Sonel®

We measure globally

ELECTROMOBILITY • PHOTOVOLTAICS • ELECTRICITY DISTRIBUTION

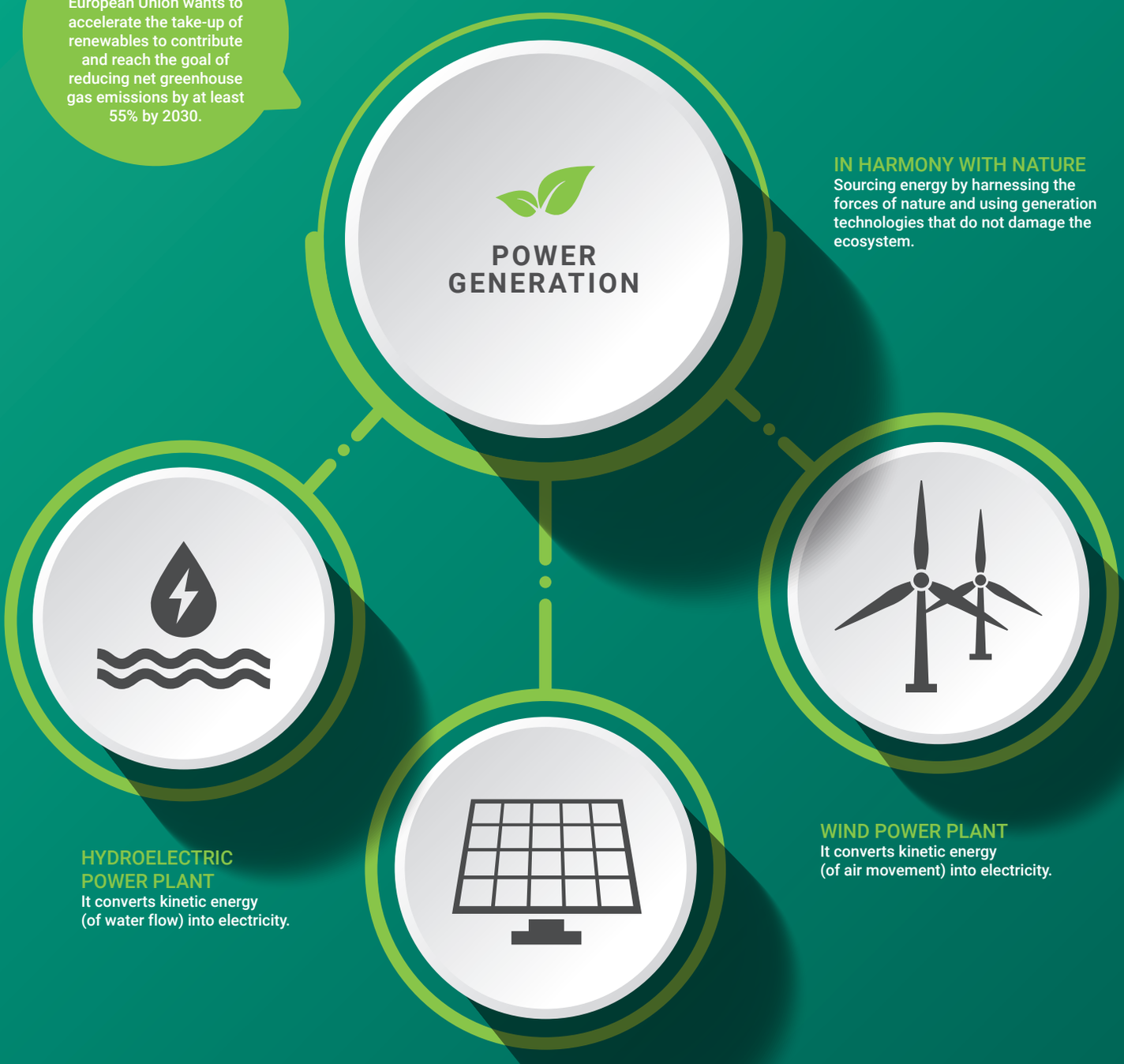
GREEN ENERGY

Renewable energy sources

When planning for a secure future, we need to keep the environment in mind. By researching the RES sector and implementing innovative solutions on the market, it is possible to gradually **change the manner in which energy is obtained, stored and transmitted.**

Obtaining energy from clean sources reduces fossil fuel consumption and greenhouse gas emissions. Increasing the use of renewable sources results in **higher return on investment and dynamic growth of the industry.**

European Union wants to accelerate the take-up of renewables to contribute and reach the goal of reducing net greenhouse gas emissions by at least 55% by 2030.



IN HARMONY WITH NATURE
Sourcing energy by harnessing the forces of nature and using generation technologies that do not damage the ecosystem.

HYDROELECTRIC POWER PLANT
It converts kinetic energy (of water flow) into electricity.

WIND POWER PLANT
It converts kinetic energy (of air movement) into electricity.

PHOTOVOLTAIC SYSTEM
It converts solar radiation energy into electricity.

Transmission of electricity

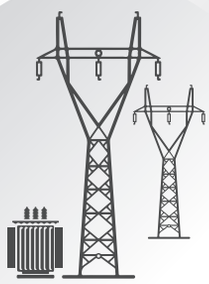
The efficiency of conversion and transmission of electricity while maintaining its quality parameters necessary for the proper operation of end devices is a key issue. Supporting the control of this process, preventing failures and ensuring safety are the main objectives of our mission. From source to consumer.

PRODUCTION

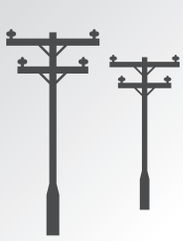
The electricity generated is transmitted to the power system, designed for optimum transmission and distribution of electricity.

TRANSMISSION GRID

Transmission of electricity through high- and extra high-voltage grid. This grid is used to transmit energy over long distances.



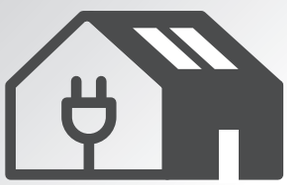
SOURCES OF ENERGY



DISTRIBUTION NETWORK

Transmission of electricity through medium- and low-voltage distribution networks. This network is designed to distribute energy to consumers.

Renewable energy is the fastest-growing energy source in the United States, increasing 42 percent from 2010 to 2020 (up 90 percent from 2000 to 2020). Solar generation (including distributed), which made up 3.3 percent of total U.S. generation in 2020, is the fastest-growing electricity source.



CONSUMER

Under a contract with a supplier, a consumer connected to the grid receives energy from the network.

Electromobility

EVSE (Electric Vehicle Supply Equipment) charging stations are increasingly becoming part of the landscape of our cities, homes, workplaces and public spaces. Ensuring maximum user safety when operating them is the philosophy that defines our products. It is also important to guarantee maximum comfort and ergonomics by means of proper lighting in the charging area.

EVSE-01 adapter

The adapter for the MPI series meters allows measurements of AC charging stations with a type 2 connector, with a socket and a fixed charging cable. Tests are available for 1- and 3-phase stations - both with and without ventilation.

In 2020, there were roughly 285,800 public charging stations for electric vehicles in Europe (including Turkey). This figure includes normal charge under or equal to 22 kilowatts as well as fast charge with over 22 kilowatts. Figures grew consecutively between 2010 and 2020, with prominent increases seen in 2011, 2012, and 2016.

MRU series

Earth resistance and soil resistivity meters

APPLICATION

- Measurement of earth resistance with a technical method.
- Measurement of the lightning protection system of the charging station in accordance with IEC 62305.

Sonel MPI-540

The MPI series comprises multifunctional electrical parameter meters designed for checking domestic and industrial systems.

PQM series

Advanced meters for measurement and analysis of parameters in power grids

APPLICATION

- Assessment of the impact of chargers on the mains.
- Load profile testing.
- Monitoring of reactive power exceedances.

LXP series

Lux meters for LED illuminance measurement

APPLICATION

- Charging station illuminance measurement.
- Intrusive light measurement.

MZC series

Fault loop impedance meters

APPLICATION

- Fault protection rating for voltages up to 750 V and a loop impedance value of 7.2 mΩ.
- Checking of loop impedance and short-circuit current IK up to ~100 kA, as well as effective touch voltage on conductive parts of electric vehicle charging stations.

Photovoltaics

Photovoltaic systems represent an environmentally friendly source of renewable energy. Photovoltaic cells work all year round - even in winter and the only condition for their operation is the presence of sunlight. Our equipment makes it possible to measure the parameters of these systems. A range of DC and AC side tests according to EN 62446 is available, as well as all measurements to determine the safety status of domestic electrical systems.

PVM-1 adapter
CP-PV measuring clamps

Accessories necessary for measuring in photovoltaic systems parameters such as current, voltage and power on the DC side. Standard equipment of MPI-540-PV.

Sonel PVM-1020

Photovoltaic system meter

APPLICATION

- Inspection of photovoltaic systems in terms of safety of use, according to IEC 62446-1 cat. 1.

Sonel IRM-1

Insolation and temperature meter compatible with MPI-540-PV and PVM-1020

APPLICATION

- For measuring irradiance and temperature of photovoltaic panel and the environment.

Sonel MPI-540-PV

A highly versatile meter, designed in particular for testing photovoltaic systems.

The instrument will perform a set of tests on the DC and AC side - in accordance with the guidelines of EN 62446 standard.

Global solar photovoltaic capacity has grown from around five gigawatts in 2005 to a approximately 509.3 gigawatts in 2018. Cumulative solar PV installations reached some 42.4 gigawatts in Germany alone.

Sonel CMP-1015-PV

Digital clamp meter for photovoltaic installations

APPLICATION

- HVDC voltage measurement (up to 1500 V DC).
- DC and AC current measurement.
- Temperature measurement.
- Current and voltage measurements downstream the inverter, frequency converter or in the VFD system.
- Built-in recorder and communication with Sonel Multimeter Mobile android application.

MRU series

Earth resistance and soil resistivity meters

APPLICATION

- Performance of earth resistance measurements in accordance with IEC 61557-5 and IEC 60364-6 standards.
- Measurements of the protective conductors continuity in accordance with EN 61557-4 with a current of 200 mA.

KT series

Thermal imaging cameras for measuring the temperature of solar panels

APPLICATION

- Detection of hot spots caused by cell damage or localised shading.
- Detection of overheating by-passes.
- Detection of overheated overcurrent protections.
- Identification of overheating cables and connectors.

Safety at every stage

As a manufacturer of metering equipment and a solution provider for many industries in the power sector, we are committed to the philosophy of improving efficiency and safety also in future areas. Year after year, with the transformation of the power sector towards low- and zero-carbon energy sources, we enhance our presence by implementing modern tools dedicated to electrical installers and professionals engaged in the metering industry.

AutoISO adapters
For measuring the insulation resistance of cables and multicore wires.
The use of adapters reduces the time required to take measurements between pairs of cores.

Performance of periodic tests in electrical systems in accordance with applicable regulations increases the safety level of the system and its users.

SECURE POWER SYSTEM

MIC series

Line of professional high voltage insulation resistance meters with a wide range of measurement functions

APPLICATION

- Maintenance and supervision of the transmission grid, transformer stations, generators.
- Insulation quality diagnostics.

PARAMETERS

- R_{ISO} = 40 TΩ, U_{ISO}=15 kV, I_{SC}=7 mA.
- DD, PI, DAR, SV, RT, PD, PDC, API, R_X, R_{CONT}, C.
- Digital filters guarantee stable measurement results in areas of strong electromagnetic interference.

KT series

Temperature meters operating with non-contact infrared measurement are used to determine the temperature of the object under test with accuracy dependent on the device

APPLICATION

- Inspection of wind turbine blades.
- Detection of overheating components in electrical cabinets and transformer stations.
- Monitoring the operation of transformer substations.
- Detection of faulty taps, insulators, fuses, disconnectors, circuit breakers.
- Inspection of rotating machinery, dust pipes, hoppers.

LKZ series

Cable and underground infrastructure locators

APPLICATION

- The location makes it possible to determine the actual position of the underground system and to determine the correct place to start work. It reduces the possibility of dangerous accidents and damage to searched objects.

UV-260

Corona camera

APPLICATION

- Detection and monitoring of corona, arc and surface discharges in the power industry.

MMR series
Micro-ohm meters

APPLICATION

- Ensuring the proper quality of electrical bonding.
- One device to measure the HV circuit breaker and the transformer.
- A current of up to 200 A and a high-power source allow the measurement of HV circuit breaker contacts with an accuracy of 0.25%.

MZC series
Fault loop impedance meters

APPLICATION

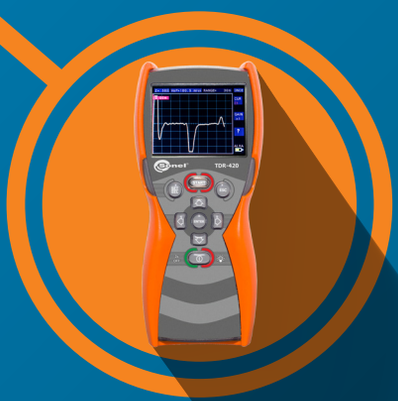
- Fault protection rating for voltages up to 750 V and a loop impedance value of 7.2 mΩ
- Quick check of loop impedance and short-circuit current IK up to ~100 kA as well as effective touch voltage.

MRU series
Earth resistance and soil resistivity meters

APPLICATION

- The MRU-200 and MRU-200-GPS meter allows for impulse measurements of the earth resistance of lightning protection system, in accordance with the requirements of IEC 62305.
- Measurement of resistance of earthing conductors and bonding conductors in accordance with IEC 61557-4 standard.
- Measurement of the earthing resistance of transformers and the earthing grid of substations.
- Measurement of the earth resistance of transmission poles using the ERP-1 adapter and the pulse method.

ERP-1 adapter
For measuring the resistance of multiple earthings without disconnecting the test clamps. The large-diameter flexible clamps allow earthing tests to be carried out on e.g. power poles, including lattice towers, without the need to switch off the power line.



TDR series
Digital fault locators

APPLICATION

- Reflectometers designed to characterize and locate faults in power and telecommunications cables.

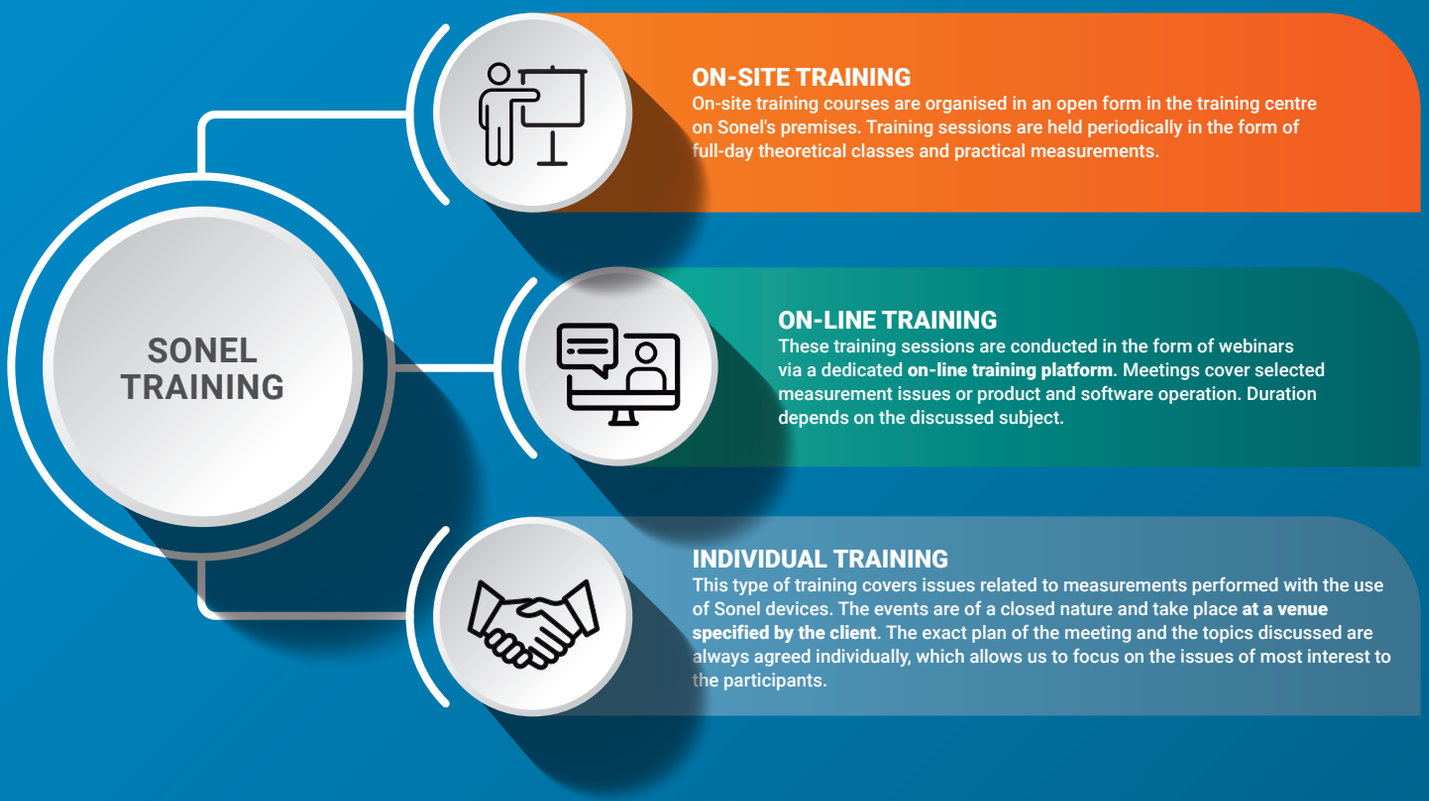
PQM series
Meters for measuring and analysing parameters in power grids

APPLICATION

- Power supply quality assessment in accordance with EN 50160.
- Interference diagnostics.
- Reactive power monitoring.

Knowledge and training

Knowledge, professionalism, experience constitute our mantra, while commitment, inquisitiveness and solving difficult cases represent the daily routine for our specialists. Sonel offers professional training in the theory of making measurements, their methodology, handling and analysis of conducted tests with simultaneous preparation of measurement reports.



ON-SITE TRAINING

On-site training courses are organised in an open form in the training centre on Sonel's premises. Training sessions are held periodically in the form of full-day theoretical classes and practical measurements.

ON-LINE TRAINING

These training sessions are conducted in the form of webinars via a dedicated **on-line training platform**. Meetings cover selected measurement issues or product and software operation. Duration depends on the discussed subject.

INDIVIDUAL TRAINING

This type of training covers issues related to measurements performed with the use of Sonel devices. The events are of a closed nature and take place **at a venue specified by the client**. The exact plan of the meeting and the topics discussed are always agreed individually, which allows us to focus on the issues of most interest to the participants.

Our training offer includes

Inspection of photovoltaic systems in terms of safety of use.
The measurement workshop includes the inspection of the electric shock protection of the low-voltage electrical system according to IEC 60364 and the photovoltaic system according to EN 62446-1.

Safety inspection of electric vehicle charging points.
As part of the training, classes are conducted in the field of measurements of electric shock protection of the low-voltage system to which a charging station is connected (according to IEC 60364), measurements of electric shock protection effectiveness of vehicle charging points (according to EN 61851-1) and measurements of illumination intensity (EN 12464-2).

Foundations of power supply quality analysis.
The training addresses topics related to power supply quality and the impact of charging stations on the low voltage supply network. Electromagnetic compatibility, standardisation related to power quality and measurement of relevant indicators are discussed.

Contact with customer service

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sonel.pl/en/trainings

WE COOPERATE WITH:

PIRE | Polska Izba Rozwoju Elektromobilności

Politechnika Wrocławska

Light Electric Motorcycle

SEP