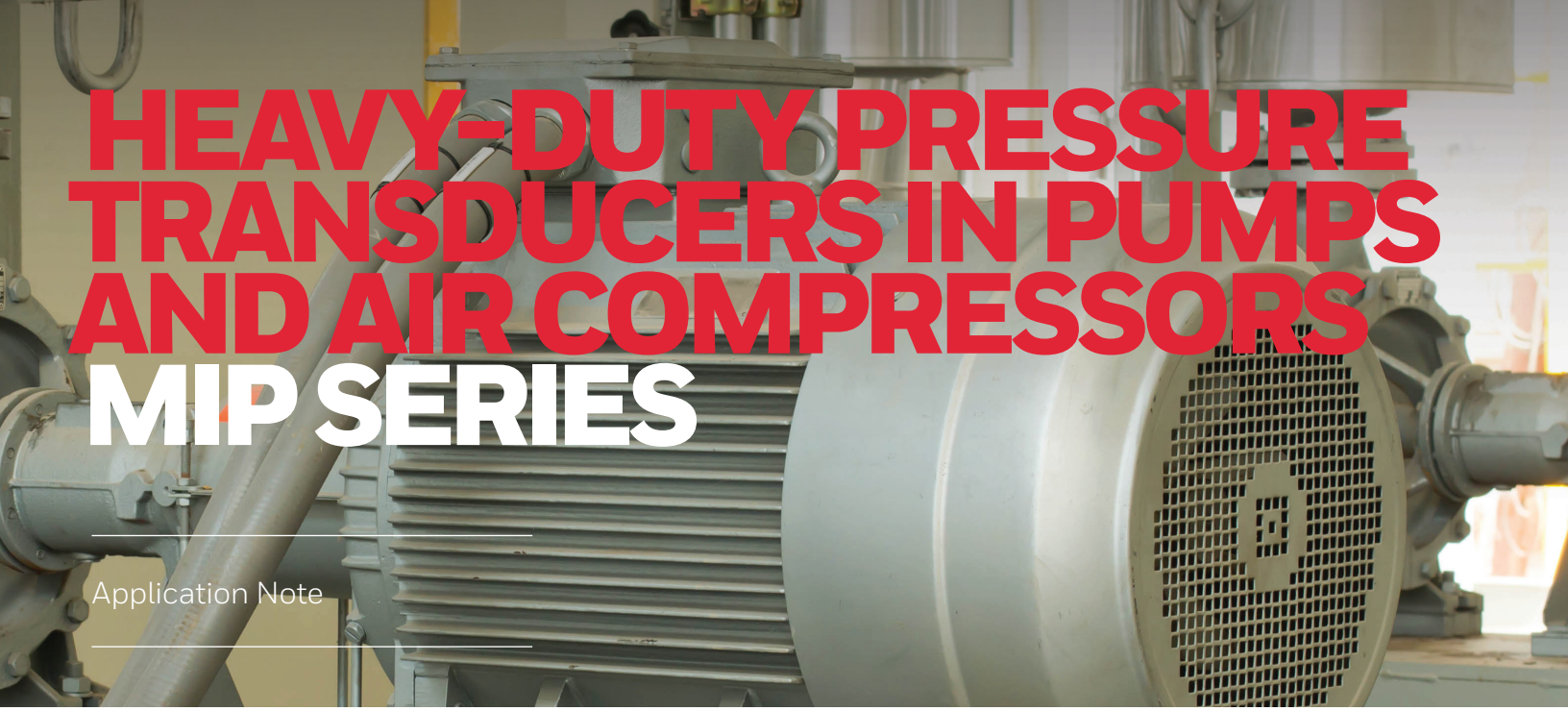


HEAVY-DUTY PRESSURE TRANSDUCERS IN PUMPS AND AIR COMPRESSORS

MIP SERIES

Application Note

This Application Note address the use of MIP Series Heavy Duty Pressure Transducers in pump and air compressor applications.

USE IN PUMPS

Pumps are used in process industries to transfer a wide range of fluids. Along with proper pump selection and installation, determining what information is needed to protect the pump and help it operate more efficiently is vitally important. Installing the proper pressure sensors not only provides immediate data regarding the pump's usage and maintenance, it can also be used as a preventative measure to identify potential irreversible damage beforehand, where further maintenance and operation resources can be reduced.

Common Industrial Applications

- **Oil and gas:** Crude oil and/or petrochemical processing in refineries
- **Chemical manufacturing and production:** To pump and transfer liquid chemicals
- **Commercial water and wastewater pumps:** Used for transfer, harvesting and purification

USE IN AIR COMPRESSORS

Air compressors provide pressurized air in numerous industrial uses such as manufacturing construction, chemical production, pneumatic tools, oil and gas, food and beverage and medical equipment applications. In general, an air compressor processes air from the outside to supply the tank(s) with air. Using pressure sensing, once the compressed air reaches a certain pressure point, the compressor turns itself off. Pressure sensors are designed to deliver system control, fluid level indication and temperature regulation, along with protection from overheating and starting/stopping the compressor.

Common Industrial Applications

- **Equipment manufacturing:** To power heavy-duty tools, rotary screw equipment for food, beverage and pharmaceutical manufacturing
- **Agricultural tools:** To power tractors, sprayers and crop conveyors for farming and agriculture operations
- **Paint spray and pressure washing:** To power airbrushes or spray nozzles that emit liquids and air for coating or pressure cleaning

SOLUTIONS

Honeywell MIP Series heavy-duty pressure tranducers can be used in pumps to measure water pressurization and monitor pump performance by measuring suction and discharge pressure. They can also be used to control and monitor the operation of an air compressor efficiency, specifically compressor inlet/outlet pressure, cooling water inlet/outlet pressure, compressor oil pressure and filter pressure drop.

KEY MIP SERIES BENEFITS

- Rugged, stainless steel construction compatible in corrosive media
- An industry leader in accuracy: ±0.15 %FSS BFSL
- Long-term stability (1000 hours) ±0.25 %FSS
- High proof and burst pressure specifications optimal for rapid pressure changes (207 bar [3000 psi])
- Small form factor sensors at low cost
- Configurability on standard ports, pressure reference type, media seal type and pressure ranges

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FIGURE 1: HEAVY-DUTY PRESSURE TRANSDUCERS USED IN PUMPS

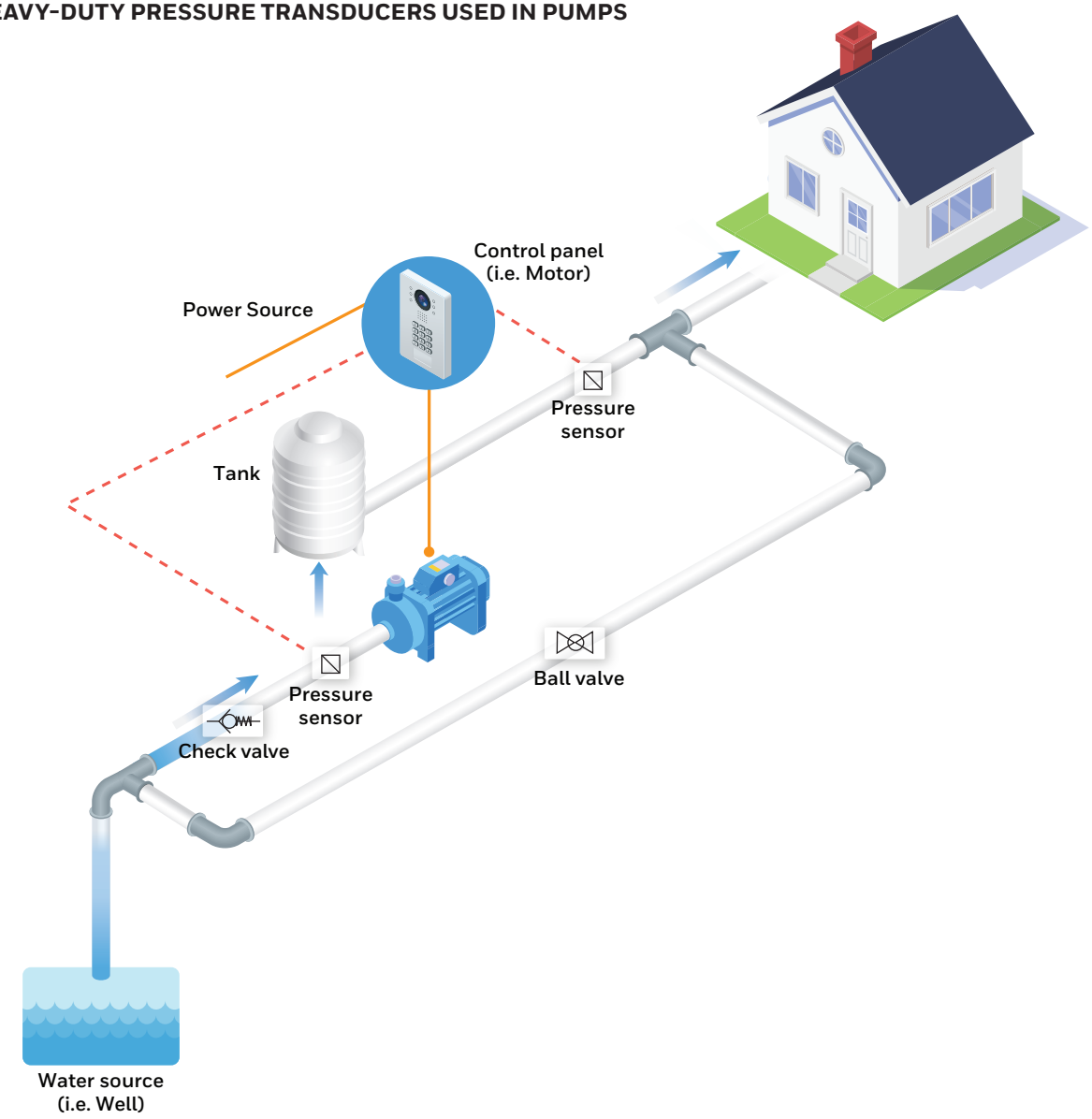
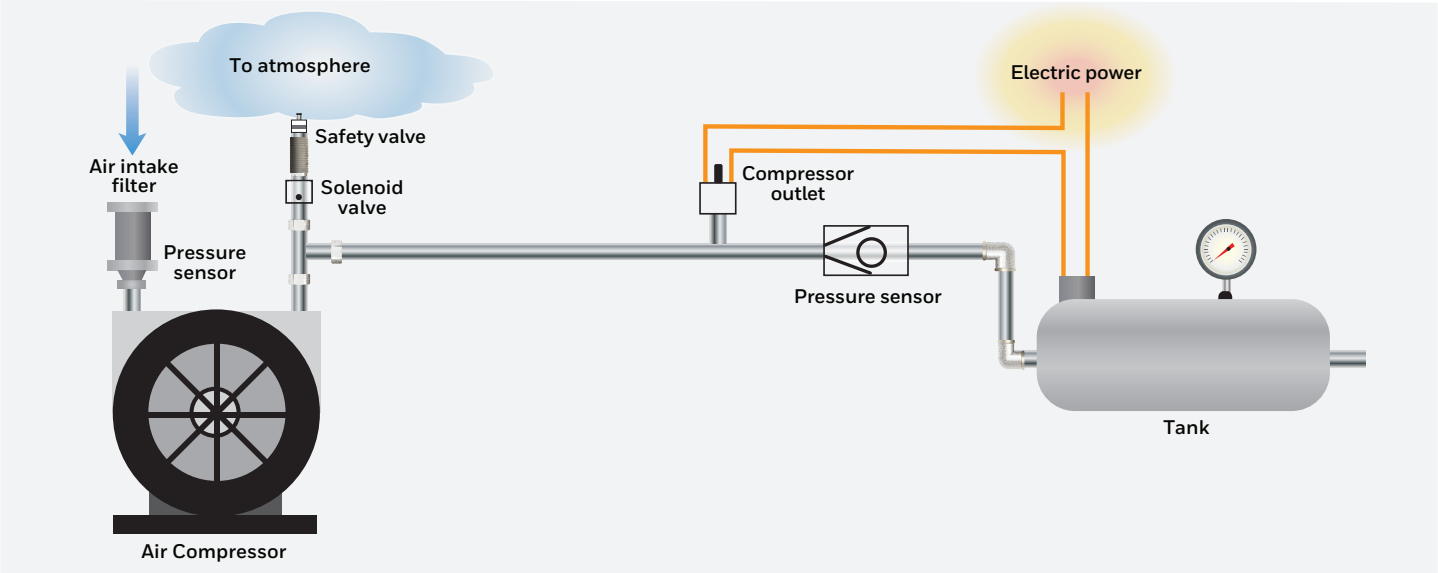


FIGURE 2: HEAVY-DUTY PRESSURE TRANSDUCERS USED IN AIR COMPRESSORS

Standard compressor configuration



EXAMPLES

Pump Skid System

A skid pump package consists of a pump, control mechanisms such as valves and sensors, a driver such as an engine or a motor and a skid frame that holds the unit together. A harsh-duty pressure transducer is commonly used to monitor hydraulic pump pressure. In extreme operating conditions, such as corrosive media and high pressure spikes, a snubber option is also available.

Hydraulic and Pneumatic Compressors

Compressors, in the form of hydraulic and pneumatic compressors, have a variety of uses in industrial settings. A robust pressure transducer is required to accurately measure and control the compressed liquid or gas that is used for storage or the transfer of energy. Pressure sensing not only provides data critical to personnel safety, it also provides preventative maintenance by increasing system efficiency.



TABLE 1: MIP SERIES SPECIFICATIONS

CHARACTERISTIC	PARAMETER 
Operating, compensated and storage temperature range	-40°C to 125°C [-40°F to 257°F]
Total Error Band	-40°C to 125°C [-40°F to 257°F]: • ±1.0 %FSS (≤10 bar) • ±0.75 %FSS (>10 bar)
Pressure range	• 1 bar to 60 bar • 15 psi to 870 psi
Pressure reference	• absolute • sealed gage
Pressure port material	stainless steel 304L
Output transfer function	ratiometric to 5 Vdc supply: 0.5 Vdc to 4.5 Vdc
EMC (radiated immunity)	100 V/m (200 MHz to 2 GHz) per ISO 11452-2
Ingress protection	IP67 (Metri-Pack 150)
External freeze/thaw resistance	>6 cycles from -30°C to 50°C [-22°F to 122°F]
Media compatibility	• **Industrial:** - pumps: water, hydraulic fluids - compressors: compressed air - process: food, beverage, oil, gas, steam • **HVAC/R:** refrigerants (butane, propane, ammonia, CO_2, R134A, R407C, R410A, R448A/Solstice® N40, R32 and R1234ze, R1234yf, glycol + water • **Transportation:** gasoline, diesel fuel, engine oil, brake fluid, coolants, CNG • **Medical:** O_2, N_2, CO_2, N_2O, air

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