ALL-IN-ONE E-SOLUTIONS WITH GRUNDFOS E-PUMPS

SOLUTIONS WITH INTEGRATED VARIABLE FREQUENCY DRIVES
GRUNDFOS E-PUMPS
--FOR A RANGE OF APPLICATIONS

The E in E-pump is synonymous with electronic control and energy savings. Using E-pumps in your systems, combined with the correct sizing and right control strategy, can achieve significant energy savings up to 60%. These savings are due to the pump performing based on demand. Grundfos is the first pump manufacturer in the world to offer a pump solution with built-in variable frequency drives.

BENEFITS INCLUDE:
- Energy and money savings due to on-demand performance
- Integrated pumps, motors, and Variable Frequency Drives (VFD) are all made by one supplier
- Customized solutions where functions are changed or added are also available. MLE motors from 15-30 hp offer advanced functions such as motor bearings monitoring, which displays an automatic warning when it’s time for relubrication or bearing replacement. If you want to monitor bearing temperature, the motor can alert you of overheating.
- The E-pumps are also flexible in accessibility options; either through the Grundfos GO technology via Apple or Android mobile devices, PC-based programming tools, or on the pump control panel itself.

CUSTOMIZED E-PUMP SOLUTIONS
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A COMPREHENSIVE RANGE OF STANDARD E-PUMP SOLUTIONS
Grundfos offers a wide range of standard E-pumps for almost any conceivable type of application. Whether the system is intended for heating, air-conditioning, water supply, pressure boosting, or processing systems in an industrial plant, an E-pump will improve the cost effectiveness of your operation.

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APPLICATIONS
- Cooling systems
- Water supply systems
- Water treatment systems
- Fire fighting systems
- Rotating equipment
- Industrial plants

TPE Series 1000 – Single-Stage Centrifugal Pumps

- Flow, Q: max 100 gpm
- Head, H: max 67 ft.
- Liquid Temp.: -4°F to +284°F
- Working Press.: max 165 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

TPE Series 2000 – Single-Stage Centrifugal Pumps (Differential Pressure Sensor Included)

- Flow, Q: max 300 gpm
- Head, H: max 67 ft.
- Liquid Temp.: -4°F to +284°F
- Working Press.: max 165 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

LCSE – End Suction Split Coupled with Integrated VFD

- Flow, Q: max 1,900 gpm
- Head, H: max 158 ft.
- Liquid Temp.: -22°F to +248°F
- Working Press.: max 232 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
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  - Industrial plants

VLSE – In-line Split with Integrated VFD

- Flow, Q: max 1,900 gpm
- Head, H: max 380 ft.
- Liquid Temp.: -4°F to +284°F
- Working Press.: max 175 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

CRE – Multi-Stage Centrifugal Pumps

- Flow, Q: max 790 gpm
- Head, H: max 865 ft.
- Liquid Temp.: -22°F to +248°F
- Working Press.: max 435 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

CME – Compact, Multi-Stage Centrifugal Pumps

- Flow, Q: max 158 gpm
- Head, H: max 392 ft.
- Liquid Temp.: -4°F to +284°F
- Working Press.: max 232 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

CRE(H), CRE(IH), CRNE(H) – Multi-Stage Centrifugal Pumps

- Flow, Q: max 1,900 gpm
- Head, H: max 670 ft.
- Liquid Temp.: -22°F to +248°F
- Working Press.: max 435 psi

APPLICATIONS
- For liquid transfer in:
  - Domestic hot water
  - Heating systems
  - Industrial plants

**DATA**

- Working Press.: max 165 psi
- Liquid Temp.: +13°F to +284°F
- Head, H: max 67 ft.
- Flow, Q: max 300 gpm

**APPLICATIONS**

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**APPLICATIONS**

- For liquid transfer in:
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  - Industrial plants

**DATA**

- Working Press.: max 175 psi
- Liquid Temp.: 10°F to 275°F
- Head, H: max 380 ft.
- Flow, Q: max 1,900 gpm

**APPLICATIONS**

- For liquid transfer in:
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THE VIRTUES OF A BUILT-IN DRIVE

A variable-speed solution with a separate integrated variable frequency drive placed in the control cabinet is common in many industrial applications today.

However, E-pumps take systems integration one step further by offering an integrated solution with a decentralized variable-speed drive placed in close proximity to the motor.

One of the measures taken to ensure superior durability is cooling the integrated variable frequency drive by the motor fan rather than the motor itself, which significantly prolongs motor life, extends service intervals, and expands suitable application ranges.

Key benefits to having an E-pump with MLE motor compared to a separate integrated variable frequency drive solution include:

- Total systems integration – one unit
- As easy to install as a standard fixed-speed pump
- Reduced cabling costs – no need for a screened cable between integrated variable frequency drive and motor
- Optimum interface between motor and drive
- Space-saving installation – no need for control cabinets/rooms or space on a wall
- Reduced logistics costs – one product, one supplier

SENSORS

Grundfos Direct Sensor program offers a number of Transmitters to be used in connection with E-pumps. These can be delivered with 4-20mA or 0-10 V:

- Pressure Transmitter up to 362 psi
- Differential Pressure Transmitter up to 232 psi
- Flow Sensor up to 1060 gpm

Another feature is the pressure and differential pressure transmitter that can be delivered with integrated temperature functions, thus giving the benefit of 2.1 solution flow sensor.

OTHER ACCESSORIES

- Dry-running protection sensor LiqTec™
- Control MPC – a multi-pump control system for parallel-connected E-pumps
- Potentiometer box for external setpoint setting
- Inlet pressure switch

BUS COMMUNICATION/GATEWAYS

The 15-30 hp E-pumps are equipped with a standard RS485 GENIbus interface. E-pumps can also be delivered with:

- LonWorks
- Profinet
- BACnet

As an accessory, we deliver gateways to convert from GENIbus to other bus standards.

The CIU family with the following possibilities:

<table>
<thead>
<tr>
<th>Model</th>
<th>Communication Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIU 100</td>
<td>For communication via LonWorks</td>
</tr>
<tr>
<td>CIU 150</td>
<td>For communication via Profinet</td>
</tr>
<tr>
<td>CIU 200</td>
<td>For communication via Modbus RTU</td>
</tr>
<tr>
<td>CIU 250</td>
<td>For wireless communication via GSM, GPRS or SMS</td>
</tr>
<tr>
<td>CIU 300</td>
<td>For communication via BACnet MS/TP</td>
</tr>
</tbody>
</table>

ACCESSORIES

These pumps are suitable for liquid transfer in:

- District heating plants
- Heating systems
- Domestic hot water systems
- Cooling and air conditioning systems
- Industrial plants

* 250 psi rating also available
GRUNDFOS GO
A world of data in the palm of your hand

Grundfos GO is the market’s most comprehensive platform for mobile pump control and pump selection. With that in your hand you are ready to save valuable time on everything from commissioning, data collection and reporting to sizing and replacement. All while on the go.

FEATURES OF THE GRUNDFOS GO

• Control and monitor all relevant pump data, group pumps for increased manageability, and change settings using any Apple or Android wireless device
• Product Dashboard view for help in installation, commissioning, operation, service, and maintenance of all Grundfos E-pumps
• User-friendly interface works using both radio and infrared technology
• Easy-to-follow tips and guidance as well as live pump data feeds such as duty point, power consumption, speed, and temperature
• Detailed alarm log system with time stamps that makes error codes fully descriptive and intuitive
• Grundfos Go WebCAPS app provides online sizing and replacement tools
• View and modify pump curves and other data on-site
• On-site generation of PDF reports that can be signed and sent live, along with photo documentation for illustration

CONSTANCE - YOU CONTROL IT!

Proportional Differential Pressure - the E-pump maintains a straight line between the set point and half of the set point at closed valve conditions.

Constant Pressure with a stop function - maintains a constant pressure, except at low flow. At low flow, the E-pump operates in an on/off mode.

Constant Differential Pressure - maintains a constant pressure regardless of flow rate.

Constant Temperature

Constant Flow - maintains a constant flow rate regardless of the pressure

Constant Level

E-SOLUTIONS WITH GRUNDFOS CU

In cases where the E-pump program does not cover the desired pump type or performance area, or if you want to separate pump and electronics, then select a grundfos CuE solution instead.

The CuE program covers supply voltages up to 690 V and power sizes up to 300 hp and can be used together with all Grundfos standard pumps. CuE offers the same functionality and user interface as the E-pumps.

All ranges and pump applications outside the E-pump range are covered by the grundfos CuE solution with a wall-mounted frequency converter and a Grundfos standard fixed-speed pump.

TECHNICAL DATA

The E-pump family is divided into two groups with respect to power supply voltage and power range. The group of 1-phase pumps ranges from 0.3 hp to 2 hp, and the group of 3-phase pumps ranges from 1.0 hp to 30 hp.

<table>
<thead>
<tr>
<th>Power Supply Range</th>
<th>Power Range by Pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>+/- 10%, 60 Hz</td>
<td>2-Pole Motors</td>
</tr>
<tr>
<td>1x208-230 V</td>
<td>0.5 - 2 HP</td>
</tr>
<tr>
<td>3x208-230 V</td>
<td>1.5 - 7.5 HP</td>
</tr>
<tr>
<td>3x460-480 V</td>
<td>1.0 - 30 HP</td>
</tr>
</tbody>
</table>

Analog Output

Built-In PID Controller: Yes

Sensor Input

Signal: 0/4-20 mA or 0-10 V

24 V supply for sensor is included.

External Setpoint

Signal: 0/4-20 mA or 0-10 V

10 V supply for setpoint potentiometer is included.

Start/Stop Input

Input for potential-free contact. Pump runs by closed contact.

Signal Relay

Potential-free signal relay is included. 15-30 hp pumps have two signal relays.

Interface to Grundfos GO

All pumps can communicate with the Grundfos infrared (IR) and Radio communication via Grundfos GO.

IR/RS485 Bus Interface

An RS485 Grundfos GENIbus is included. It provides for communication to Grundfos Controls and Gateways (15 - 30 hp pumps).

Enclosure Class

TEFC

EMC Immunity

All pumps comply with “The Electromagnetic Compatibility Directive 89/336/EEC” EN61800-3 for both the first and the second environment.

UL

The MLE is a UL-recognized component.
Efficiency meets innovation to create astounding electricity savings

Putting sustainability first, Grundfos has initiated "Meet the Energy Challenge NOW". The purpose of this initiative is to position pumps on the global climate agenda and to make a wide range of stakeholders within different industries aware of the fact that energy savings and CO₂ reductions can be obtained by implementing already available technology. Pumps represent a massive and hidden potential for savings, in both energy and cost. With 10% of the world’s electricity consumption used for pumps, optimization of pump systems evidently represents untapped potential. As a matter of fact it is possible to save as much as 4% of the world’s electricity consumption if everybody switches to high efficiency pump systems.

As the pioneers of this agenda, motors and variable frequency drives (VFD) exhibit minimal electricity usage while ensuring top-of-the-line performance and reliability. Grundfos is always working on advancements in integrated motor technology, and will continuously deliver the very highest possible level of efficiency.

Explore the complete Grundfos portfolio at www.grundfos.us