronous generators operate at diesel- and hydro power stations, GTG two pole turbo generator series operate at steam- and gas turbine of power stations.



Synchronous condenser

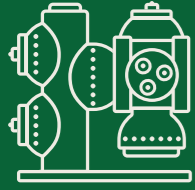
Synchronous condensers are one of the most effective means to maintain grid quality, fault ride-through and fault support, which is essential to maintain electricity supply. The increasing penetration of renewables (solar and wind) in the energy mix is reducing the resilience and stability of electricity networks because these new resources are inherently intermittent and variable.

SCs can play a significant role in compensating these shortcomings and in the future they are expected to help mitigate network issues and enhance the reliability of power supplies.

SCs are needed to provide the required inertia and reactive power and to maintain the proper shortcircuit capacity of the grid, furthermore they produce no harmonics and increase the network transfer capability, and they are overloadable.

Ganz offers SCs in the range of 15-50 MVar, in special cases up to 70 MVar, multi units with their auxiliary equipment for 50-60 Hz application up to 15 kV voltage level.





SERVICES



GANZ Service provides



- Life assessment of RM, PT, GIS
- Framework agreement to ensure the smooth operation
- Periodic maintenance to nourish efficiency and to avoid any unexpected damage
- Online monitoring systems for prevention purposes
- Engineering backup & calculations

GANZ Service Division

Ganz Service Division undertakes service activities worldwide of medium & high voltage motors, synchronous generators, power transformers and gas-insulated switchgear with know-how and more than hundred years of experience.

As a full solution provider, we deliver lifetime extension programs supported by condition-based monitoring systems, as well as numerous accessories and spare parts for all equipment.

Adjusting to the unique customer requirements, we offer flexible and customized service solutions. Through our extensive global network, our services will help to achieve the full potential of your assets to increase reliability and optimize productivity.

GANZ believes that the continuous maintenance is non-negotiable when it comes to an equipment's lifetime. Proper maintenance contributes to extending the operational life of electric equipment while being cost-effective and environmentally-conscious if we choose to have a maintenance-oriented approach.

Therefore, GANZ offers the best service support for its customers to ensure they get the maximum and efficient operation time without technical failures.

Why GANZ Service?

- Extremely flexible to customer needs
- Tailor-made solutions
- Competitive delivery times
- 24/7 remote technical support
- High level of customer experience
- Own brand of Monitoring System (GANZ Intelligent Solutions)
- Provides services of non-Ganz branded products





POWER TRANSFORMERS

- Activities are performed both on-site and in factory
- Planned maintenance
- Spare parts supply
- Troubleshooting and site repair
- On-site and factory testing (IEC and IEEE standards)
- Transformer oil treatment, oil regeneration
- Full oil testing (IEC 60422) and dissolved gas analysis (IEC60599)
- Condition assessment based on site and or factory testing
- Active part removal for visual inspection
- General refurbishments
- Transformer oil tank revamping
- Site supervising, installation & commissioning
- Retrofit with GANZ Intelligent Solutions monitoring system



Maintenance method for Power Transformers



Transformers are critical components in electrical power systems, thus proper and regular maintenance is crucial to ensure their stable and safe operation.

- Visual inspections of signs of leaks, oil condition, and external damage. Checking of any loose connections, damaged bushings
- Oil sampling and analysis to understand the current condition
- Using temperature gauges and thermal imaging to identify hot spots
- Periodical inspection and test of tap changer
- Checking and replacing of gaskets to prevent oil leaks and maintain the integrity of the transformer's enclosure
- Periodic DGA tests to analyze the gases dissolved in the transformer oil
- With a qualified professional team, GANZ can perform a comprehensive inspection, testing, and analysis of the transformer to identify potential issues that may not be apparent during routine checks





ROTATING MACHINES

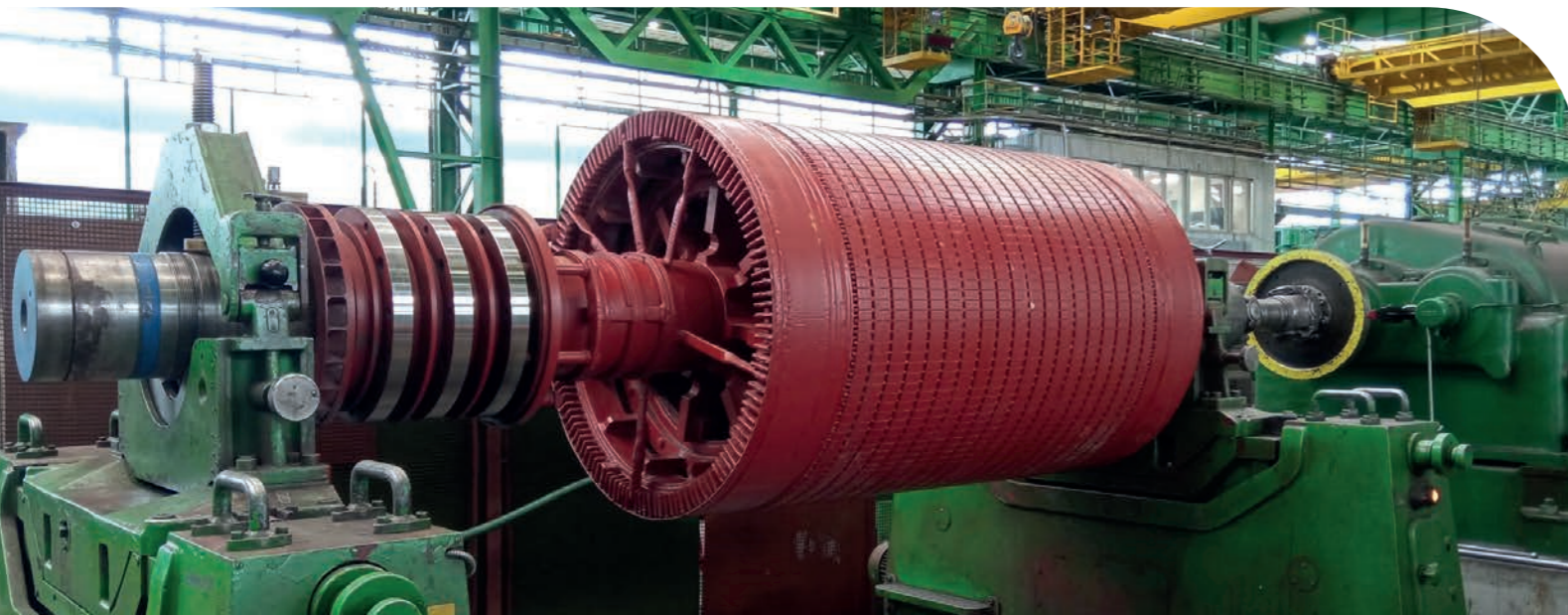
- Activities are performed both on-site and in factory
- Complete diagnostic test of motors and generators based on the IEC-60034 standard
- Modernization with rewinding the rotor and stator of motors, hydro- and turbogenerators to „F“ or „H“ class
- Revision and maintenance of AC/DC motors and generators
- Changing the slot wedges for rotor and stator
- Reverse engineering
- Revamping and retrofiting
- On-line balancing up to 50 tons in own test bay
- Spare parts manufacturing & supply
- Site supervising, installation & commissioning



Maintenance method for Rotating Machines

Maintaining electric motors or generators is essential to ensure their efficient and reliable operation in the long run.

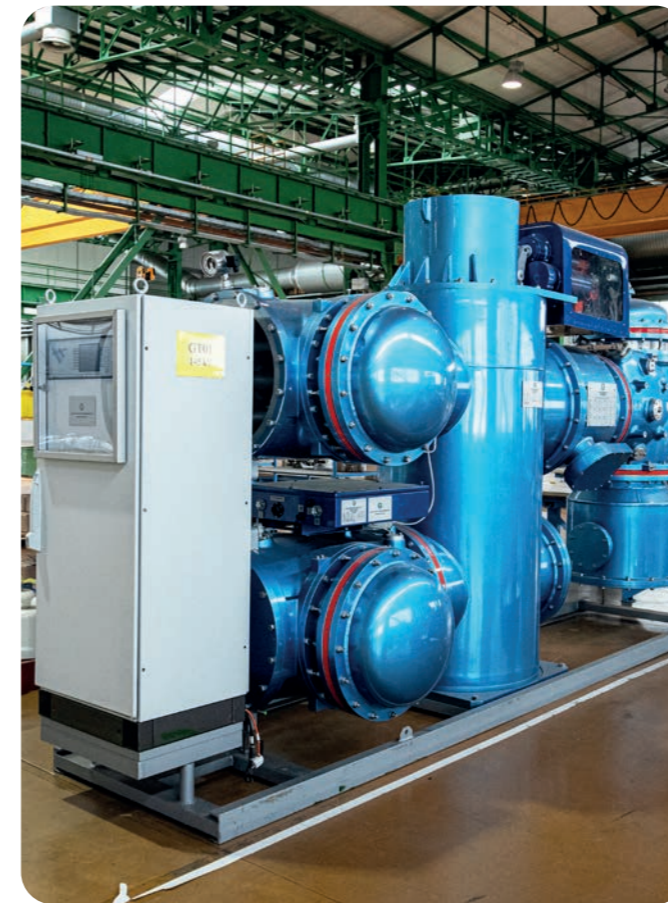
- Regular inspections
- Cleaning the overall motor/generator and the air vents to ensure proper ventilation, as overheating can be a common issue
- Ensuring that bearings and moving parts are properly lubricated
- Check and maintain proper alignment of the motor or generator shaft
- Monitoring the cooling system, such as fans and cooling fins
- Performing electrical tests, such as insulation resistance test to identify any potential insulation breakdown or other electrical issues
- Conducting dynamic balancing and vibration analysis to ensure that the rotor is balanced and that vibrations are within acceptable limits
- Always recording the maintenance activities and test results which hold valuable information in planning and help determine future maintenance tasks



GAS-INSULATED SWITCHGEAR

The following activities are performed both on-site and in factory.

- SF6 gas analysis; leak detection; and filling
- Scheduled maintenance
- Lifetime extension
- Spare parts supply
- Troubleshooting and site repair
- Factory refurbishments
- Bay extension
- Online diagnostics, measurements
- Supervision of site works

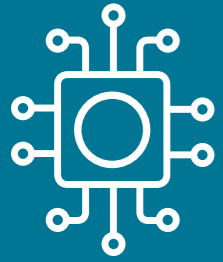


Maintenance method for GIS

Gas-insulated switchgear (GIS) is a critical component in power systems, providing a compact and reliable way to control and protect electrical equipment.



- Monitoring the gas insulation properties regularly, such as sulfur hexafluoride (SF6) gas density which helps identify potential leaks and ensures the integrity of the insulation system
- Checking the mechanical components including the operating mechanism and circuit breakers, for proper operation
- Performing routine test on circuit breakers, including contact resistance measurement, timing tests, and insulation resistance tests
- Inspect the busbar connections for tightness and signs of overheating
- Handling SF6 gas
- Checking the integrity of seals and gaskets to prevent gas leaks
- Providing remote monitoring systems to continuously monitor the GIS condition
- GANZ has specialized personnel and equipment for in-depth analysis for your GIS



INTELLIGENT SOLUTIONS



Introduction

The industry has been experiencing difficult times where the ever-increasing demand and the Energy Transition have put considerable pressure on operators. OEMs have significantly increased lead times reaching several years for certain type of assets.

GANZ is answering the call for a solution in the midst of asset shortages and mounting costs of unplanned downtimes.

We launched our asset monitoring and digitalization brand, GANZ Intelligent Solutions in 2022 with the goal to have a system available for each and every product that is either manufactured or serviced by GANZ.

Main benefits

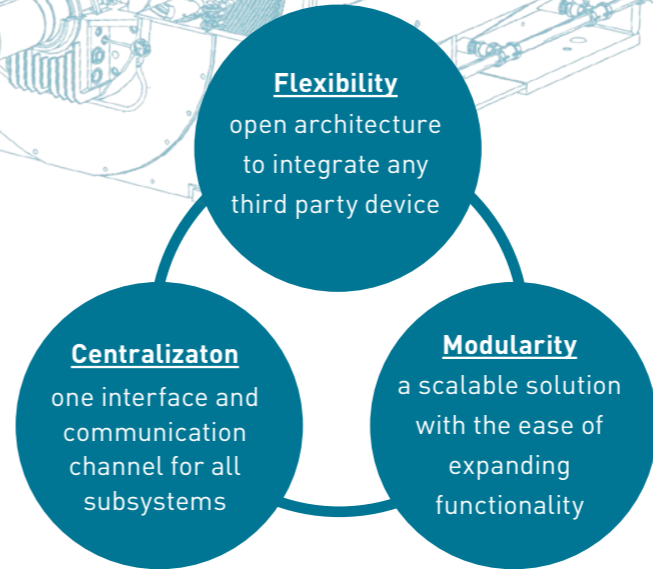
Our systems provide an easily reachable, centralized solution which enables

- avoiding critical failures through early detection
- maintenance cost reduction thanks to condition based strategies
- and decreased duration and frequency of unplanned downtimes.

Our systems include primary asset monitoring functions such as

- o signal acquisition
- o adjustable alarms
- o visualization of live and historical data
- o data logging and export
- o data flow through different communication protocols

The way to condition monitoring excellence



Expert System

Many operators are also facing shortages of expert personnel which makes it challenging to have the right decisions on intervention.

The asset fleet management solutions available at GANZ open the door to predictive maintenance through expert recommendations.

- Asset Health Indexes
- Comparative assessments
- Expert recommendations for intervention
- Integrated maintenance services

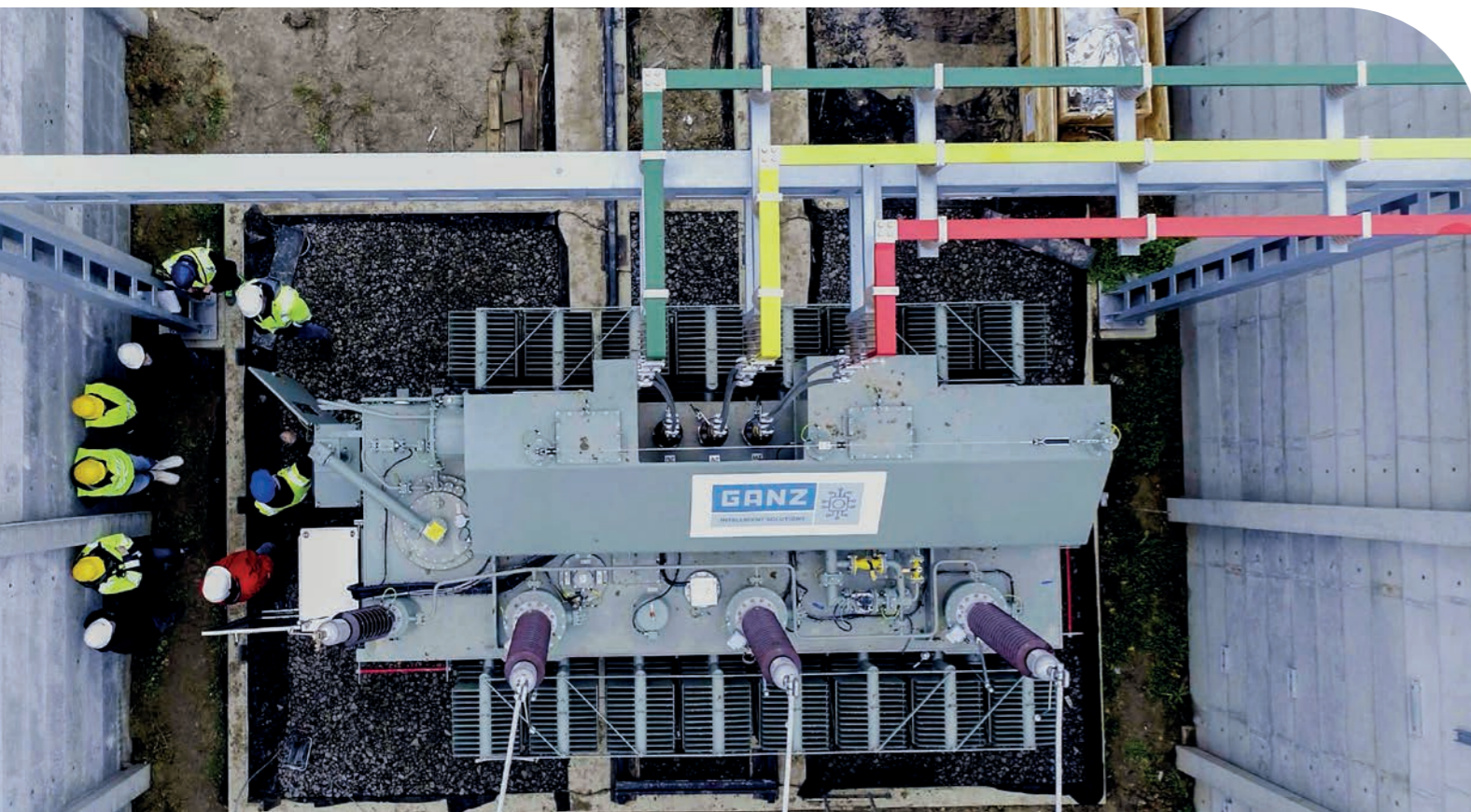
Retrofit Application

The persisting availability issue also drives operators to rely more on already existing, older assets. This involves operation beyond the originally planned lifetime and the requirement to operate at a more acceptable level of reliability despite old asset age.

GANZ Intelligent Solutions can be applied to already existing, ageing units regardless of type or brand, which provides our partners with an answer to this challenge.

Application allows for the

- extension of the useful lifetime of the asset
- data based asset replacement scheduling
- digital integration of ageing units



POWER TRANSFORMERS

Power Transformers - being the most valuable assets - are to have an expected lifetime of at least 40 years. Efficient use throughout this lifetime by avoiding and indicating possible failures early is the prime goal for any operator. Ganz has performed extensive research regarding the root causes of power transformer failures.



Packages

Based on the analyzed data our solutions are targeting the most common failure locations such as

- Winding Insulation
- High Voltage Bushings
- On Load Tap changer

The transformation of the energy industry with sustainable and green applications is a top priority for GANZ. As such all transformers delivered by our company can be easily upgraded to a high level of digitalization.

Different levels of Intelligent Solutions can be included in the form of goal specific packages.

- o **iReady+**: An all-rounder cost efficient solution with entry level features.
- o **iStandard**: A package focusing on winding insulation health and intelligent cooling control.
- o **iAdvanced**: Equipped with the most sophisticated digitalization features and newest technology.

Further, tailor made solutions are also available based on our end-users' request or the **expert recommendation from GANZ** - depending on the application.

Launched in late 2022 and supported by our unique strategic cooperation with Maschinenfabrik Reinhausen, our Power Transformer Portfolio continues to be a popular choice among our customers.

Online monitoring capabilities

Dissolved Gas analysis

- o Early warning through hydrogen and moisture level
- o Multi-gas online assessment solutions

Fiber optic winding temperature measurement

Partial discharge

- o Detection
- o Localization

Cooling monitoring and electronic cooling control

- o Temperature-dependent control
- o Load-dependent control

Cooling efficiency monitoring

Digital Twin thermal models

Bushing Monitoring for

- o Capacitance
- o Sum of currents
- o Dissipation factor - $\tan(\delta)$

Basic Tap changer monitoring solutions

- o Operational statistics
- o Maintenance scheduling
- o Load current
- o Temperature

Advanced Tap changer monitoring solutions

- o Torque
- o Vibroacoustic assessment



Digital Twin

Taking part in the process of introducing Digital Twin applications is an important objective for GANZ as they further improve the effectiveness of fault detection and predictive maintenance strategies. As of 2023, GANZ has delivered the first transformer in Hungary with Digital Twin application and we already have orders for further units for 2024.



ELECTRIC ROTATING MACHINES



Rotating Machines
- both in the role of power generation
and motor application -
involve similar challenges
in the industry.

Packages

The unplanned downtime of an asset can easily cause financial losses reaching hundreds of thousands in euros - be it a power plant or a manufacturing facility. Following a professional approach, GANZ is providing a targeted solution to keep track of the condition of rotating machines by monitoring components critical for asset health and operation.

Our off-the-shelf packages offer ever-increasing potential to improve safety and efficiency - complementing our rotating machines portfolio with condition monitoring capabilities.

- **iReady:** Winding and bearing temperature measurement along with vibration monitoring.
- **iStandard:** Accessory digitalization package, covering cooling and lubrication.
- **iAdvanced:** A sophisticated solution package covering partial discharge online monitoring.

There is a wide range of parameters that can be monitored as our system is open and flexible. Currently our packages include capability to monitor:

- Temperature via RTD-s (stator winding, bearing, ambient, etc.)
- Vibration
- Accessories (Leakage detector, Heater, etc)
- Cooling and Lubrication (Temperature and Flow)
- Partial Discharge

Additional optional monitoring features that can be included:

- Brush Wear
- Current Signature
- RPM
- Temperatures via Fiber Optic

Online monitoring capabilities



GIS SF6

Packages

Maintaining and ensuring a reliable operation of these ageing assets is challenging, while it is crucial to provide time for a green transition to take place.

Our solutions enable the monitoring of key parameters and calculations - aiding asset owners and operators to overcome these challenges

- SF6 gas properties
- Temperature
 - Humidity
 - Pressure
 - Density

- Partial Discharge activity
- Detection
 - Localization

Gas Insulated Switchgears are also going through their own green transition in the industry as SF6 gas is to be replaced in all applications. However, exchanging all the currently available assets with environmentally friendly solutions is beyond the financial capability of many asset owners. According to survey results the primary cause of failures is wear and corrosion, which significantly increases failure rates and maintenance costs.



External steel structures of transformers

In 2023, GTVF Steel Structures Manufacturer Ltd. restarted production at its plant in Szolnok, with significant investment.

The aim is to improve production technology and increase the plant's energy efficiency, which helps further strengthen the competitiveness and security of supply of production. The plant will assemble the steel structures for the outer covers of the transformers and transport them to the Tápiószele factory completing the value chain with its manufacturing activities.

Previously, the steel structures were manufactured in Turkey, however, in recent years the vulnerability of long supply chains has been highlighted more than ever. Manufacturing in Hungary has shortened supply chains and reduced security of supply risks, and further strengthened quality assurance.

The investment programme is set to be completed by 2024. However, the factory has already commenced trial operations, and the first employees joined in June 2023.



Currently, the site employs approximately 45 people, but this number will increase in the future to ensure continuous production. This development will enable Ganz to provide its customers with even greater security and predictability. The reopening of the Ganz Metal Works production plant in Szolnok has not only benefited the company, but has also contributed to the revival of Szolnok's industrial tradition.



For lifting of the transformers completely assembled they are provided with four lifting hooks welded onto the lifting ribs on the tank wall. For lower lifting there are four jacking pads at the sides of the transformer tank. In order to control the transport stresses of the transformers, depending on their size and way of transportation, transformers are equipped with three-dimension impact recorder.

Transformers can be transported completely filled with or without oil in the main tank, depending on the size.

Delivery both on road and rail is possible, because the factory in Tápiószele has direct railway connection.

Depending on transportation considerations Ganz transformers may be shipped either with or without bushings, radiators, fans and conservators.

In case of transportation without oil, in order to avoid the moisture absorption by the active part, the tank is filled with dry air at a positive pressure maintained by a proper equipment.



CONTACT US:



sales@ganzelectric.com



www.ganzelectric.com



Head Office:

1095 Budapest, Soroksári street 30-34
(Haller Gardens Office) Building C - 5th floor



Manufacturing facilities:
2766 Tápiószele, Györgyei street 14-22

Steel structure manufacturing facility:
5000 Szolnok, Kőrösi street 74



Follow us on LinkedIn

