DERAGGER II®

ELIMINATING PUMP BLOCKAGES

THE
SOLUTION
IS
CLEAR

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By maintaining a clean impeller at all times, the low voltage DERAGGER II releases you from the time-consuming and costly necessity of manually lifting pumps – thus eliminating downtime and other costs associated with pump blockages. Reduced environmental incidents, together with less electricity consumption, result in a lowered carbon footprint.

Ragged pump before installation of DERAGGER II

Rag-free pump impeller after 2 months of DERAGGER II operation

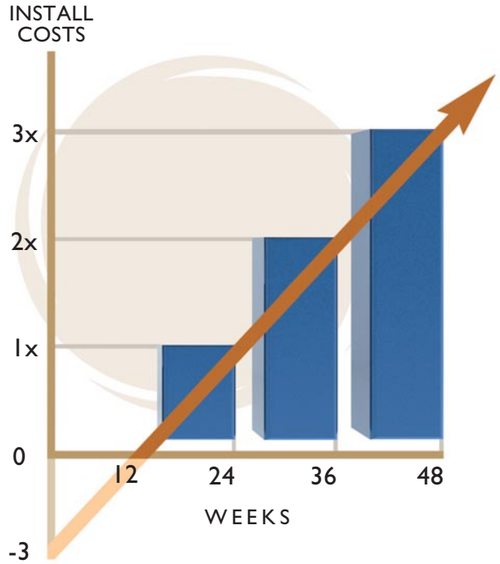
Environmental Benefits

- Ends the disruption of pump downtime and uncontrolled sewerage discharge, thanks to reliable pumping efficiency.
- Reduces power consumption by up to 48% through maintaining a constantly clean pump.
- Reduces travel to unmanned sites by 0.171kg CO^2 per km, by eliminating operator input.

Cost Benefits

- Eliminates reactive callouts.
- The wealth of remotely available diagnostic information means that operations can be centralised. It also reduces operator intervention.
- Proven reduction of energy consumption by up to 48% by ensuring maximum pumping efficiency.

Pay back in weeks



With typical installation payback in weeks rather than years, the anti-ragging benefits of the **DERAGGER II** have been demonstrated to drive down operation costs. The **DERAGGER II** is a must-have for all your pumping stations.

KEY DERAGGER II BENEFITS

- **Eliminates blockages before they form**
- **Simple plug and play to any starter type**
- **No new kiosks, replacement panels or construction works**
- **Minimal interruption to 'live' sites**
- **Typical payback in weeks**
- **Reduces pollution incidents**
- **Reduces operational callout costs**
- **Improves electrical efficiency**
- **Full pump performance information**

Don't take our word for it. Hear what our clients say!

'In addition to the 'obvious' reduction in callouts to attend choked pumps, the DERAGGER has successfully reduced the power consumption and power costs by more than 20%.'
Chris Turton, Scottish Water

'The DERAGGER II has allowed the plant to operate as designed and provides consistent 'returned sludge' without blockages. The benefits of this is 'huge' in helping our plant operate to its maximum efficiency. As well as freeing our maintenance teams to focus on asset care rather than unblocking pumps.'
Todd Hiscock, City of Dade

'Since installing the DERAGGER II on two very problematic sites we have seen a marked reduction on the number of callouts and maintenance time associated with clearing pump blockages. In all, the DERAGGER II has proved to be a very effective solution in minimising pump down time and costs.'
Hefyn Williams, Welsh Water

'Before the DERAGGER II was installed we were pulling rags from the pumps several times a week. The DERAGGER II not only kept our pumps rag free they are saving energy and maintenance costs. This is probably the best piece of equipment we have installed at our plant.'
Steve Jones, Welsh Water

1 module, 4 starters

Local Pump Diagnostics

The **DERAGGER II** boasts sophisticated built-in diagnostics and power monitoring.

With 365 days of downloadable data, you can conveniently determine maintenance and replacement schedules for pumps.

Over 300 timestamp events, alarms and trips are stored on the device.

Diagnostic counters include:

- **No. of cleans**
- **No. of starts**
- **No. of trips**
- **Under / over current trips**
- **Under / over voltage trips**
- **Phase loss trips**
- **Motor run hours**
- **KW/Hrs**
- **Average daily KW/hrs**
- **Average daily run time**
- **Average daily current consumptions**
- **Average daily KW/pumped flow**

Remote Pump Data Analysis

The **DERAGGER II** locally logs 365 days of performance data. In addition, Clearwater Controls can provide enhanced pump analysis through our remote monitoring service.

Our secure server can read the data from site and provide either a daily, weekly or monthly detailed report on the performance of each pump. This is emailed directly to the plant/asset manager.

This service can also be used to send specific alarm data to the responsible person for the site, as well as create a maintenance predictor.

Pump Protection

The **DERAGGER II** has effective motor thermal protection tested to IEC 60947-4. On motor overload, the **DERAGGER II** trips out, the fault normally open and normally closed contacts change state, and the forward and reverse outputs are opened to stop the pump in the same way as a traditional thermal overload.

The overload protection has thermal curves that simulate the heating up and cooling down of the motor. All calculations are performed through sophisticated software that estimates the motor temperature using the True RMS motor current supplied by the power monitor.

The thermal protection adopts the standard three-phase IP55 motor as a model. It also takes into consideration if the motor is cooling while being driven or not being driven. The thermal image cooling time depends on the motor power, i.e., for each power there is a different cooling time. The estimated motor temperature is timestamped and stored in non-volatile memory. Therefore, by turning off the **DERAGGER II** the motor temperature is kept. When the **DERAGGER II** is energised again, the thermal image is updated from the memory and timestamp.

The **DERAGGER II** also contains the following pump protection:

- **Phase loss**
- **Current imbalance**
- **Under / over current**
- **Under / over voltage**
- **Frequency out of range**

Description	Value	Tolerance
Protection degree	IP20	
Mounting arrangement	TS35 Din rail	
Operating conditions	0 - 50C (Non condensing)	
Supply Voltage	85-265Vac (50/60Hz)	
Power consumption	4.5W typical	
Digital Input Voltage	3 x 110-230Vac optically isolated	+/-10%
Insulation	2.5kV	
Relays	3 x volt free SPNO (250V,3A max) 1x volt free SPDT (250V,10A max)	
Solid State relay	1 x SPNO (250V, 100mA max)	
Voltage measurement	Up to 600 Vac	
Analogue Inputs (4-20mA)	1 x passive, 1 x active/passive 15Vdc for loop power	
Status feedback	10 LED's	
Internal fuse size	1A	
Terminals	Torque 0.5Nm Conductor CSA 0.5-2.5mm²	
Communications	2 wire RS485 Modbus RTU, Profibus DP	

24V data available on request

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The multi-award-winning DERAGGER II is a retrofit, patented electric pump management system that delivers **real-time monitoring** to automatically eliminate wastewater pump blockages **before they form**. Benefits include reduced operational costs, rapid payback, an improved environmental impact, and time saved from reactively dealing with blockages and ragging.

Technical Characteristics In Brief

Size:
Width 35mm
Height 100mm
Depth 115mm

Mounting:
TS35 Din rail

Protection degrees:
IP20

Supply voltage:
110Vac – 230Vac

Control Voltage:
24Vdc or 110 – 230Vac

Fault outputs:
1 x N/O
1 x N/C

Inputs:
Run, External Trip / Trigger and Reset

Current Ratings :
0 – 800A

Communications:
Modbus, Profibus DP

Customisable Clean Cycle

Anti-ragging/Blockage Prevention

- **Real-time monitoring and elimination**
- **Cleans pump on start up**
- **Timed clean trigger**
- **External trigger from PLC or low flow**
- **Trigger on 0-20mA analogue input**
- **Fully customisable clean cycle**

Customisable with Apps

Extra apps can be added to the unit for customised functionality, such as:

- **Wet well clean cycle**
  Allows the well to be pumped below its normal stop level for a user-defined period of time. This breaks down and passes forward any rags gathered at the bottom of the well, thus maintaining a clean well.
- **Odour control**
  Runs the pump through a clean, if it has not run for a while. This prevents stagnation and settling in the well.
- **Batch/volume pumping**
  On a start command, the pump will run for a user adjustable period of time to pump the well down, which is useful as a back up to level device.
- **Pump dry run protection**
  Monitors the pump's power, and on low torque will inhibit the pump. This provides dry run protection. If this happens regularly, the device can be set up to trip the pump.
- **Analogue input**
  Allows configuration of up to 5 separate setpoints on each of the 2 analogue inputs. The following DERAGGER actions can be triggered on rising above or falling below the setpoint threshold: Start, Stop, Clean, Trip or Alarm.
- **Pump data analysis**
  Stores one year's worth of data in relation to daily energy consumptions, power, current, flow and pump efficiency in terms of pumped volume to consumed energy ratio. Additionally stores alarms and pump trip events.