ProcessDefender™

Power Monitors

Unparalleled protection for motor driven equipment

Process Load Monitor

15.6

kW

PD100

- **USES THE MOTOR AS A SENSOR**
- **CERTIFIED TO UL AND CE**
- **USER PROTECTION AGAINST ARC FLASH**
- **OVER- & UNDERLOAD PROTECTION**
- **REAL TIME CLOCK**
- **ALARM DATA LOGGING VIA MODBUS**

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When it comes to protecting machines and processes from abnormal conditions, our products have developed a reputation as the best in the business. For over 20 years, our power monitoring solutions have been used to eliminate costly equipment failure and its associated downtime.

STOP DAMAGE & DOWNTIME BEFORE IT OCCURS

Process, Reliability and Maintenance Engineers are often confronted with the consequences of unscheduled downtime and expensive repair costs associated with unexpected failure of motor driven equipment. The event may have been caused by an operator error, equipment failure, upstream process problems or a myriad of other unexpected events, regardless, it can be a major problem when it occurs.

Protecting motor driven equipment with ProcessDefender™ can alert the operator to events such as pump run dry, dead head, cavitation, or a closed suction valve. An alert can be as simple as a visual operator alarm, a signal to a plant DCS, or a direct local shut down of the motor. Either way, ProcessDefender™ will react quickly enough to protect the equipment from damage and downtime.
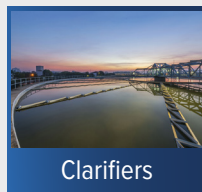
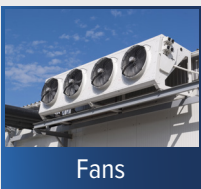**TYPICAL APPLICATIONS**

Pumps
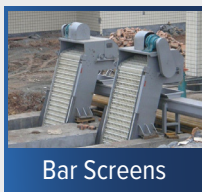
Bar Screens
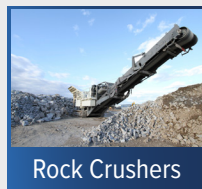
Clarifiers

Conveyors

Cranes & Hoists

Fans

Mixers

Rock Crushers

In addition to the applications shown, ProcessDefender™ is also capable of reliably protecting blowers, aerators, centrifuges, grain legs, and more. A variety of pump types can be protected, perhaps most notably mag drive pumps, where dry run conditions can be catastrophic.

KEY FEATURES & BENEFITS

- Motor Load monitoring uses the motor as a sensor to prevent damage and downtime
- Custom, large-format externally mounted HMI
- Display motor load as either HP, kW, % of Motor Power
- Display motor Amps or Volts
- Programming possible via external HMI
- Over and underload protection
- Single model for all voltages
- Real Time Clock
- Logging of alarms including time and date stamp
- Firmware can be field-updated by user
- Display of equipment run time
- Ability to view Modbus parameters / addresses on HMI
- Analog output (4-20 mA) of motor load
- Certified to UL, cUL and CE
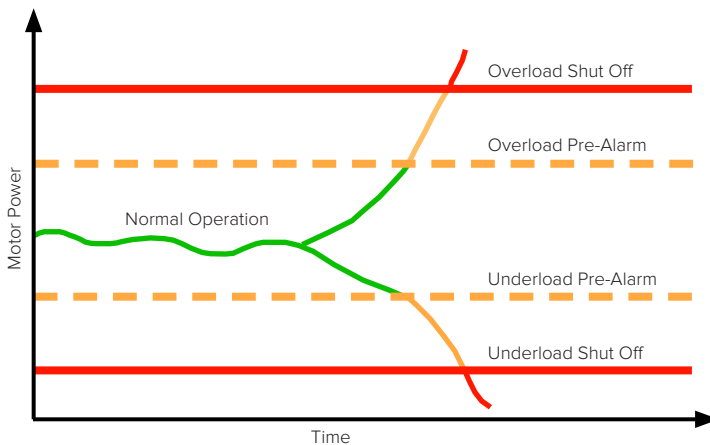
ProcessDefender™ provides early warnings of overload and underload conditions. If necessary, the product will take preventative action against the abnormal condition by shutting down the driven equipment before damage and downtime occur.
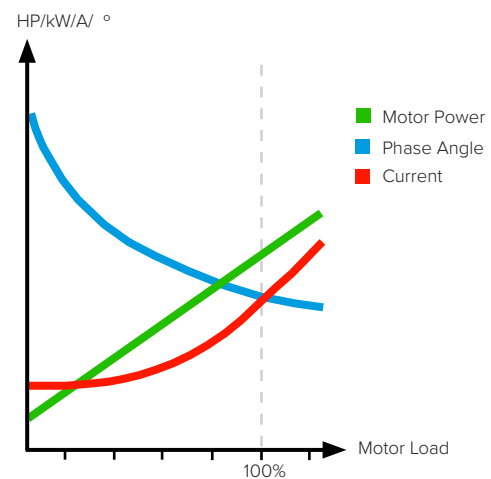
Input Power is a far more accurate and reliable method of protecting machines and processes than relying on Current. Unlike Input Power, Current does not have a linear profile, meaning it is unable to provide reliable protection at certain loads.

SIMPLE INSTALLATION AND ZERO MAINTENANCE

ProcessDefender™ comprises a motor power sensor installed in the motor starter panel or MCC, and an HMI installed in the control panel door. Installation is quick, simple and can be entrusted to a plant electrician for existing equipment or a panel builder for new equipment.

ProcessDefender™ has no long-term maintenance requirements, and the plant can expect many years of trouble-free operation.

USING THE MOTOR AS A SENSOR

ProcessDefender™ uses the motor as a sensor! By accurately measuring motor power, ProcessDefender ensures that abnormal conditions such as pump run dry or a closed suction valve are reliably detected prior to pump damage - both critical demands when using Mag-Drive pumps.
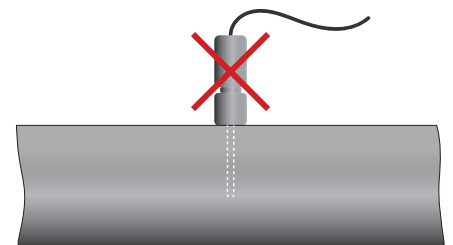
ProcessDefender™ does not require external sensors or cabling.

SAFE PROGRAMMING

Programming the ProcessDefender does not expose the Engineer to the dangers of Arc Flash. The panel door remains completely closed during programming, thereby protecting facility staff from the high voltages within motor controls. Many facilities will not allow their staff to work on live equipment such as programming a device within the motor control panel or MCC. ProcessDefender is programmed via the HMI and parameters can be viewed over Modbus communication.

With ProcessDefender™ protecting your machines & processes, you can stay focused on the task at hand!

BENEFITS OF THE PD100

ProcessDefender™ offers complete monitoring and protection for all motor driven equipment, with user-friendliness and functionality that is unparalleled amongst power monitoring devices.

ProcessDefender HMI and sensor

Feature	PD100
Process Overload Protection	✓
Process Underload Protection	✓
Process Overload Pre-Alarm with dedicated independent relay	✓
Process Underload Pre-Alarm with dedicated independent relay	✓
Three independent alarm relays	✓
Single model for all voltages of 100 - 500 VAC	✓
Split core CT's to aid installation	✓
Three independent alarm relays	✓
Over- and Under-Voltage protection with independent relay	✓
Ability to apply hysteresis to all unlatched alarm relays	✓
Programmable via external HMI	✓
Ability to latch or unlatch alarm relays	✓
Event Logging with time and date stamp	✓
Real time clock with date	✓
Lockable program settings	✓
Phase Angle Monitored over Modbus	✓
Modbus Parameters / Addresses displayed on HMI	✓
Equipment Run Time	✓

Peace-of-mind for every application

Application	Challenge	ProcessDefender Solution	Value
All pump types	Dry-running, cavitation and other types of pump failure.	Detects over- and underload conditions. Provides warning and then stops the pump.	Prevents damage and downtime. Increased reliability. Extended equipment lifetime.
	Inefficiency due to low flow, a closed valve, a blocked pipe or impeller, etc.	Detects over- and underload. Sends warning or stops the pump.	Optimized operation. Increased reliability. Reduced equipment wear.
	Mechanical flow switches and temperature sensors are expensive and fail frequently.	Using pump motor as sensor eliminates need for external sensors. No moving parts increases reliability.	Increased reliability. Reduced maintenance, investment and installation costs. Extended equipment lifetime.
	Temperature sensors and flow switches do not register dry-running or no-flow during low load conditions.	Detects over- and underload in low load range. Using pump motor as sensor eliminates need for external sensors.	Increased reliability. Reduced maintenance and installation costs. Extended equipment lifetime.
	Sensors need cleaning and mechanical adjustment.	Using pump motor as sensor eliminates need for external sensors.	Reduced maintenance and installation costs. Easy installation and set up.
Centrifugal pumps	Frequent dry-running causes damage and downtime.	Shuts pump off before it runs dry.	Reduced maintenance costs. Less downtime.
Magnetic pumps	Current monitoring is unreliable. Underload is not detected in low load range.	Detects underload in low load range.	Increased reliability. Reduced maintenance costs. Less downtime.
Screw and impeller pumps	Dry-running is detected too late. Sensors do not register short period of lower motor load as remaining liquid still lubricates the pump.	Detects short period of lower motor load. Sends warning or stops the pump.	Reduced maintenance costs. Extended equipment lifetime. Less downtime.
Mixers	Mixer blade is damaged or has fallen off.	Detects over- and underload. Sends warning or stops the mixer.	Optimized operation.
	Difficult to determine when viscosity is right.	Controls viscosity according to motor load using the analog output.	Optimized operation. Improved product quality.
	Shaft oscillation occurs.	Detects abnormal load variations. Sends warning or stops the mixer.	Reduced maintenance costs and downtime.
Scrapers	Jamming occurs.	Detects overload. Sends warning or stops the scraper.	Reduced maintenance costs and downtime.
	Scraper blade is damaged or has fallen off.	Detects over- and underload. Sends warning or stops the scraper.	Optimized operation.
Conveyor systems, crushers, etc.	Jamming occurs.	Detects overload. Sends warning or stops the process.	Reduced maintenance costs and downtime.
	Material runs out, causing unnecessary idling.	Detects underload. Sends warning or stops the process.	Optimized operation.

TECHNICAL DATA

The ProcessDefender load monitor features advanced multi-function monitoring with two output relays, an analog output and a digital display for load indication and parameter settings.

Supply voltage	1 x 100-240 VAC & 3 x 100-480 VAC
Frequency	45 Hz to 65 Hz
Rated current	Up to 999 A via current transformer
Output Relays	3
Accuracy	≥98%
Repeatability	≥99%
Protection class	NEMA 4 / IP65 (HMI only)
Approvals	UL, cUL, CE

For additional technical information, please refer to the ProcessDefender manual.

Progress through Innovation™

Our innovative solutions are developed with a focus on controlling, protecting and monitoring machines and processes that are driven by electric motors.

Contact your authorized H2flow Controls solutions provider to find out how our products can reduce your operating costs and increase your productivity.

Ask us for an authorized partner at info@h2floweurope.com

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ProcessDefender Rev.1.2