



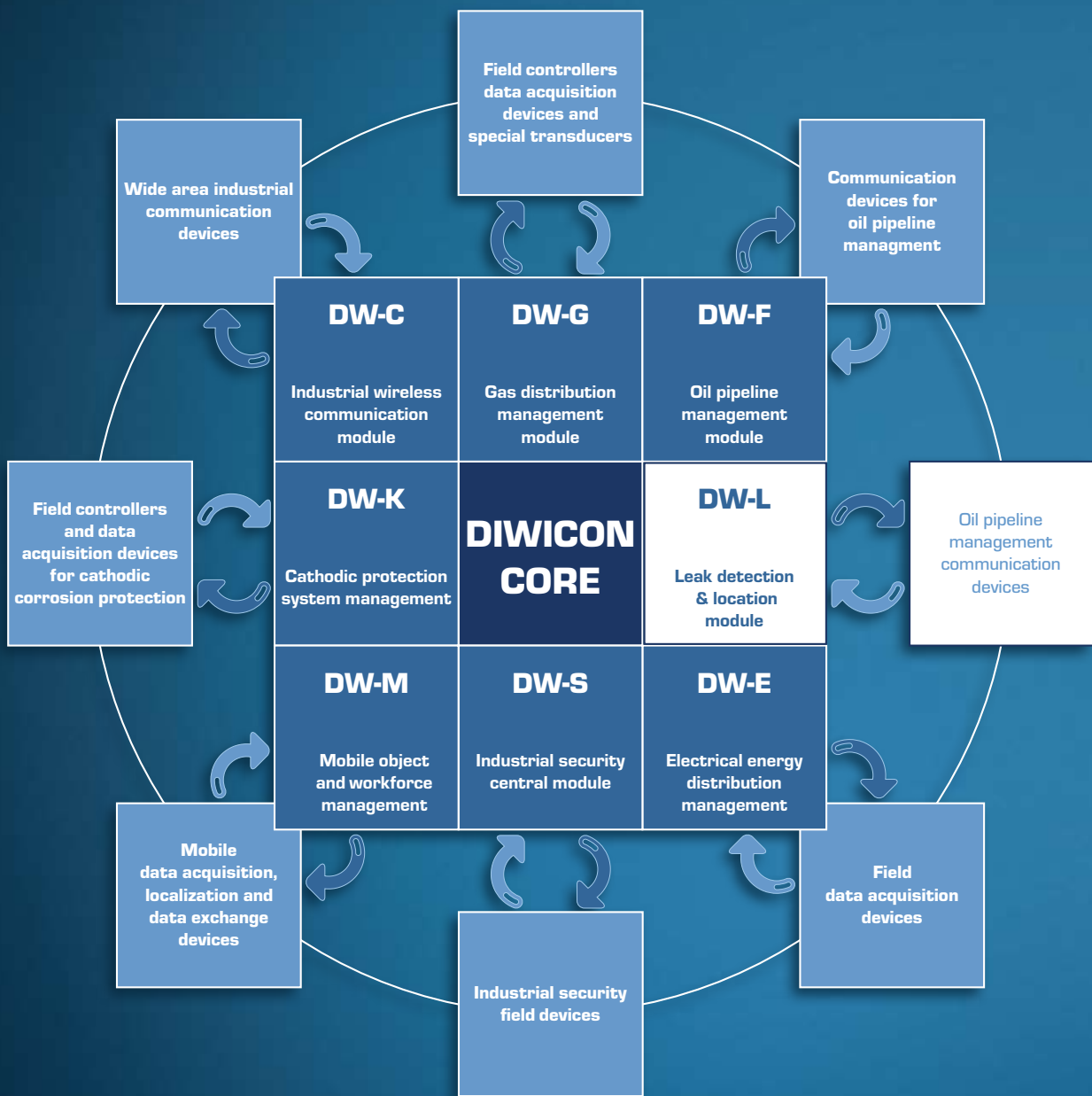
**Leak detection and localization system**



# DIWICON

## DIWICON-L

DIWICON-L is a member of the DIWICON technology family which offers a range vertical products and solutions for industries requiring mission critical reliability.



The DIWICON-L system is designed to detect and locate losses from liquid transport pipelines. Losses from pipeline networks, apart from environmental damage, can result in life threatening situations. Quick detection and precise localization of losses reduce or eliminate resulting damages.

#### ADVANTAGES OF THE DIWICON-L SYSTEM

- Continuous hydraulic monitoring
- Event detection within 1 minute
- Localization precision +/- 250 m
- Can be used on short pipelines
- Can be integrated into any SCADA system
- Standardized wireless data communication

The DIWICON-L system is an indispensable accessory for crude oil, petroleum product, and liquid gas pipelines. It gives the pipeline operator the possibility to quickly react to pipeline accidents.

#### SYSTEM ELEMENTS

- Ultrafast pressure transmitters
- Field signal processing units
- Field data communication devices
- Central server computer
- Monitoring software package

#### TECHNOLOGICAL DATA\*

##### Standing pipeline:

- Detection threshold: 0.5 liter/min.
- Localization precision: +/- 100 m
- Alarm: within 2 minutes

#### SYSTEM CHARACTERISTICS

- Unlimited expandability
- Modular
- Standard data interfaces
- Thin client technology
- Redundancy
- Distributed intelligence

##### Transit pipeline:

- Detection threshold: 0.5 liter/min.
- Localization precision: +/- 250 m
- Alarm: within 2 minutes

\*The data shown is based on a 100km DN200/PN64 crude oil pipeline. The sensitivity, localization precision, and reaction time improve on shorter pipelines.



# DIWICON

## DIWICON-L Technology

The leak detection system is based on CASON DIWICON technology.

The close cooperation between the hardware, software, and communication elements which make up the system provide monitoring, displays, and automatic analysis of the hydraulic events within the pipeline.

When a loss occurs, the system generates an alarm and the operators make the event data available.

## DIWICON-L Operation

The CASON DIWICON-L technology is based on the monitoring and automatic evaluation of pressure variations within the pipeline.

Pressure waves are created when liquid escapes from a closed pipeline. The leak detection pressure transmitters detect these pressure waves at different times.

The transmission speed of the pressure wave through the entire pipeline is known based on previous hydraulic events.

Knowing the time of detection and the transmission speeds, the point of origin of the pressure wave can be localized.

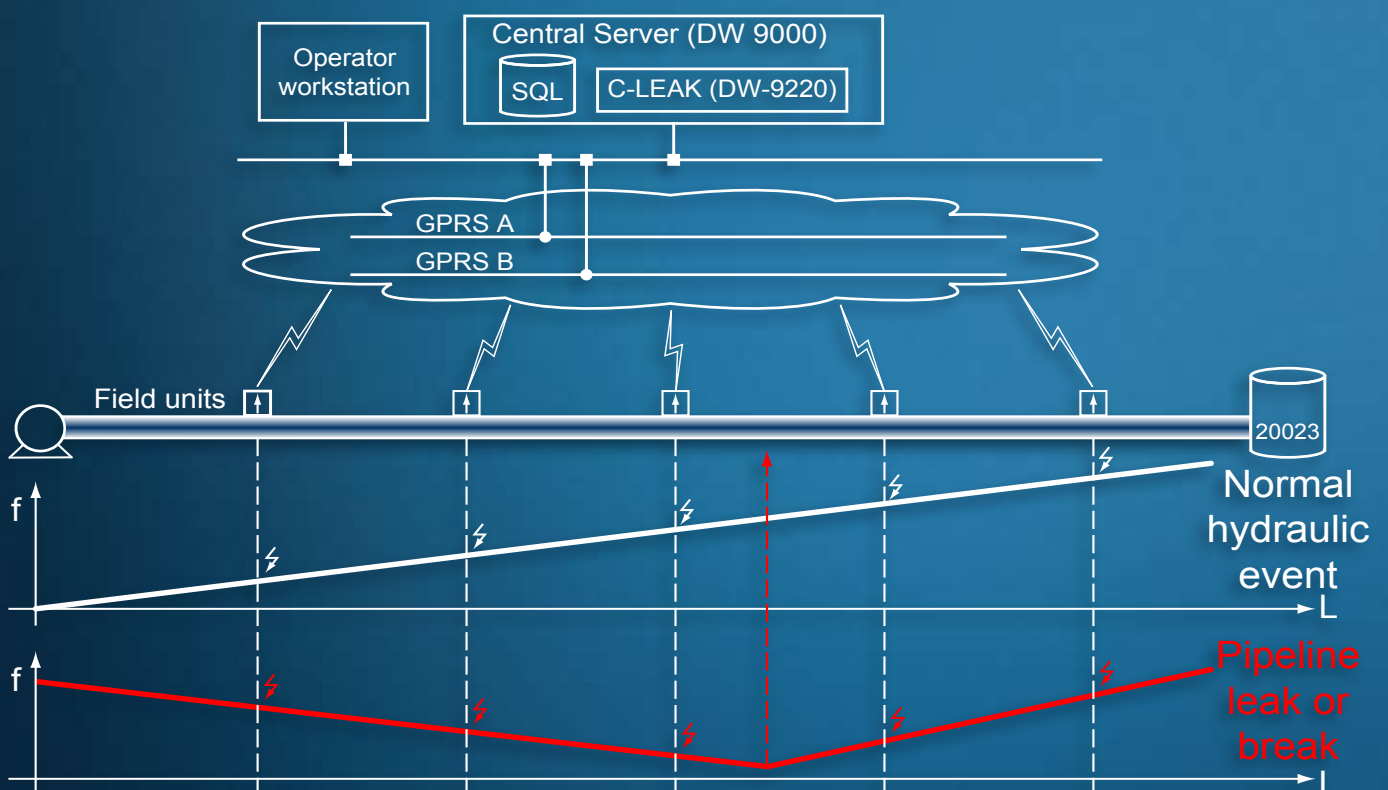
## Sensitivity and precision

The amplitudes of the resulting pressure waves vary according to the type of event, and can be very small [10-30 mbar with 100 bar transport pressure].

Precise time synchronization of measurements ensures precise localization.

The DIWICON-L system's sensitivity is ensured by special pressure transmitters with a 0.1 mBar sensitivity which can perform 5,200 measurements per second.

The time synchronization of the system is performed by a separate GPS module with 1 ms accuracy.





## DIWICON-L FIELD SYSTEM

The task of the field system is the local collection of pressure data, the detection of pressure waves, and communicating the data with the central system.

### Timeserver (DW-712 UTC)

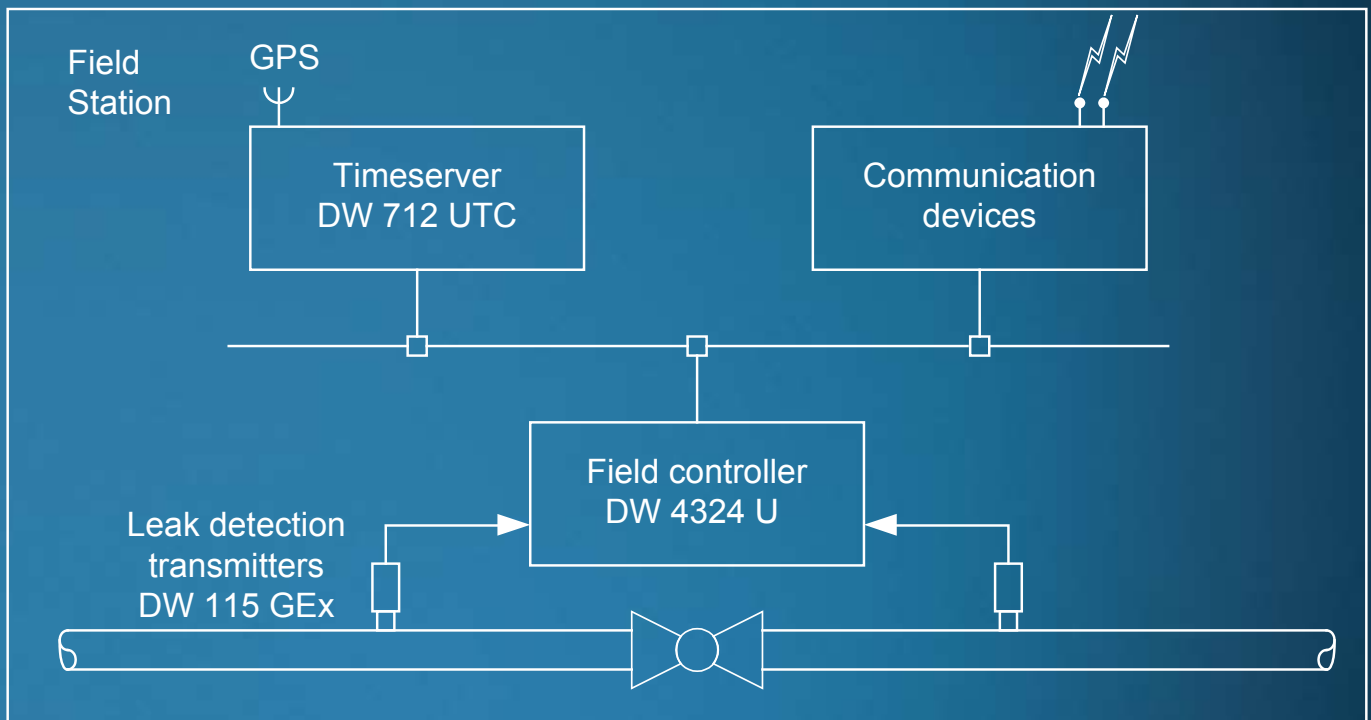
The role of the DIWICON 712 UTC exact time server is to provide exact system time synchronization to devices connected to the field Ethernet TCP/IP network.

The devices make use of an internal GPS satellite receiver to serve precise 1 ms time synchronization over a standard SNTP protocol.

### Communication devices

The pipeline monitoring system, depending on its configuration, can connect to the central server via the standard TCP/IP network of the leak detection system.

When an established communication method is not present, the long distance data communication DIWICON-C industrial GPRS data transmission devices can be used.



### Leak detection pressure transmitters (DW-115 GEx)

The task of the special pressure transmitters is the detection of pressure waves.

Their most distinct characteristic is their high sensitivity and low reaction time.

The transmitters are capable of reliably detecting 10 mBar pressure waves with 100 Bar transport pressure.

The speed transmitter's makes possible 10,000 measurements / second pressure value samples.

### Field Controller (DW-4324)

The signal processing unit performs the processing of signals from [the] two leak detection pressure transmitters.

The device performs 5,000 measurements per second for each input.

The 24 bit digitalized signals are processed locally using mathematical statistical algorithms.

Following the pressure wave selection and determination of propagation direction, the data is transmitted to the center via the communication system.

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