

# IN-1000 CONDITION MONITORING

SAFETY BY DEFAULT WITH CONDITION MONITORING

LOWER MAINTENANCE COSTS  
UP TO

50 %

PRODUCTION DOWNTIME

0 %

**COLFAX**<sup>®</sup>  
Fluid Handling

REDEFINING WHAT'S POSSIBLE



## **IN-1000: INTELLIGENT PUMP MONITORING**

### **CONDITION AND OPERATION MONITORING FOR GREATER SAFETY AND LOWER OPERATING COSTS**

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With its SmartTechnology IN-1000 Series, Colfax Fluid Handling is defining a new generation of Condition Monitoring.

IN-1000 is an electronic and fully automated monitoring system. The modular design of IN-1000 permits easy integration into pump systems, with pre-configured settings that are the foundation of rapid, individualized startup. IN-1000 may be retrofitted at any time and allows central monitoring of up to 21 pumps with one control.

The new SmartTechnology IN-1000 series is ready to handle anything from straightforward condition monitoring to more complex monitoring activities, including operation monitoring of multiple pumps for simultaneous fulfillment to ensure your safety and operating cost requirements are met.

Operations are monitored continuously and automatically, with activity logging and storage for evaluation of your process. If unusual operating conditions occur, both audible and visual alerts are triggered and shown on a graphics-capable color display.

Because of these capabilities, maintenance and repairs can be planned in advance, there are no unplanned production downtimes or consequential damages, and maintenance intervals are extended. As a result, expenses for maintenance and spare parts go down and the long service life of each Colfax Fluid Handling pump/motor assembly can be utilized to its fullest.



# IN-1000: MODULAR DIAGNOSTIC SYSTEM

INCREASE SAVETY, MAXIMIZE EFFICIENCY, AND MINIMIZE COSTS

## Pump system monitoring for elevated protection

- The early phases of mechanical seal damage is detected by collecting and monitoring the normal leakage that is required for regular operation of this seal type.
- Mechanical oscillations are monitored and continuously compared to two threshold values defined by DIN/ISO 10816-3 and -7. As a result, vibrations during operation are detected before they can cause damage.
- IN-1000 monitors the condition of the bearing. Changes in bearing temperature are evaluated to indicate potential wear of the bearing.

Additional digital and/or analog sensors (based on specific requirements) monitor parameters such as pressure and liquid temperature.

## Two Level Alert System

Maintenance personnel receive information about disturbances and/or irregular operating conditions in plain language, accompanied by visualizations on the graphical display. If the warning threshold for one of the monitored parameters is reached, a notification appears. Warnings indicate that maintenance should be planned. If the alarm threshold for one of the monitored parameters is reached or exceeded, the system will respond with an alarm message, which has to be confirmed. Alarms indicate that maintenance and/or repairs are necessary.

## Data logging

IN-1000 records all sensor data with the date and time, which can be exported to a spreadsheet for evaluation purposes. Data logging identifies the pump's current operating conditions. With this information, load profiles, pressure curves, or temperature load curves, for example, can be generated in order to uncover potential for optimization. The causes and triggers of the error and alarm messages can be derived directly from the recordings.



## Remote maintenance

Ethernet connections provide for communications with a master control panel. The Vijeo Design'Air smartphone app and an integrated web server in combination with a WLAN-router give maintenance personnel and others the power to access the system remotely with their phones. If the IP-address of IN-1000 is accessible, any Internet-connected computer may have access.



Vijeo Design'Air smartphone app available from:



# IN-1000: CENTRALIZED DIAGNOSTICS

## MODULAR SYSTEM DESIGN

### Master module

Each IN-1000 system contains just one master module. It displays messages from all pumps, stores the most recent 100 warning and alarm messages, and displays all sensor values on the integrated color touchscreen. The master module forwards messages in real time over cables via the Internet. Recipients of the messages may be a conventional master control panel, personal computers, smartphones, or tablets with an Internet connection.

### Satellite modules

If an IN-1000 system is comprised of more than one pump, there will be additional satellite modules that receive sensor values. Data is transferred to the master over Modbus RTU, even across great distances. The master module handles communication with the user and centralized storage of sensor values.

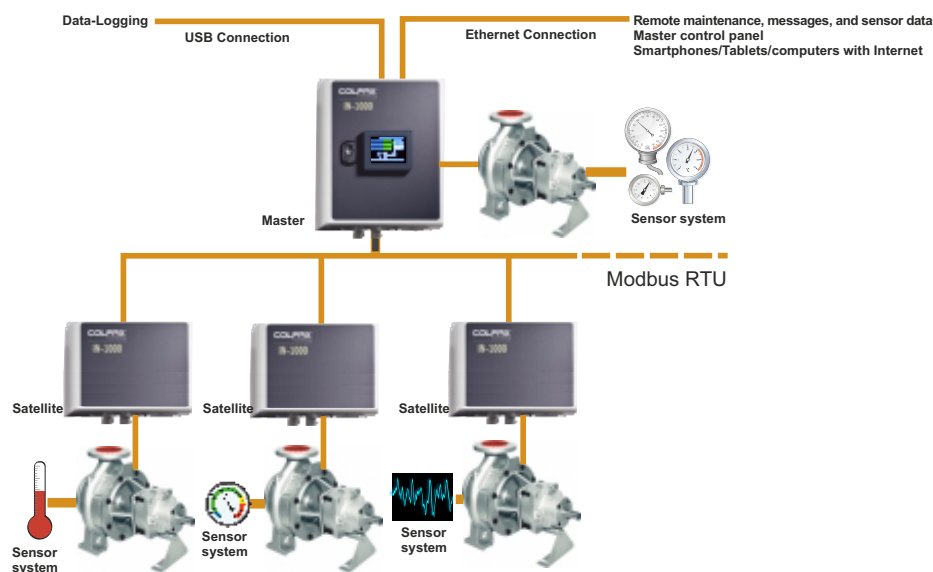
### Sensors

Depending on the application and configuration, each pump in the IN-1000 system will contain pressure, temperature, leak, and/or vibration sensors.

## APPLICATION EXAMPLES

- Increase the safety of thermal oil systems
- Optimize cooling-water processes
- Logging of operating points for generation of load profiles

### IN-1000 IN USE



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Each modular IN-1000 network may contain up to 10 communicating satellite modules. Up to 8 sensors will be controlled by one satellite module. Master-master communication is possible for the purpose of establishing a complex network.

### IN-1000 SPECIFICATIONS

Housing in IP67  
Dimensions (H x W x D):  
Master: 300 x 250 x 160 mm  
Satellite: 180 x 250 x 110 mm  
Wall mounting  
External power supply; 230 DC;  
internal 24 V  
Data logging through the USB port is  
adequate for storing several years'  
worth of sensor data (custom  
storage size).

Master inputs:  
2 x digital  
1 x PT100/Temp.  
2 x analog (4-20 mA)

Satellite inputs:  
8 x analog (4-20 mA)

Master outputs:  
3 x digital



## AT THE HEART OF EVERY OPERATION: THE BEST FLUID-MANAGEMENT SYSTEM

When it comes to pumping liquids, pumps and systems from Colfax Fluid Handling are among the most trusted solutions in the world.

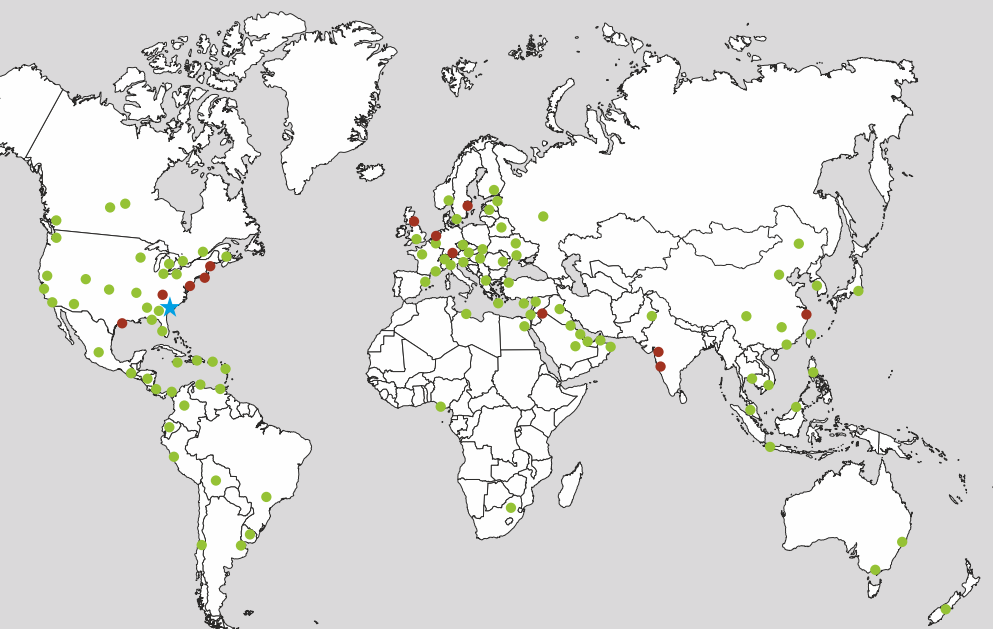
The team at Colfax Fluid Handling is committed to developing the best solutions for your specific requirements. We refer to this as Total Savings of Ownership (TSO)\*, which aims to minimize total operating costs. At Colfax Fluid Handling, savings begin with fair prices. But Total Savings of Ownership also means having the knowledge of what it takes to optimize the profitability of an industrial system throughout its entire service life.

Our extensive know-how, technical experience, and application competence give us the ability to optimize system performance and ensure that your employees receive the application experience and training they need. We have a global presence, coupled with the right tools for simplifying your engineering and technical processes. This gives us the unique ability to ensure that you receive what you need – precisely when you need it. Colfax Fluid Handling is committed to your success. We redefine what is possible for you and your customers.

### REDEFINING WHAT'S POSSIBLE

Colfax Fluid Handling has a global network of sales, production, and service capabilities to ensure that our customers receive competent and optimal support.

- ★ Headquarters
- Regional production and consultation centers
- Global sales network



Colfax Fluid Handling

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