Grundfos TP/TPE is the world’s most comprehensive range of high efficiency in-line pumps. Grundfos Grundfos Blueflux® I E3. The TP/TPE pumps feature the world-renowned I E3 motor as standard, along with integrated frequency converters that ensure maximum efficiency at all times. This guarantees the lowest possible life cycle costs and the best conditions for the environment.

Grundfos application areas:
• Heating
• District heating
• Air-conditioning
• District cooling
• Industrial cooling
• Industrial processes
• Water supply
GRUNDFOS TP/TPE IS THE WORLD’S MOST COMPREHENSIVE RANGE OF HIGH EFFICIENCY IN-LINE PUMPS DESIGNED FOR USE IN A VARIETY OF APPLICATIONS

Comprehensive range:

50 Hz:
• From 0.12 kW to 630 kW
• Capacities of up to more than 4500 m³/h
• Head up to 170 m

60 Hz:
• From 0.37 kW to 315 kW
• Capacities of up to 1250 m³/h
• Head up to 235 m

The whole range features:

• Liquid temperature range up to +150°C
• Ambient temperature up to +60°C
• Operating pressure up to 25 bar
• Compatible with all application areas:
  - heating
  - district heating
  - air-conditioning
  - district cooling
  - industrial cooling
  - industrial processes
  - water supply

Optimised flow geometry

With our unique high-precision machinery, we have minimised the tolerances used in the manufacture of the impeller and pump casing, and optimised the flow geometries of these two crucial components. The result: minimal backflow and increased energy efficiency.

Surface details

Sometimes, looking at the surface is a good thing. Grundfos TP/TPE pumps are given cataphoresis surface treatments, consisting of Powercron® cathodic electrocoating and zinc phosphate coating. Cataphoresis on the inside of the pump means a longer lasting inside surface that keeps efficiency high.

The curves show the performance area of Grundfos In-Line pumps. Curves show the performance area of pumps with integrated frequency converters (TPE pumps).
TP – GRUNDFOS BLUEFLUX® MOTORS MAKE THE DIFFERENCE

The standard Grundfos Blueflux® motor in Grundfos TP pumps is anything but standard. First of all, Grundfos Blueflux® motors are the most efficient motors available. They meet the highest IE3 standard in the EuP directive for motors. Second, Grundfos leads the way by featuring only Grundfos Blueflux® motors as standard in our pumps.* The IE3 standard motor is designed for maximum efficiency at both full-load and part-load operation. Thus, it has an extremely high level of efficiency over a broad operations band and is the ideal motor for a variety of application areas.

*For some 60Hz pumps only IE2 motors are currently available.

The amazing Grundfos Blueflux® motors

- Minimal heat development increases lubrication intervals and winding insulation service life
- Low bearing temperatures increase bearing service life
- Extremely low noise levels due to advanced axial fan design
- Operational at high ambient temperatures (up to +60°C). Normally, an ambient temperature above 40°C requires one motor size bigger in order to prevent overheating.

TP – PUMPS FOR LIFE

If you are looking for the ultimate in-line pump on the market, look no further than Grundfos TPE. These highly adaptable, intelligent pumps feature integrated frequency converters that ensure maximum efficiency at all times. All TPE components are tailor-made and mutually optimised, resulting in energy savings of up to 50% compared to conventional pumps.

Grundfos offers two concepts within E-pumps: the TPE Series 1000 is the standard configuration of E-pumps suitable for applications where a sensor in the system controls the pressure, temperature or flow rate.

The pumps within TPE Series 2000 are factory-set to proportional pressure control and they continuously adjust the pressure to fit the current demand.
Technology Pays Off

There are immediate financial benefits from choosing a TPE solution:
- **Energy savings**
  - Up to 50% (typically 25-35%)
- **Reduction in CO₂ emissions**
  - Typically 1 ton CO₂ per 3 kW
- **Payback time**
  - Typically 2-3 years
- **Life cycle cost**
  - Typically 25% lower

**District heating system. Maximum capacity 2500 m³/h and 60 m.**

Energy costs account for up to 90% of the overall cost of a pump during its lifetime. In other words, thinking about energy efficiency is not only beneficial to the environment – it could also save you a lot of money.

Life Cycle Cost (LCC) analysis is an objective standard that allows you to benchmark different pump solutions and suppliers based on initial investment and the costs of installation, maintenance and energy.

How to calculate Life Cycle Cost (LCC):

\[
LCC = C_i + C_{in} + C_e + C_o + C_m + C_s + C_{env} + C_d
\]

- **Ci** = initial costs, purchase price
- **Cin** = installation and commissioning
- **Ce** = energy costs
- **Co** = operation costs (labour cost)
- **Cm** = maintenance and repair costs
- **Cs** = down time costs (loss of production)
- **Cenv** = environmental costs
- **Cd** = decommissioning / disposal costs

LCC process will show the most cost effective solution within the limits of available data.

**Facts about TPE solutions**

- **E-solution versus fixed-speed solution in a typical pump application with variable pumping demand.**
  - **Annual energy savings**
    - Up to 50% (typically 25-35%)
  - **Annual reduction in CO₂ emissions**
    - Typically 1 ton CO₂ per 3 kW
  - **Reduction in life cycle costs**
    - Typically 25%
  - **Payback time for the extra investment in a TPE solution**
    - 2-3 years

*Figures are based on a pump with a 3 kW motor in an application running 24 hours per day 220 days per year. Average 0.37 kg CO₂ per kWh. The annual cost calculation is based on a 10-year period.*

**District heating system.**

- **Old system**
  - Replace old pumps with new state-of-the-art high efficiency ones.
- **New system**
  - Ensure that all pumps are sized correctly and replace ones that are not.
  - Conduct full assessment of the pump system and draw up action plan.

For more information contact your local Grundfos company.
Compact perfection
The proportion between the length and width of the shaft in the pump is extremely important. Large shaft diameters ($D$) and a short distance from impeller to motor ($L$) maximizes stability and ensures lower maintenance costs. Grundfos pumps always strive for the most optimal proportion between the length and width of the shaft ($L/D$):
- Maximal shaft seal lifetime
- Especially well suited for frequency converter operation

Integrated frequency converter in TPE
- Easy commissioning
- Easy installation – no need for cabling
- Space saving
- Motor, frequency converter and motor protection in one
- Software optimised for pump operation – low operation costs

The all-in-one solution
In Grundfos TP/TPE pumps, coupling and shaft have been friction-welded together to create a completely stable mechanical unit, which drastically reduces the vibration levels. The stability of this all-in-one solution prolongs the lifetime of both shaft seal and bearings:
- Maximal shaft seal lifetime
- Especially well suited for frequency converter operation

Anti-corrosion surface
Cataphoresis surface treatment consisting of Powercron® cathodic electrocoating and zinc phosphate coating:
- Maximal protection against corrosion
- Cataphoresis on the inside of the pump means a longer lasting inside surface that keeps efficiency high

Mechanically and hydraulically balanced impeller
- minimized vibration levels and axial forces
- Maximized motor bearing and shaft seal lifetime

Renewable neck rings
All TP and TPE pumps come with renewable neck rings, making it possible to upgrade your pump when necessary.

Grundfos Blueflux® IE3
Grundfos Blueflux® motors as standard in both TP and TPE pumps. Only motors with the official IE3 logo are certified maximum efficiency motors.

The all-in-one solution
In Grundfos TP/TPE pumps, coupling and shaft have been friction-welded together to create a completely stable mechanical unit, which drastically reduces the vibration levels. The stability of this all-in-one solution prolongs the lifetime of both shaft seal and bearings.

Unique design of shaft seal chamber
- No need for external piping
- Ensures optimal water circulation, thereby prolonging the lifetime of the shaft seal

Renewable neck rings
All TP and TPE pumps come with renewable neck rings, making it possible to upgrade your pump when necessary.
CUE – THE FUTURE IS HERE

Up to 22 kW, Grundfos offers a complete range of pumps with integrated frequency converters. For larger motor sizes, Grundfos offers a solution up to 250 kW called CUE.

The CUE range is a series of wall-mounted frequency converters with E-pump functionality. The CUE allows you to control the speed of virtually any Grundfos pump regardless of size, power range or application area. Now that’s a solution perfect for the future.

EXPLORATE OUR ONLINE UNIVERSE

Make the most of Grundfos CBS – visit the Thinking Buildings Universe at www.thinkingbuildings.com.

Our website contains a range of services that function as your online Grundfos CBS expert:

• Quick Pump Selection with an extensive product database and dimensioning tool that helps you choose the right pump for your needs
• E-learning programme that lets you improve your specialist knowledge
• Access to BLUEPRINT that keeps you up to date on the latest technology, product information and background material
• Lexicon where you can look up definitions of relevant professional terms

Welcome to the Grundfos CBS Thinking Buildings Universe!