

## The Challenge

Today's mature power plants present unique challenges when performing maintenance, repair, replacements and upgrades. Often, companies that provided in-place instrumentation are long gone. Monitoring and control requirements may have changed. More, and better, process information is needed to improve operations and profitability.

## The Interface Solution Experts

Moore Industries offers a full range of sensors, instrumentation and data communication systems that help you replace and link legacy instruments with existing equipment and with new control strategies.



Inside are just some examples of solutions we offer for power plant applications using:

- Signal Transmitters, Isolators and Converters
- Temperature Sensors, Transmitters and Assemblies
- Limit Alarms, Trips and Switches
- Fieldbus Device Couplers and Power Supplies
- Process Controllers, Monitors and Backup Stations
- Smart HART® Loop Interfaces and Monitors
- Distributed I/O and Data Communication Systems
- I/P and P/I Converters
- AC Power Transducers and Monitors

## Specialized Instruments



The chances are we can meet your signal interface needs with one of our standard products.

But if we can't, Moore Industries **Special Needs And Products (SNAP)** may be your answer when you need a signal interface instrument that's a bit different, a lot different or something you just can't get anymore. If we can modify a Moore Industries instrument to meet your requirements at a price that's right for you, we will.

[www.miinet.com/SNAP](http://www.miinet.com/SNAP)



## NCS NET Concentrator System® Distributed I/O and Data Communications Network

- Avoid installing new wires by **concentrating analog and discrete signals** in peer-to-host and peer-to-peer architectures.
- Continuously **monitor boiler tube temperatures** for efficiency, and provide alarms to warn of trouble in the event of overheating.
- Accurately **monitor burner tip temperatures** with industry-standard S-, R- and K-type thermocouples.
- Use OPC to interface directly with OSI PI or other historian packages for **data archiving**.
- Keep track of remote **cooling pump temperatures** even in high or low ambient conditions of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$ ).
- **Track oil tank levels** in tank farms in oil fired power plants.
- Use communication port to **expand I/O capabilities** when the existing DCS/PLC has reached its maximum analog I/O limit.
- Utilize as a front end to **digitally concentrate I/O points** into MODBUS RTU and MODBUS TCP for recorders and hosts.
- **Monitor pH and conductivity** to reduce tube oxidation and calcium deposits that strain flow and causes overheating.
- **Eliminates the need for interposing relays** by accepting direct 125Vdc or 240Vdc discrete inputs.
- Use **peer-to-peer DI/DO networks** to relocate annunciator panels to more convenient locations.



*Cost-Effectively Concentrate and Transmit Multiple Process Signals Long Distances on Twisted Wire Pair, Ethernet or Wireless*



## Signal Transmitters, Isolators and Converters

- Use temperature transmitters with **high excitation RTD** current to reduce input noise for 10 ohm Cu RTD stator temperatures.
- **Convert  $\pm 10\text{V}$  legacy signals** to today's modern 4-20mA signals.
- **Convert low level RTD and thermocouple signals** to high-level 4-20mA analog signals.
- Turn a valve actuator **slidewire (potentiometer) input into a 4-20mA signal** that can be readily accepted by a control system.
- **Monitor 125Vdc battery backups** that are used in the event of a line power outage.



## Process Controllers, Monitors and Backup Stations



- Use as **hot PID backup** for critical drum level measurements.
- Utilize as a **remote manual station** to facilitate maintenance and troubleshooting.
- **Take control in the field** over a damper drive when there is a problem with the control system or when loops need to be manually tuned.

## HART® Loop Interfaces and Monitors

- **“Break Out” additional analog and discrete signals** from smart HART transmitters and valves.
- **Convert HART to MODBUS RTU** to allow HART transmitters to interface directly with MODBUS-based monitoring and control systems.
- Monitor and provide continuous **% or open/close valve status** data for critical high pressure steam lines.
- Provide vital high/low process and **fault diagnostic alarms** for important process instruments and valves.



## Limit Alarm Trips and Switches



- Provide on/off control, warn of trouble, or provide **emergency shutdown** by sending one or more alarm (relay) outputs when a monitored process signal falls outside high and/or low limits.
- Monitor a pressure transmitter’s output signal and **shutdown a feedwater pump** on low pressure.

## the WORM® Flexible Temperature Sensor

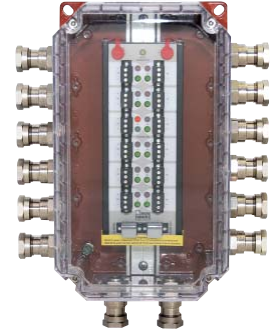
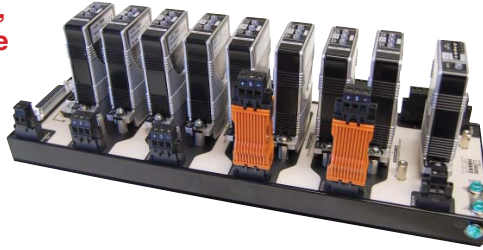


- **Save money** by using industry-standard WORM thermocouples, such as Type E, in place of expensive sheathed sensors.
- **Easily bends** into heat-induced sagging thermowells.

# Automation and Instrument Solutions for Power Plant Applications

## Fieldbus Physical Layer Device Couplers and Power Supplies

- Deliver a fast and easy way to **connect, protect, power and terminate multiple fieldbus devices.**
- Create complete **FOUNDATION Fieldbus™ H1 and PROFIBUS PA** fieldbus physical layers.
- Safeguard important monitoring and controls signals by implementing **cost-effective redundant fieldbus physical layers.**



## AC Power Transducers and Monitors



- **Monitor motor loads** to determine if a pump is on the operating curve with respect to flow and load.
- **Monitor Watts**, VARs, phase angle and current/voltage.

## I/P and P/I Converters



- **Convert a current signal to a pneumatic signal** so a DCS, PLC or PC can control a valve or actuator.
- **Convert pneumatic signals to current signals** so remote pneumatic devices can interface with electronic instruments and computer-based monitoring systems.

## Safety Instrumented Systems (SIS)



- Instruments with comprehensive FMEDA (**Failure, Modes, Effects and Diagnostics Analysis**) data available.
- **Third-party approved IEC 61508** alarm trips for use in Safety Instrumented Systems up to SIL 2.



## Let Us Do The Work.

Our application experts are ready to help. You'll get an answer within 24 hours or by the next business day!



### Do You...

- Need help specifying a product?
- Need installation assistance?
- Have product certification questions?
- Have application questions?
- Need a price and delivery quotation?

[www.miinet.com/ehelp](http://www.miinet.com/ehelp)



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