Energy Technology

AMR Systems

Bus systems

Wireless M-Bus radio system

LPWAN radio system (LoRaWAN, SIGFOX)

Stationary GSM system

Electronic components

Software solutions

ZENNER

All that counts.

ZENNER AMR Systems

Flexible, smart, efficient

Smart and innovative technologies for capturing, analysing and processing meter data have long been standard in water and energy measurement. Municipal utilities, industrial companies, property companies and metering services are increasingly relying on time-saving and cost-saving remote meter reading via wired M-bus systems, wireless radio systems or modern smart metering measurement systems.

As a ZENNER customer you have access to an innovative portfolio containing wired M-bus systems and radio solutions as well as electronic hardware and professional software packages for commissioning and reading your systems.

Focusing on quality and efficiency, our engineers have developed intelligent systems from flexible measurement technology and high-performance remote reading technology to be the perfect solution for all of your current and future individual meeting needs

ZENNER meters have modern communication interfaces which enable integration into M-bus or radio systems. We also offer smart solutions to integrate conventional, pulse-based meters, enabling the meters to be integrated into readout systems at a later date. We are therefore turning every meter into a smart meter.

Benefits of AMR systems

- Efficient reading process
- Shorter billing intervals
- Increased data quality and improved data management
- Ability to monitor consumption
- Visualisation of savings potential
- Measures to optimise consumption
- Resource conservation and environmental protection

ZENNER AMR systems

For individual customer needs

Our customer´s requirements for a remote reading system are versatile and individually, as well as our solutions and products that we are developing for utilities and many other customer groups worldwide.

M-Bus

Bus systems:

M-Bus and ZR-Bus

Wired remote readout system for requesting meter data in large buildings and properties. Developed for the housing industry, energy suppliers and industry

LoRaWAN sigfox

Stationary Radio System

Remote meter reading in the Internet of Things

Radio meter reading system via LPWAN (Low Power Wide Area Network) for the wireless transmission of meter data, sensor and device data over long distances. Developed for public utilities, industrial enterprises and housing industry.

M-Bus

Wireless M-Bus

Walk-by radio system OPERA

Walk-by radio system for remote meter reading. Specially developed for water and energy supply companies.

GSM

Stationary GSM system

Meer reading via GSM and internet

System for remote meter reading and monitoring of measuring points via GSM and internet with data transfer via SMS and online meter administration.

Bus systems

Cable readout systems: M-bus and ZENNER-bus

Imagine a building where several hundred meters of all kinds – water meters, heat meters, cooling meters, gas and electricity meters – have been installed. Now imagine that all of these meters could be read from a central computer within minutes.

In practice, such situations use cable bus systems. M-bus (meter-bus) and our specially developed ZR-bus (ZENNER-bus) are intelligent system solutions for smart remote reading of water, energy, electricity and gas meters

Bus systems are used in properties where structural or infrastructure conditions mean that it is not possible or economical to use a radio system. These include larger commercial properties, industrial facilities, hospitals and airports.

ZENNER offers such properties a comprehensive product range containing all the components needed to connect meters to a smart, cable remote readout system using transfers in accordance with the M-bus standard (DIN EN 1434). In addition to meters with an integrated bus interface, you can also integrate meters with pulse output into the bus system via pulse counters.

The main components of our bus systems are electronic communication interfaces in the energy calculators of our heat meters and pulse counters. We use bus converters (level converters) to supply power to the bus segments and as interfaces to the PC or transmission equipment (e.g. CommunicationMaster with Ethernet or GSM interface).

For the remote reading and transmission of data in energy monitoring or energy management systems, we offer our customers modular software packages perfectly adapted to all of their individual needs.

M-bus overview

1 multipulse

The multipulse pulse counter with integrated bus interface can be connected to up to three meters with pulse output and integrated into the bus system.

2 EDC-M-Bus

The EDC-M-bus electronic data capture module with integrated M-bus interface is attached to the water meter and enables said meter to be read via the M-bus master.

3 zelsius C5

The multidataWR3 energy calculators and the zelsius C5 heat meter energy calculator with integrated M-bus interface also have two or three optional additional inputs for integrating meters with pulser into bus systems.

Level converters are the central metering points for queries to the M-bus system. Up to 250 meters can be connected to one level converter per bus segment. Multiple bus segments are linked using a repeater.

The CommunicationMaster with Ethernet or GSM interface can be optionally used as a transparent gateway. In combination with the ZENNER meterVPN server it enables automated, secure and efficient remote reading of the M-bus system.

The GlobalMeterManager GMM is a piece of modular system software used to select bus systems, configure ZENNER equipment and administer meter data.

M-bus system components

Multidata WR3 energy calculators and zelsius C5 compact energy meter with M-bus interface

Both the multidata WR3 energy calculator for split heat and cooling meters and the compact meters of the zelsius C5 series are available in a version with an M-bus interface. Up to two additional meters with pulser are connected to suitably equipped multidata devices (up to three for zelsius C5 devices) and integrated into the M-bus system.

EDC M-bus communications module for water meters with modulator discs

The innovative EDC communications module with M-bus interface is a clip-on module for water meters. It enables remote reading of water meters via the M-bus system. The EDC module was developed for electronic and non-reactive scanning of all ZENNER water meters equipped with a modulator disc. The innovative EDC product range also offers two further models with radio and pulse output.

Multipulse/multilog pulse counter

The ZENNER pulse counter with M-bus interface is used wherever existing meters with pulse outputs are integrated into a bus system. Up to three meters with pulse output can be connected to one pulse counter.

Pulse Data Capture

The Pulse Data Capture is the economic alternative to a pulse counter and also offers the functionality of integrating meters with pulser into an M-bus system. It has a maximum of two pulse inputs.

M-bus master / level converter

M-bus meter consumption data is requested via the M-bus master or level converter as the central reading point. Power can be supplied to the connected M-bus equipment (slaves) via the bus. Up to 250 meters can be connected per bus segment. Larger systems are implemented using repeaters.

CommunicationMaster E and G

The transparent gateways of the CommunicationMaster series offer uncomplicated, secure remote reading of M-bus or ZENNER-bus systems via the internet or GSM. For this purpose, the gateway is integrated into an existing TCP/IP network or dials in to the GSM network. Using the associated ZENNER meterVPN service, the gateway establishes an automatic, secure data connection between the level converter to be read and the reading PC. GlobalMeterManager is used as reading software.

GlobalMeterManager GMM

ZENNER developed GlobalMeterManager for the commissioning and reading of bus systems and for equipment configuration. This smart system software offers the correct range of functions for every field of use.

Whether configuring equipment or commissioning remote readout systems, its innovative concept of combining individual components into a function package enables our customers to licence the package that suits their individual requirements.

The consumption data read and the M-bus information are saved in the GMM database, and are available for creating the consumption bill or for energy monitoring.

Walk-by Funksystem OPERA

Wireless M-bus - wireless remote meter reading system

We at ZENNER have specially developed a smart, mobile radio system for the remote reading of water and heat/cooling meters. It is perfectly tailored to needs of public utilities with regard to efficient reading processes and optimum data quality.

Our mobile radio system uses unidirectional data transmission. The measuring equipment independently sends a data protocol at set intervals. The radio protocols are encrypted to the latest technical standards for data security reasons.

They are processed and stored by the MinoConnect-Radio radio receiver and a handheld/tablet PC with reading software. The consumption data recorded and the associated meter parameters are then transmitted from the handheld device to the PC in the office, and are available for billing creation or energy monitoring purposes.

As well as the most common application of walk-by reading, our system is also available for drive-by use with suitable reading software.

Using ZENNER radio technology ensures that suppliers and service providers are viewed as innovative and customer-friendly. There is no longer any need for appointments or home inspections. The consumption data obtained from quarterly or monthly metering also results in significantly increased transparency for consumers, with the increasing importance of energy controlling taken into account.

Wireless M-bus overview

1 EDC-wM-Bus

With the wM-bus EDC communications module, the meter data is transmitted via the MinoConnectRadio radio receiver to a handheld.

2 zelsius C5 series

The compact heat meters of the zelsius C5 series have an integrated wM-bus module which directly transmits the data.

3 Pulse Data Capture

Meters with pulse output can use an external wM-bus module (PulseRadio-Gateway) to transmit data via the Mino-ConnectRadio radio receiver to a hand-held.

Using the MinoConnectRadio, data can be received as a walk-by procedure from all ZENNER equipment with wireless M-bus interfaces and transmitted to a handheld.

The data received from MinoConnect-Radio is transmitted to a chosen hand-held with an Android operating system via Bluetooth.

The data are transferred from the hand-held to a PC and are available for billing, energy monitoring and other uses.

Benefits of OMS

Open Metering System

ZENNER has developed the wireless M-bus radio system Opera under the European OMS (Open Metering System) standard especially for the European market. OMS offers operators of modern smart metering measurement systems sustainable measuring technology and security of investment, as all OMS meters with a wM-bus interface - regardless of manufacturer – can be integrated into ZENNER's wireless M-bus radio system.

OMS in overview

- Flexibility: the meter park becomes compatible and interoperable
- Free choice of supplier: OMS meters from various manufacturers can be combined without issue
- Planning security: the value of the investment in the meter park remains stable for the long term
- Direct communication with the meters designed for the purpose:
  - Reading consumption
  - Locating defective meters or leaks
  - Disconnecting meters

For more informations about the Open Metering System please visit the OMS-website:
www.oms-group.org

Wireless M-bus system components

EDC wireless M-bus module for water meters

The EDC (Electronic Data Capture) communications module is a clip-on module for water meters to provide secure remote reading and to integrate water meters into smart metering systems. It was developed for electronic and non-reactive scanning of all ZENNER water meters equipped with a modulator disc.

Product features

- Unidirectional data transmission
- Battery operation, battery life up to 15 years
- Tamper detection
- Flood-proof (IP68)
- Retrofittable without damage or sealing
- Flow direction detection
- Secure data capture without using reed switches
- Optical interface for configuration
- For all ZENNER water meters with modulator discs

Smart meter functions:

- Self-monitoring
- Tamper detection
- Detection of module being removed from the meter
- Backflow detection
- Leak detection
- Meter stop detection
- Detection of oversized meter
- Detection of undersized meter or burst pipe

Integrated wireless M-bus module

The radio version of the zelsius C5 series compact meters for thermal energy has an integrated wireless M-bus module which transmits data directly to the relevant reading device. The different versions are adapted to different data telegrams and transmission intervals to specially meet the requirements of district heating plants or measurement service companies.

Pulse Data Capture (wireless M-Bus Interface)

The pulse to radio converter enables all conventional meters with a pulse output (regardless of energy type) to be integrated into the wireless M-bus system and read via radio. The PulseRadioGateway has a maximum of two meter inputs for connecting meters with pulser.

MinoConnectRadio

The MinoConnectRadio is used to receive radio data telegrams from the meters and transfer them via Bluetooth to the mobile handheld device. This rechargeable mobile equipment processes T, S and C mode and can also be used to read all OMS-compliant measuring equipment from other manufacturers. In addition, the equipment can be used in combination with a suitable connection cable to read M-bus systems, as it also has an RS232 interface.

Mobile equipment

Smartphones with Android operating systems and Android tablets can currently be used as mobile readout equipment. Various pieces of industrial equipment with Windows operating systems are also supported. We would be happy to advise you on choosing the best equipment for your application. In the future we plan to allow meter data to be read using Windows tablets.

Reading software

To make reading as easy and efficient as possible, ZENNER offers various solutions perfectly tailored to the various applications. This offering ranges from highly economic reading software without route guidance, to a reading and configuration solution, to a professional, card-based route management system including an interface with the most common billing systems.

Our wireless M-bus radio system is a standardised, non-proprietary system. This means that as well as the ZENNER reading options listed above, our customers can also use their own software solutions. ZENNER will provide you with support in integrating the radio protocols into your system solution with associated sample equipment and technical documentation.

LPWAN Radio System

For the wireless remote reading via the Internet of Things

Billions of intelligent objects (Smart Things) are connected around the globe on the Internet of Things (IoT). It is also possible to globally integrate such metering devices as water meters, heat meters, gas meters and energy meters using radio technology.

Smart meters use the smallest data volumes for communication. All they need is a very low data rate and minimum battery power. The LPWAN technology is predestined for reading measuring instruments because it covers a long range and uses a low data rate. It can be realized at low cost in particular for reading water meters and other measuring instruments.

LPWAN stands for Low Power Wide Area Network and characterises a wireless telecommunications network with minimal power consumption, in which battery-powered objects such as sensors, radio-enabled water meters or heat meters in particular can be connected. Equipped with suitable radio modules, like the ZENNER EDC module, water meters, heat meters, gas or electricity meters can be integrated in these networks.

Zenner is relying on two communication standards in the development of smart LPWAN solutions for the Internet of Things. On the one hand on the internationally increasingly established communication standard LoRaWAN™ and on the other hand on Sigfox. LoRaWAN™ was developed by the LoRa® Alliance, an international non-profit organisation with the declared aim of establishing LoRaWAN™ as the communication standard for the Internet of Things.

On the other hand it is also relying on the solution Sigfox. The French company Sigfox specialises globally in the development of wireless networks for the Internet of Things. Water meters and heat meters, heat cost allocators and smoke detectors will be developed by Zenner in the future in such a way that they are in a position to understand both standards - LoRaWAN™ and Sigfox.

1

1 Measuring instruments with LPWAN

Battery-operated measurement instruments to measure the consumption of water and power with a bi-directional communication interface send their consumption values wirelessly to LPWAN gateways.

2 Smart home with LPWAN

Smart home instruments such as smoke detectors with an LPWAN interface for bi-directional wireless transfer send their data to LPWAN gateways.

3 Sensors

Any sensors with a bi-directional communication interface in industrial operations, buildings or smart cities can also be integrated into the LPWAN system.

The LPWAN gateways receive the individual radio telegrams and send commands or updates as necessary to the individual sensors. The data telegrams are managed by a network server.

The data is stored in cloud-based databases and is available there for further use and evaluation, e.g. during energy monitoring, for consumption billing, to initiate service calls or for alarm signalling.

Appropriate web applications are provided for the corresponding user groups for different uses.

Stationary GSM system

Remote meter reading and measurement point monitoring via GSM and internet

There are various fields of application for remote meter reading via GSM (Global System for Mobile Communication).

One of these is remote reading of measurement points installed in systems where effective readingvia walk-by radio or M-bus is not an option.

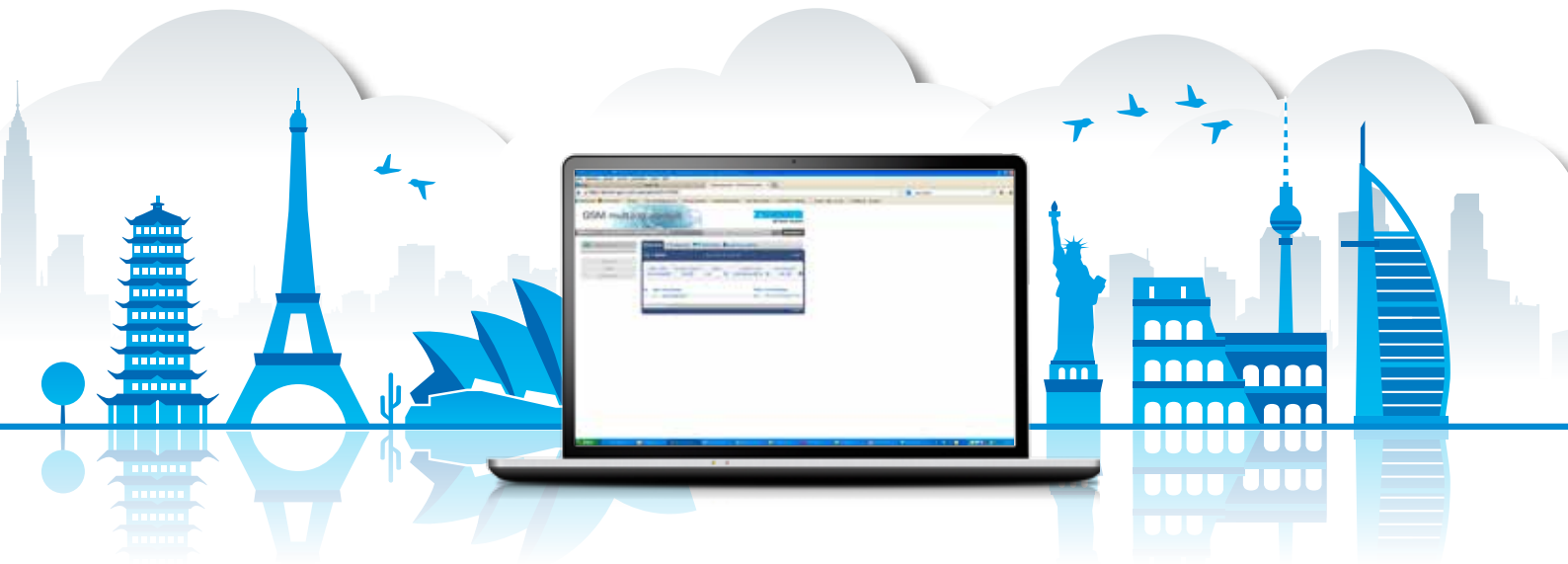
Bulk consumer measuring points can also be read easily and at short intervals via GSM. Other fields of application are leak detection and pressure monitoring. An alarm message is sent via SMS in the event of an unusual operational status.

Long travel times and complicated access, for example to meters integrated into shafts, often result in huge effort being expended. This increases the more often the meter has to be read. With ZENNER's GSM solution these are problems of the past, and an investment in our GSM system will pay for itself in a very short time.

often the meter has to be read. With ZENNER's GSM solution these are problems of the past, and an investment in our GSM system will pay for itself in a very short time.

Up to two meters or pulse outputs are connected to our GSM data logger GSM multilog for remote reading via GSM. The battery-operated data logger has an integrated GSM modem and stores the meter readings at regular, freely configurable intervals. The data are transmitted to a server via SMS. The highest level of data security is guaranteed. Consumption data can be retrieved and evaluated via a protected internet portal.

The data is therefore available for access at any time. The same portal can be used to individually configure the GSM multilog and for example set up alarm messages.



GSM overview

1 2

The meters can be connected to the GSM multilog using a reed pulser or ZENNER's electronic EDC pulse module.

GSM multilog saves the meter reading at regular intervals and transmits the saved data and any alarms to the GSM multilog cockpit via SMS. The SIM card is preinstalled.

The GSM multilog cockpit receives, saves and manages the transmitted data. The data remain available there for import into billing systems or for energy monitoring purposes.

GSM system components

GSM multilog – battery-operated data logger with integrated GSM modem

The GSM multilog data log is connected via a pulser to the water meter being monitored. GSM multilog saves the meter reading at regular intervals (e.g. hourly) and transmits the saved information via SMS to a server generally once a day. The mobile radio card required for SMS data transmission is preinstalled ex works as standard. The server receives, saves and manages the transmitted data.

GSM multilog users are granted protected access to our online portal GSM multilog cockpit. The consumer information saved can be retrieved here. In addition, each user can individually set configuration settings for alarm messages and view overviews, comparisons or analyses of consumption profiles.

Technical data

- Functions: remote meter reading and pressure monitoring
- Weight: approx. 800g
- Dimensions: 120x80x55 mm (LxWxH)
- Mounting: wall mounting
- Protection class: max. IP 68
- Temperature range: -20°C to +50°C
- Power supply: lithium battery 3.6V
- Current consumption: idle: approx. 0.04 mA; active: approx. 30 mA; transmitting: max. 250 mA
- Modem: integrated quad band GSM modem

Use

- Reliable data capture and remote meter reading at measuring points with no external voltage supply
- Monitoring bulk water meter and measuring points for bulk consumers
- Optional pressure monitoring
- Alarm messages
- Leak detection

Alarms

- For burst pipe or leak
- For excess or insufficient pressure
- For errors detected

Function features

- IInternal, self-regulating real time clock
- Internal self-monitoring functions (reception level, battery voltage)
- Daily transmission of saved values
- Two pulse inputs, two message inputs, other variants upon request
- Variant with analogue input (0/4…20 mA) available
- Meter values every hour
- Analogue values every 15 minutes
- Optional: pressure sensor: 4...20 mA; 0...25 bar

Benefits

- Maximum transmission security via SMS
- Plug ’n play: ensuring a high level of installation safety
- Battery operation: with daily messages, battery life up to 7 years
- No configuration on site, completed via automatic configuring
- Complete solution: internet-based data centre with interface to billing systems
- Integrated data logger with time synchronisation

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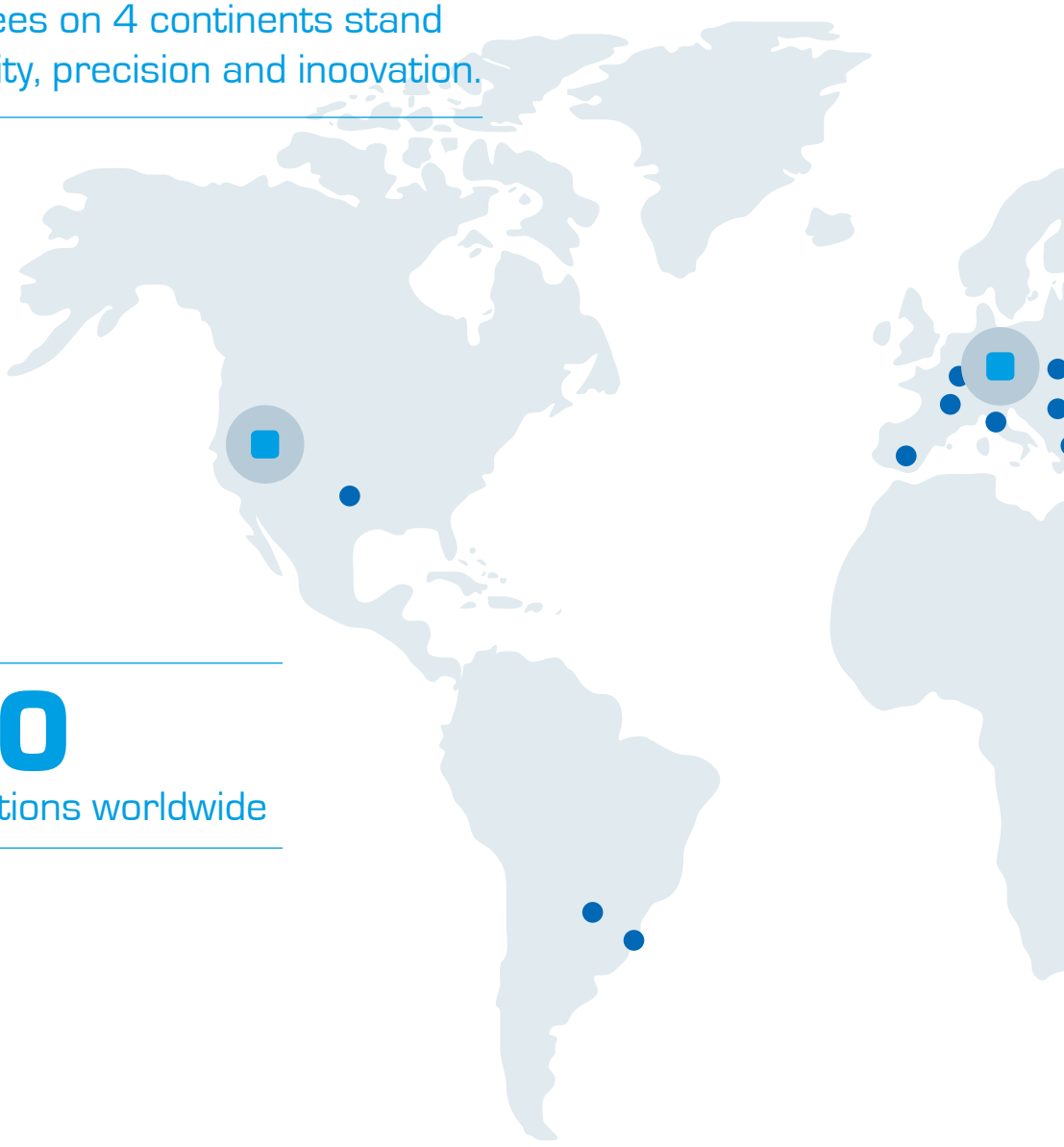

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locations worldwide

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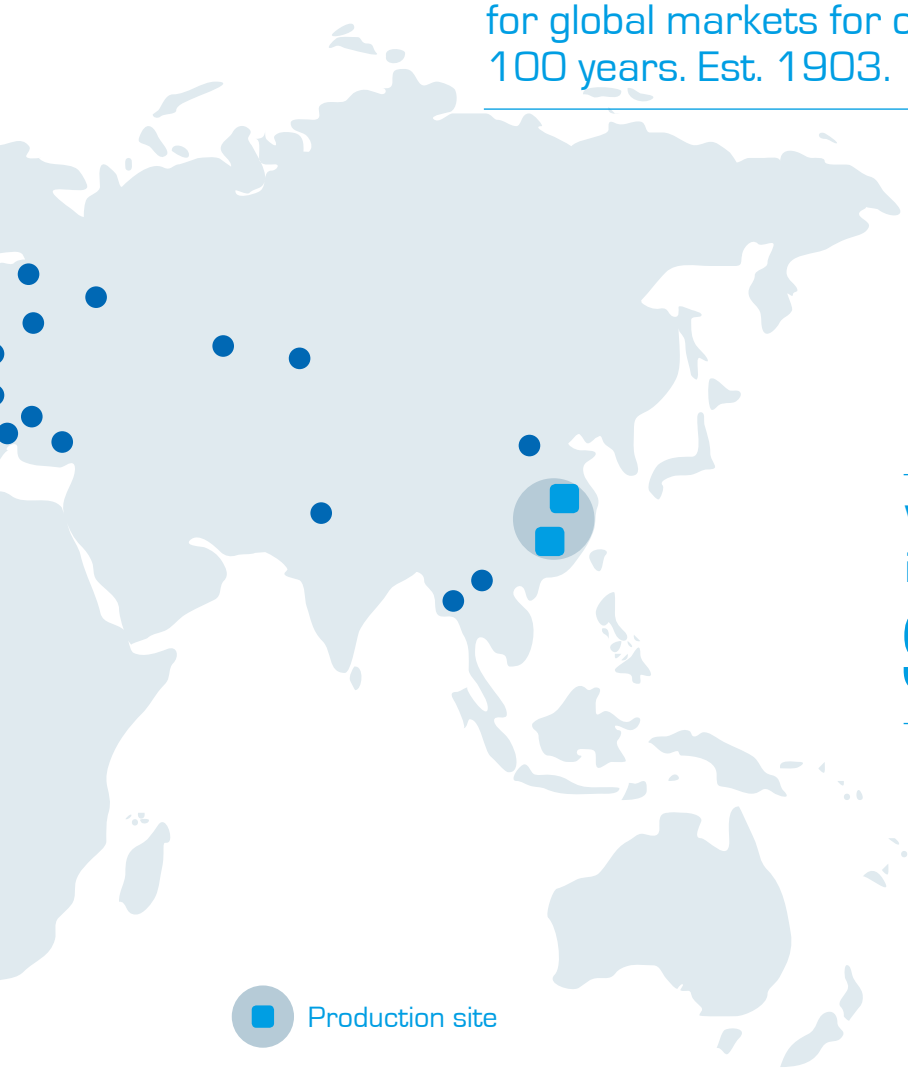

We export our products in 90 countries

90

Production site

Subsidiary

ZENNER International GmbH & Co. KG
Römerstadt 6
66121 Saarbrücken
Germany

Telefon +49 681 99 676-30
Telefax +49 681 99 676-3100

E-Mail info@zenner.com
www.zenner.com