INSTRUMENTS
HIGH-QUALITY INSTRUMENTS MAKE THE DIFFERENCE

The ROSEN Group supports industries, with a focus on integrity and maximizing asset lifespan. Our wide range of products and services contribute to safe and reliable infrastructure operation.

ROSEN MAKES THE DIFFERENCE
ROSEN is an expert in sensor and data acquisition technologies and supplies sophisticated instruments. Such as body inspection systems for pipe mills, data loggers, tool tracking and locating systems, and other sensor systems. Our products are designed and built with high in-house production depth. More than 800 employees at our research and development centers worldwide, enable us to create and provide professional and customized solutions in a very short time frame.
The diversified know-how of the ROSEN Group in the engineering of electronics, mechanics, plastics, sensor technologies, networks and software solutions, is the basis for providing state of the art technology.

AVAILABLE WHEN YOU NEED IT
Our in-house production and worldwide locations provide an optimized process to dispatch time, technical in-house services, as well as an on-site support if necessary. All products are provided as single components and/or complete systems.

SOFTWARE – EASY DATA ACCESS AND ANALYSIS
ROSEN has created customized software solutions and services for various industries. Developed entirely in-house, our software interface ensures easy data visualization with functionalities such as project administration, data reading and reporting.

ROBUST AND RELIABLE
Our wide variety of expertise and long-term experience enables us to provide cost efficient and reliable solutions for our customers.
ROSEN is the first choice for instruments of the highest quality. With a robust and ergonomic design for long-life operation, even in harsh conditions, or for special applications such as ATEX certification. We focus on system integration and comfortable interfaces.
A complete range of instruments are used for our inspection services and are continuously improved on the basis of our operations experience.

ATEX COMPLIANT INSTRUMENTS FOR HAZARDOUS ATMOSPHERE
Our commitment to a safe working environment is demonstrated by the extensive range of instruments matching the industry standards and regulations. ROSEN production quality assurance is certified according to DIN EN 80079-34, which allows us to manufacture ATEX equipment.

ROSEN has a team of qualified experts responsible for handling, documentation and maintaining ATEX relevant equipment and components.
All equipment, materials and accessories have to be ATEX certified to be permitted to operate within a designated ATEX zone.
ROSEN’s tool tracking and locating system is a two-in-one solution. It provides highly reliable detection of inspection and cleaning tools in pipelines. It can also track and locate in-line inspection or cleaning tools during their passage through a pipeline. The system is equipped with extreme low frequency (ELF) transmitters or strong magnets. The signals of the Intelligent Transmitter (ITX) are detected by a receiver. We deliver a complete system that consists of an Electronic Tool Detector (EPD) and an Intelligent Transmitter (ITX). We also offer a Pipeline Data Logger (PDL), Temperature Data Logger (TDL), Above Ground Benchmarker (BM), and Marker Magnets (MM). Our customers can combine any of these components to meet their specific needs.

As a one-stop shop, ROSEN offers tailor-made cleaning tool products and cleaning services for a variety of applications, with carefully selected components, and selection of cleaning tools.

**OUR SYSTEM PROVIDES**
- A robust stainless steel housing for harsh operation conditions in most liquid and gaseous media
- Long operating time
- Selectable signal mode from 1:1 to 1:6 or continuous (depending on tool speed and required battery lifetime)
- Easy battery replacement
- 22 Hz extremely low frequency signals
- Transmitters, that are available for pipes with an outside diameter between 3” and 56”
- A wide range of cleaning tools and equipment

**AND WORKS FOR**
Liquid, Crude Oil, Water, Gases, Refined products

**OPERATION ACTIVITIES**
Cleaning, Flooding, Dewatering, Inspecting and Batching

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1. Temperature Data Logger (TDL)
2. Electronic Tool Detector (EPD)
3. Pipeline Data Logger (PDL)
4. Intelligent Transmitter (ITX)
5. Above Ground Benchmarker (BM)
6. Marker Magnet (MM)
ELECTRONIC TOOL DETECTOR (EPD III / ATEX EPD)
A STREAMLINED DEVICE

THE HAND-HELD RECEIVER
ROSEN’s EPD III device comes with a new ergonomic design, improved graphic display and extended detection capabilities. The Electronic Tool Detector device is used in combination with a transmitter (ITX series), or magnetic signals from in-line inspection (ILI) tools or cleaning tools equipped with tracking magnets. It is part of our tool tracking and locating system. In addition to determining the precise location of a stationary tool, the device can be used for monitoring the passage of a tool.
The EPD includes a hand-held unit, the antenna, an antenna cable for the connection, and the carrier for easy handling of the EPD.

KEY ADVANTAGES
- ATEX EPD available
- Monochrome, non-reflecting graphics display
- Keypad-operated hand-held unit
- Able to detect extreme low frequency and magnet signals
- Built-in GPS module (Time/Location)
- Bluetooth interface
INTELLIGENT TRANSMITTER (ITX)
ROBUST AND RELIABLE

THE TOUGH GET GOING
To track and locate during their run, inspection or cleaning tools are usually equipped with an intelligent transmitter (ITX), or with magnets. The electromagnetic signals of the ITX transmitters can be received by an instrument outside of the pipeline, e.g. the Electronic Tool Detector or Above Ground Benchmarker.
Their compact, rugged design and robust materials allow operation in virtually all products and media. ITX transmitters are available for all pipe sizes from 3” to 56”. For smaller sizes up to 12”, complete transmitter tools are available. For larger sizes, a bolt-on flange is used for easy mounting of the ITX to any cleaning or inspection tool. ROSEN’s transmitters operate up to 1000 hours with a signal range of up to 23 meters (75 feet).
All ITX transmitters are designed for use with ROSEN’s tool tracking and locating receivers and cleaning tools. They feature a compact design, high signal range for long distance detection, and longer operating time. They are also best in class for performance, safety features, and can be activated by an external switch.

KEY ADVANTAGES
• High signal range (Distance up to 23m/75ft)
• Applicable in almost all media due to stainless steel housing
• Max. pressure 200 bar (Up to 300 bar on request)
• Standard operating time up to 1000h (Higher on request)
• Max. operating temperature 85°C/185°F
• External on/off switch
• Easy battery replacement
• Available for 3” or larger in-line inspection and cleaning tools
• Pressure switch activation available on request
• ATEX compliant version available
<table>
<thead>
<tr>
<th>Feature</th>
<th>ITX 251 From 3&quot;, 1.5D</th>
<th>ITX 503 From 4&quot;, 1.5D</th>
<th>ITX 504 From 6&quot;, 1.5D</th>
<th>ITX 804 From 8&quot;, 1.5D</th>
<th>ITX 806 From 8&quot;, 1.5D</th>
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<tbody>
<tr>
<td>Application area</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Nominal battery life alkaline (1:3 mode)</td>
<td>220h</td>
<td>500h</td>
<td>500h</td>
<td>500h</td>
<td>500h</td>
</tr>
<tr>
<td>Nominal battery life lithium (1:3 mode)</td>
<td>1000h</td>
<td>1000h</td>
<td>1000h</td>
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<td>1000h</td>
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<tr>
<td>Free airspace pickup range</td>
<td>6.5m (21.3ft)</td>
<td>10m (32.8ft)</td>
<td>11m (36ft)</td>
<td>21m (68.9ft)</td>
<td>23m (75.5ft)</td>
</tr>
<tr>
<td>Covered range 1</td>
<td>3.1m (10.17ft)</td>
<td>4.4m (14.43ft)</td>
<td>5.3m (17.39ft)</td>
<td>10.3m (33.79ft)</td>
<td>11.3m (37.07ft)</td>
</tr>
<tr>
<td>Covered range 2</td>
<td>2m (6.6ft)</td>
<td>3m (9.8ft)</td>
<td>4m (13.1ft)</td>
<td>6m (19.7ft)</td>
<td>7m (23ft)</td>
</tr>
<tr>
<td>Weight</td>
<td>258g (0.57lb)</td>
<td>2.0kg (4.4lb)</td>
<td>2.2kg (4.9lb)</td>
<td>6.8 kg (15lb)</td>
<td>10 kg (22lb)</td>
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<td>Pressure release safety valve</td>
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<tr>
<td>ATEX available</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

1 12.5mm/0.49” pipeline wall thickness
2 22mm/0.87” pipeline wall thickness

For detailed technical data please refer to technical datasheets.
REFERENCE LOCATION
During in-line-inspection runs, the passage of inspection tools is monitored with above ground benchmarker (BM) systems. ROSEN’s BM10 provides highly accurate reference points at specific intervals along the pipeline. The device uses accurate clocks and locations which are synchronized by GPS time. They are able to detect, and record very precise small changes of the magnetic field, generated during passage of in-line inspection tools and transmitter signals. After inspection runs, the data of the tool and all benchmarkers are correlated by time in order to get highly accurate reference points. The Full Service Box is developed for easy transport, quick recharge and fast read out.

KEY ADVANTAGES
• Precise reference points by GPS (Time/Location)
• Non-reflecting digital display
• Fast data acquisition
• User friendly software
• Robust & proven system
• Compact size
• Full Service Box (Transport/Recharge/Read Out)
MARKER MAGNETS FOR PIPELINES
In order to detect pipeline damage or weakness, pipes are regularly examined with inspection tools. As it travels through the pipeline, the inspection tool detects the present state of defects and possible weak points, and then records these in an internal memory unit.
The magnets are attached at precisely defined locations every 1-2 km, typically in the 12 o’clock position on the pipeline. When the tool passes this point, its electronics will register a strong magnetic field and record its location in an internal memory unit, along with the precise time of day.
For pipelines with higher wall thickness or exterior coatings, a heavy duty marker magnet is available.

KEY ADVANTAGES
• Reliable reference points also available for difficult environments (Offshore services, mountainous terrain, shore areas, salt water)
• Long lifetime and durable design
• High performance polyurethane elastomer
• Flattened shape for decreasing accidental removal
• Stronger magnets available on request
ADD INTELLIGENCE TO YOUR TOOLS
ROSEN’s Pipeline Data Loggers (PDL and ATEX PDL) are designed to collect and store operational data during a pipeline inspection. They provide operators with detailed time-dependent data such as temperature of the medium, pressure conditions in the pipeline, differential pressure and acceleration. The PDL is designed as a stand-alone unit, which can be added to any pipeline cleaning or inspection tool from 4” to 56”. The newest development is ROSEN’s ATEX PDL which offers several advantages, such as indication of bends including bend angle.

The user-friendly software makes it easy to configure and read out the stored data. All data can be analyzed based on various criteria and visualized with ROSEN software. By analyzing the data it is possible to use recorded temperature profiles for wax models, to detect and locate restrictions and deposits, monitor tool behaviour, assess cleaning progress and effectiveness, and verify pipeline conditions.

DATA ACQUISITION & REPORTING – FULL SERVICE
The provided software allows tiled displays of the different measurement criteria. It is an intelligent platform to select and synchronize time frames of a particular interest. We offer full service that includes the data acquisition and reporting of your survey results.

KEY ADVANTAGES
- Precise recording of operational data
- Robust stainless steel housing
- Functions in almost all media
- Max. pressure 200bar (Up to 300bar on request)
- Standard operating temperatures from -20°C/-4°F to 75°C/167°F (Up to 150°C/302°F on request)
- Can be mounted on tools used for 4” to 56” inspections
- Fast accurate data reporting
- ATEX compliant version available
TEMPERATURE DATA LOGGER (TDL)

PRECISE LOGGING

TEMPERATURE CONDITIONS
The temperature data logger (TDL) is a very precise logging tool with a high accuracy and outstanding measurement resolution. It can be used to record the temperature changes of a pipeline over time. The system consists of three main components; which are the measuring tip (metal tip or magnet), a rod/lance with a length up to 3 meters or an attached cable sensor, and an electronic battery case.

KEY ADVANTAGES
• Temperature measurement with high resolution, high accuracy and low drift
• Wireless data transmission
• User friendly software
• Temperature rod/lance from 1,5m/5ft - 3m/9,5ft
• Magnet sensor version for above ground pipelines

TDL system

TDL software component
CLEANING PRODUCTS
Inline cleaning addresses the challenge of contaminated pipelines and can be utilized during commissioning, regular cleaning, and for pre-inspection cleaning. Our Cleaning Tools have been used for decades in pre-inspection pipeline cleaning operations conducted by the ROSEN Group, as well as numerous major pipeline operators. We offer tailor made cleaning tool products and cleaning services (RoClean CLP Service) for a variety of cleaning applications. Components include brushes, cups, discs, magnetic spacer, and electronic instrumentation; such as transmitters and pipeline data loggers. We tailor our tools to your application and deliver standard configurations at competitive pricing.
ROCLEAN CLP SERVICE
The RroCleaN service begins with close cooperation with the pipeline operator. An analysis of the pipeline conditions is conducted, based on past in-line inspection measurements, pressure and flow readings, cleaning records, and relevant documentation. Subsequently the development and implementation of a tailored cleaning program is carried out. The progress of the cleaning program can be documented and monitored with our asset integrity management software suite ROAiMS.

ROAIMS FOR PIPELINES
ROAIMS is a collection of interoperable software tools that support asset maintenance in a reliable, safe and cost effective way. The key objective of ROAIMS is to provide an efficient, auditable and well-structured integrity process to support operators in the following:
• Identifying potential for operational lifetime extension of an asset with balanced costs
• Reducing downtime during operation by having an optimized risk-based maintenance plan
• Avoiding unnecessary repairs and interventions
• Defining appropriate inspection intervals from a proactive rather than reactive approach

ROGEO XYZ SERVICE
Knowing the accurate position of your pipeline is crucial for managing your assets in Geographical Information System’s (GIS), and for planning field activities like maintenance work and field verifications. If your pipeline is exposed to ground hazards, ROSEN RoGeO XYZ Service is a key element to assure the pipeline integrity by identifying pipe movement and bending strain. ROSEN uses the latest technology in inspection to obtain data for our RoGeo services (ROSEN Geographical). Our well-structured, certified data evaluation process provides exact pipeline reference coordinates as an input for an illustrated plan, elevation and distance view. Findings from other inspections can be geographically referenced with the same high accuracy.
WHAT WE DO
WE TRANSLATE TECHNOLOGY INTO SOLUTIONS

The ROSEN Group makes the difference, with the extensive long-term experience and expertise of our employees. This enables us to offer cost efficient and reliable solutions for our customers. Our in-house production and global locations provide instruments at the right time and location, that are flexible and of the highest quality.

THE ROSEN GROUP

“Empowered by technology” is the promise that we at ROSEN deliver, by enhancing the operations of our customers, making them safe, cost effective, and more efficient. We are a worldwide provider of cutting-edge solutions in all areas of the integrity process chain. We suit a wide range of industries: Oil & Gas, Energy, Process, Mining, Manufacturing, Telecommunications and Transportation; for a wide range of assets, including pipeline, tanks and vessels as well as wind turbines, trains, telecommunication towers and many more.

The ROSEN Group is privately owned and financed, we are not bound to stock markets or strategic investors. This enables us to be as flexible as possible to suit nearly every customer need on a global scale.

We have an office near you, wherever you are based.
If you would like more information, please contact us:

www.rosen-group.com

LOCATIONS