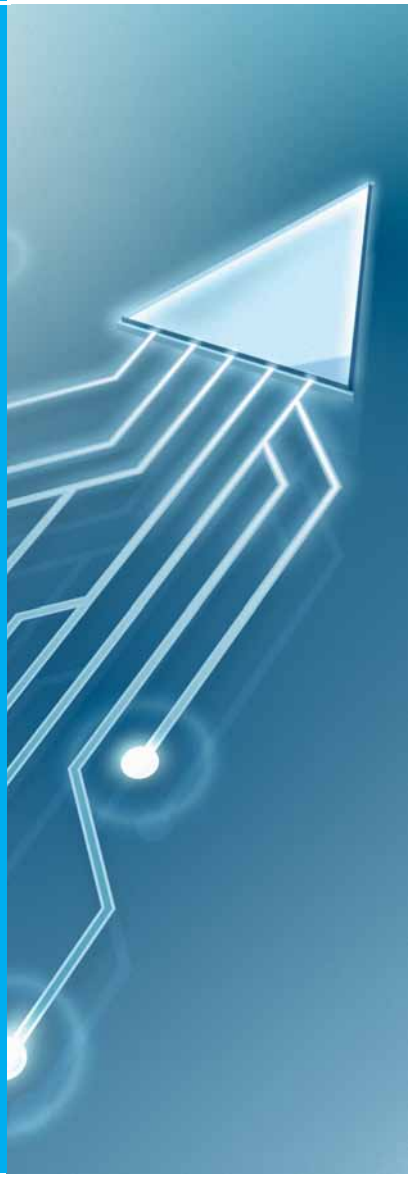
WirelessHART Solutions

... for real world applications



Endress+Hauser

People for Process Automation

WirelessHART solutions reduce costs

Project costs Endress+Hauser's WirelessHART solutions provide you with more information about your process and plant. Your project costs are also reduced thanks to more efficient planning and rapid installation.

- **Process monitoring and optimization**
  WirelessHART allows you to better monitor your process. With the additional information it provides, your processes can be more precisely monitored and optimized. This results in increased efficiency and higher flexibility of production, as well as reduced energy consumption. Measuring tasks that are normally not realized due to the high cost of wiring, e.g. tank farms now become feasible.

- **Plant Asset Management**
  Critical points in a plant, e.g. valves, can be more efficiently integrated into your maintenance strategy by using WirelessHART. The improved data flow and additional diagnostic information favor predictive maintenance. This increases the reliability and safety of your plant, while reducing repair costs and unplanned shutdowns.

- **Tank Monitoring / Inventory Control**
  Working as part of a wireless system, WirelessHART devices acquire measured levels or material flow at regular intervals. The system transmits the information obtained to SCADA or inventory management software and, depending on application, onward to an ERP system. As a result, your inventory cost can be reduced and gaps in supply chains can be closed. This translates into the chance to maintain your competitiveness in a world with increasing globalization of production.

Advantages of WirelessHART technology:

- Remote and difficult-to-access measuring points connected without expensive cables
- Simple planning, rapid installation, quick integration into the plant infrastructure
- High level of reliability due to redundant communication paths
- Easiest upgrade of Endress+Hauser and 3rd party HART devices
- Optimal point of installation in every application thanks to the flexible adapter concept
- Non-reactive and autarkic field device operation due to battery operation
- Simple parameterization and monitoring of entire plant sections using DTM and DD technology with e.g. FieldCare, Endress+Hauser's Plant Asset Management software

Use on moving plant equipment

Applications with ever-changing locations

... or bridging of obstacles

State-of-the-art technology

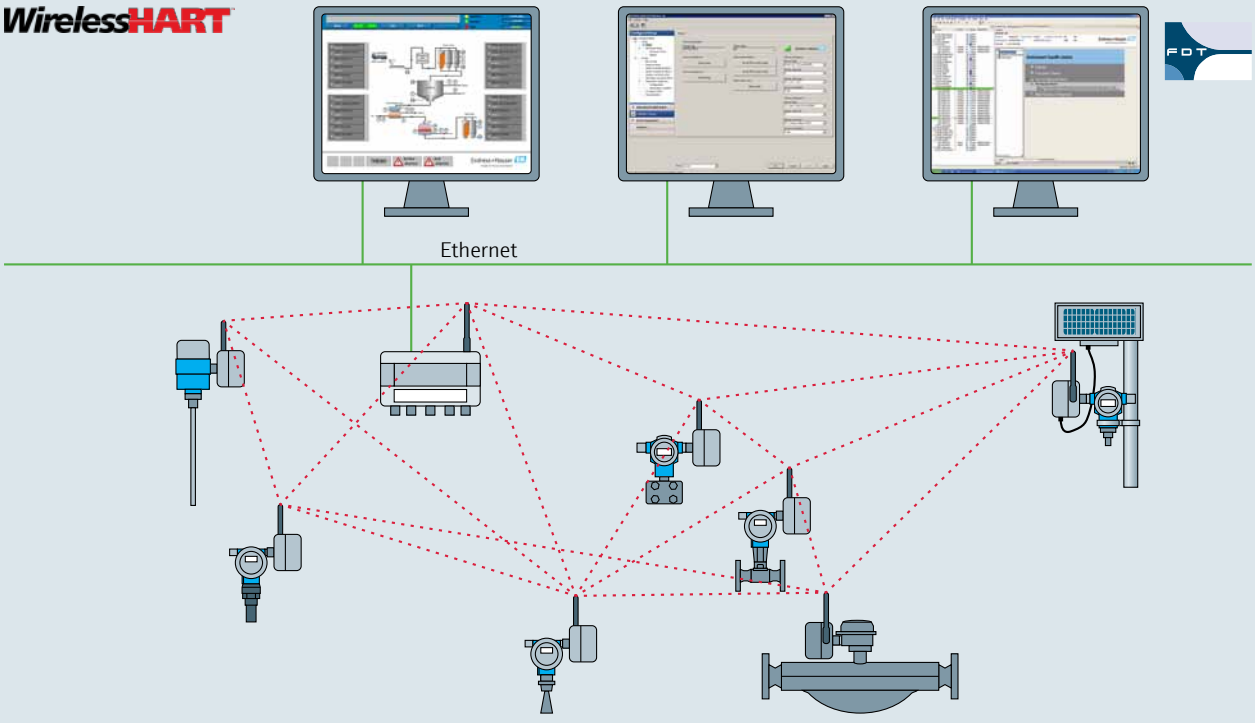
WirelessHART protocol

Communication WirelessHART is a technology for wireless communication specifically conceived for process automation. It adds wireless capabilities to the HART protocol while maintaining compatibility with existing HART devices, commands and tools.

Components of a WirelessHART network:

- The WirelessHART Adapter transmits the measurement and diagnostic information of the attached HART device: existing HART field devices are easily upgraded
- The WirelessHART Fieldgate receives the information and makes it available to the plant network via Modbus or OPC using Ethernet or RS485 communication
- The information is made available via:
  - Modbus TCP
  - HART protocol
  - EtherNet/IP
- The network and security manager is responsible for configuring, managing and monitoring the network
- The WirelessHART network protocol has built in safeguards that ensure reliable and secure communication
- The self-organizing and self-healing mesh network with redundant paths ensures reliable operation, even when obstacles or interference interrupt a communication path
- Channel hopping and blacklisting ensure reliable operation even within other networks using the 2.4 GHz band
- Time synchronized communication means power-efficient and scalable communication
- Robust security and authentication measures following open standards (e.g. encryption according to AES128) with state-of-the-art key management ensure that network and data are protected at all times

Typical WirelessHART network



In a wireless mesh network, all devices communicate with each other, allowing alternative communication paths should the shortest path be broken.

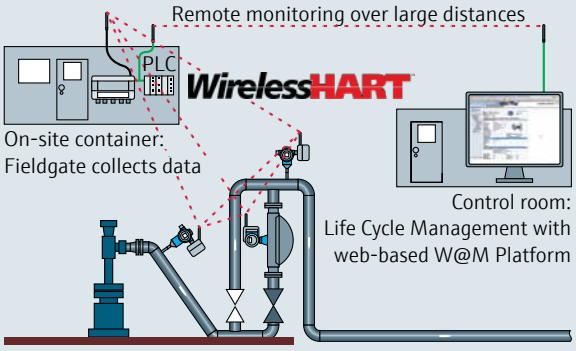
Many possibilities for use

Successfully implemented worldwide:

WirelessHART technology already finds use worldwide. Endress+Hauser's specialists have realized numerous challenging projects professionally and to the full satisfaction of their customers.

WirelessHART offers solutions for:
- Rapid and flexible installation
- Moving plant equipment
- Flexible and mobile installations
- Bridging obstacles
- Upgrading legacy technology

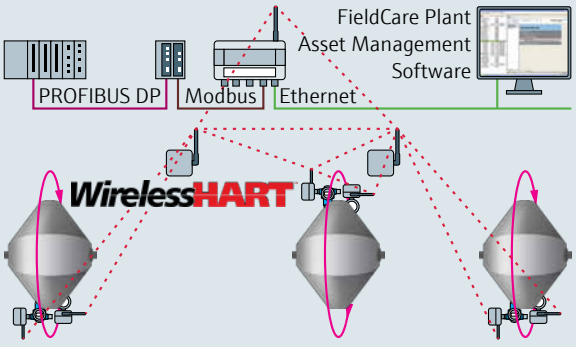
WirelessHART in the extraction of crude oil



Extraction of crude oil The requirement was for a flexible solution for the monitoring of oil well production. The use of WirelessHART considerably reduced the installation effort per well head: the installation time was reduced from 15 days to 3 days, the costs for 400 m communication cable were saved; 100 m³ cable channelling and a remote I/O per well head were rendered unnecessary.

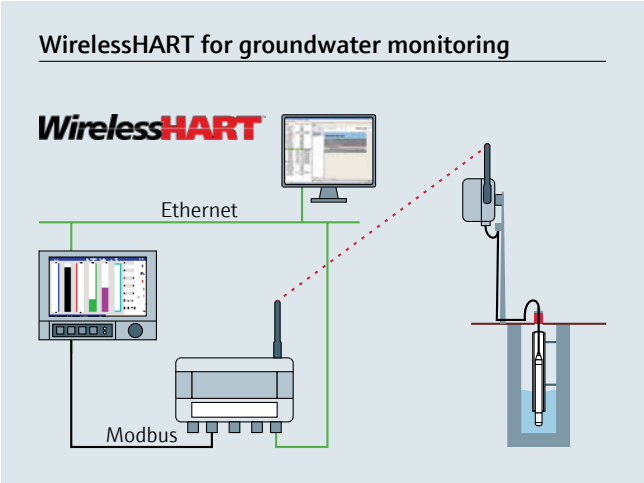
Scope of supply:
- 800 field devices, 800 WirelessHART Adapters SWA70 and 43 WirelessHART Fieldgates SWG70
- Connection to Endress+Hauser's W@M Life Cycle Information Platform
- Support in the selection and integration of field devices
- Consultation on wireless technology and network design
- On-site WirelessHART technology training

WirelessHART in the production of catalyzers



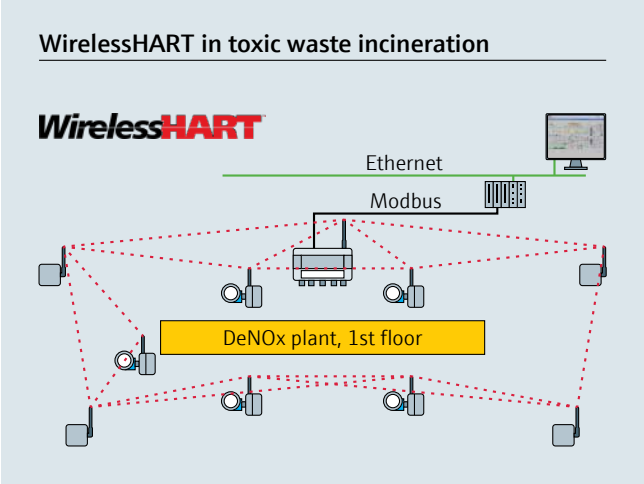
Production of catalyzers In the manufacture of catalyzers, the product is made in a large number of steps. One of these is the drying process, which is carried out in a large vacuum drum. The drum is mounted to right and left of the surface where its two conical halves meet and thus rotates about its own axis. The WirelessHART Adapters SWA70, which also provide power, are mounted directly on the field devices. Two additional adapters transmit the HART information from the instruments on the continuously rotating drum to the WirelessHART Fieldgate SWG70.

Scope of supply:
- Short overview, system integration and engineering
- HART field devices
- WirelessHART Fieldgate SWG70 and Adapters SWA70
- FieldCare Plant Asset Management
- Commissioning and start-up, training and instruction



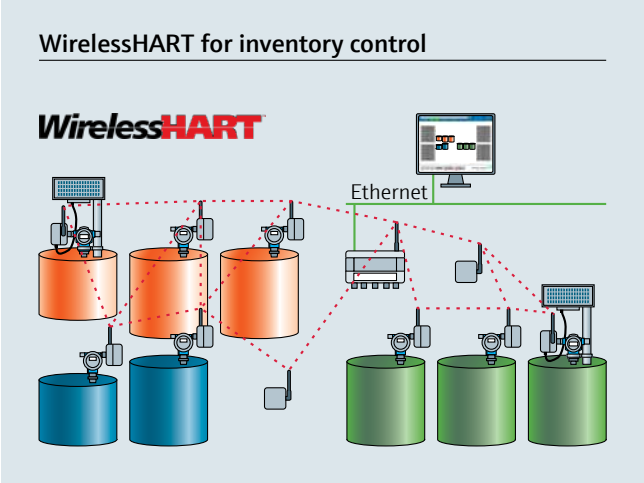
Monitoring of groundwater A flexible solution for the monitoring of groundwater at ten different places was required. The use of WirelessHART technology considerably reduced the installation effort. The system delivers reliable measurement data, which are updated every five minutes. A particular challenge was the location of the WirelessHART Adapters SWA70, as the site contained a number of high buildings and the measuring points were widely distributed. This was solved by using additional adapters as repeaters.

Scope of supply:
- 20 WirelessHART Adapters SWA70
- 1 WirelessHART Fieldgate SWG70
- 10 pressure transmitters for hydrostatic level measurement
- Memograph M RSG40 graphic data manager
- Basic and detail engineering
- Commissioning



Incineration of toxic waste During the incineration of toxic waste, poisonous flue gases are produced, which must be rendered harmless before they can be discharged to the environment. In a difficult to access DeNOx plant, the advantages of WirelessHART were demonstrated by the quick and uncomplicated realization of the project. The user benefitted from little wiring cost and considerably reduced engineering and documentation costs.

Scope of supply:
- 17 WirelessHART Adapters SWA70 and 1 WirelessHART Fieldgate SWG70
- 7 differential pressure and 5 temperature transmitters
- Preconfiguration of the adapters and fieldgate
- System integration test
- Factory Acceptance Test (FAT)
- Commissioning and training



Inventory control in a tank farm WirelessHART was chosen because it was possible to provide fully integrated inventory control while saving on installation and cabling costs. Endress+Hauser opted for division into several easily managed sub-projects, since capital expenditure was high and the realization was complex. As each sub-project was completed, it was possible to evaluate the intermediate results and create a cost/benefit analysis, in order to plan the next steps.

Scope of supply:
- Design of the mesh network
- Support during the installation of the devices
- HMI development for tank level display
- Implementation of the WirelessHART network by service
- 16 Levelflex transmitters
- 16 WirelessHART Adapters SWA70 and 1 WirelessHART Fieldgate SWG70
- SCADA software





Components at a glance

Technical data

WirelessHART Fieldgate SWG70

- Housing material:
  Aluminum
- Dimensions [mm]:
  257.0 x 285.0 x 85.0
- Mounting:
  Wall mounting
- Power:
  20 to 30 V DC, < 5 W
- Signals:
  Interfaces
  - Ethernet
  - RS-485
  Protocols
  - Modbus TCP
  - HART
  - EtherNet/IP
- Operating frequency:
  2.4 GHz acc. to IEEE 802.15.4
- No. of network participants:
  Max. 250, dependent upon minimum update rate
- Degree of protection:
  IP65; NEMA Type 4
- Type of protection:
  Ex certificate ATEX Zone 2

WirelessHART Adapter SWA70

- Housing material:
  Aluminum, polyester or stainless steel
- Dimensions [mm]:
  111.5 x 189.9 x 92.8
- Mounting:
  Screw thread M20x1.5, G1/2, NPT1/2, NPT3/4
- Operating frequency:
  2.4 GHz acc. to IEEE 802.15.4
- Transmission range under reference conditions:
  Max. 250 m
- Degree of protection:
  IP65, IP66; NEMA Type 4
- Type of protection:
  Ex certificate ATEX, CSA C/US and IEC; Zone 1
- Power:
  - Battery
    with battery life dependent upon instrument type and environmental temperature, 5–7 years for hourly update rate
  - Solar panel
    8 to 50 V DC
  - Wide range power supply
    24 to 230 V AC/DC

WirelessHART Fieldgate SWG70

WirelessHART Adapter SWA70









Products and services

Network your devices with WirelessHART now

WirelessHART Fieldgate SWG70 and Adapter SWA70
Upgrade your HART or 4 to 20 mA device with wireless technology using a WirelessHART Adapter SWA70. Our adapter and fieldgate concept allows legacy and new devices to be integrated into a wireless network.

Endress+Hauser offers a unique selection of HART and 4 to 20 mA devices as well as a multitude of supporting services. We guarantee seamless integration into the systems of a wide variety of manufacturers.

Detailed information on our offering can be found at:
www.endress.com/en/products/level
www.endress.com/en/products/pressure
www.endress.com/en/products/flow
www.endress.com/en/products/temperature
www.endress.com/en/solutions/analytical-solutions
www.endress.com/en/products/system-components-and-recorders
www.endress.com/en/solutions/plant-asset-management

The WirelessHART Adapter SWA70 makes a WirelessHART device out of every HART device. If required, the device can be powered by the built-in battery of the WirelessHART Adapter.

Field Network Engineering services:

Endress+Hauser offers a multitude of supporting services in the area of Field Network Engineering:
- Network planning and analysis
- Consultation and training on network planning
- Project management
- Technology and component selection
- Commissioning
- Maintenance over the entire life cycle

More information on Field Network Engineering:
www.endress.com/en/solutions/field-network-engineering

WirelessHART technology training:

A comprehensive training offer is available:
- Hands-on based, recognized in all industries
- Practical and user-specific
- Manufacturer independent

Details on the current training program:
www.endress.com/en/events/training





Supplementary documentation

- Field Network Engineering
  Competence Brochure – CP01088S/04/EN
- Digital communication and device integration
  Competence Brochure – CP00018S/04/EN
- FieldCare
  Competence Brochure – CP00001S/04/EN

Additional information

Web:
www.endress.com/en/solutions/field-network-engineering/wirelesshart-technology
www.endress.com/en/events/training

www.addresses.endress.com

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