Grundfos solar surface pumps provide the perfect sustainable, reliable and cost-efficient alternative to irregular water supply solutions in remote locations, or for highly specific applications anywhere.

These pumps provide individual solutions to water problems where conventional water supply systems fail or simply cannot reach. Although the initial investment including solar panel is higher, the operating cost is minimal.

Tailored pump and energy source
Grundfos has developed the MGFlex motor for optimal performance using solar power, for surface pump applications. In addition to solar panels, Grundfos solar surface pumps can be run from the grid or a generator.

With variable speed operation and motor protection built in as standard, Grundfos solar surface pumps offer

- Easy installation
- Virtually no maintenance
- Low cost and highly-efficient pumping

Focus on lifecycle costs
The initial upfront investment on a Grundfos surface solar pumping solution is higher than for conventional water supply systems, but this is where the comparison stops.

The total cost of owning a pump system over the product’s entire lifetime is about much more than just the purchase price – it is the total sum of not only the costs but also the benefits of having a long-term business relationship with Grundfos.

The lifecycle costs of a Grundfos surface solar pumping solution will be considerably lower than with other water supply systems, because you can save substantial sums on reduced maintenance costs – and no energy costs. Other more intangible cost-reducing factors include correct system sizing, high pump efficiency and performance, technical advice, service and reliable logistics.

Flexibility and security for your application
A solar surface pump offers unparalleled flexibility for small, rural communities. Following the initial investment, it is important that costs are kept low for typical users of these pumping systems.

Which pump you select for your Grundfos solar surface pumping solution depends on your application. Grundfos CR pumps and MTR float pumps run from the MGFlex motor will cover most usual applications, although in principle other Grundfos pumps can also be used.

Typical applications in rural or remote areas:
- Small-scale irrigation
- Livestock and fish farming
- Water supply for remote villages

Extracting groundwater and delivering it to the crop via drip irrigation is an example of highly efficient water use. Remote villages far removed from the grid benefit from a stable water supply.

Applications for homes or businesses in rural areas or towns:
- Pressure boosting in the house
- Swimming pools

Perhaps a relevant application for your solar surface pump is a pressure boosting system indoors using Grundfos CR pumps, ensuring reliable pressure at the tap. Swimming pool applications remove the need for cable installations outdoors.

OEM applications
In addition, the MGFlex motor for solar surface pumping solutions is available to OEMs for installation in all manner of other applications. However, it is important that you first check with your Grundfos representative for technical feasibility and possible consequences for warranty coverage.

Working with the resources at hand for water supply security
Solar surface pumps driven by the Grundfos MGFlex motor have built-in protection features that protect the pump itself.

- **Wide voltage range**
  The wide voltage range of the high-efficiency MGFlex motor for DC or AC voltage operating at high efficiency makes pump sizing and selection extremely easy.

- **Use with solar, grid or generator**
  The MGFlex motor developed by Grundfos for solar energy can also be run from the grid or a generator.

- **Maximum system efficiency**
  The motor will continuously optimise the speed according to the input power available. This is called Maximum Power Point Tracking (MPPT) and operates only when the pump is connected to DC supply.

- **Variable speed power transmission**
  The unique Grundfos frequency converter ensures variable-speed power transmission to the motor.

- **Built-in motor protection**
  The motor is protected against overloading and overheating, and load condition and voltage is monitored continuously.

- **System monitoring**
  It is possible to connect the solar surface pump solution to Grundfos Remote Management (GRM) for system monitoring at a distance.

- **High reliability**
  Powerful carbon/ceramic bearings ensure high reliability.

- **Dry Running Protection**
  Being a surface pump, dry running protection can be ensured by proper piping design or the use of a contact sensor at the inlet.

Solar surface pumps offer tangible benefits:

- **Easy installation**
  Solar surface pumps can be tailored to your application and local conditions. Supplied as a plug-and-go solution, the system is remarkably easy to install and use under even the most difficult conditions.

- **Virtually no maintenance**
  The built-in protection features for the pump motor as well as the frequency drive ensure a low maintenance solar surface pumping solution.

- **Cost-efficient pumping**
  Designed for continuous as well as intermittent operation, solar surface pumps are especially suitable for where cost is all-important. Once the initial investment in the solar surface pump solution is made, operating costs are minimal.

Solar panels available in two sizes:

The GF solar panels are selected especially for MG solar surface pump motor unit and are available in two sizes:

<table>
<thead>
<tr>
<th>Product name</th>
<th>GW250</th>
<th>GF80s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Panel Type</td>
<td>Polycrystalline</td>
<td>Polycrystalline</td>
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<tr>
<td>Peak Power (Pmax)</td>
<td>250 Watt</td>
<td>80 Watt</td>
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<td>Voltage (Vmp)</td>
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<td>17.9 Volt</td>
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<tr>
<td>Current (Imp)</td>
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<td>Open Circuit Voltage</td>
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<tr>
<td>Short Circuit Current</td>
<td>8.12 Amp</td>
<td>4.8 Amp</td>
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<td>Connector Type</td>
<td>MC4</td>
<td>MC4</td>
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<tr>
<td>Approval</td>
<td>IEC &amp; UL</td>
<td>IEC &amp; UL</td>
</tr>
<tr>
<td>Warranty Efficiency</td>
<td>12 yrs 90% and 25 yrs 80%</td>
<td>12 yrs 90% and 25 yrs 80%</td>
</tr>
</tbody>
</table>
The MGFlex motor is developed by Grundfos to get the most out of the sun. It is a Permanent Magnet motor with an integrated frequency converter that enables the MGFlex motor to run at high efficiency over a wide speed range.

- Maximum Power input (P1) of 880W and 1730W
- Motor speed range 1000 – 3600 RPM
- Maximum input current of 4.6A and 8.9A
- Enclosure class IP 55

The motor is compatible to both DC and AC voltage supply.

- 30 – 300VDC, PE
- 1 x 90 – 240V, –10%/+6%, 50/60Hz, PE

Performance curves

The following examples of performance curves show the MGFlex motor paired with the three most suitable CR pumps.

This provides the best pump efficiency.

Technical data

| Power supply to pump | 30-300VDC, PE  
| 1 x 90 – 240V, –10%/+6%, 50/60Hz, PE |
| Energy source | Solar Module  
Generator  
Grid |
| Start/Stop control | Digital input to control the start/stop of the motor |
| Power Switch on/off or from DC to AC | Maximum 4 times per hour |
| Ambient Temperature | During operation: -20°C to +50°C  
During storage/transport: -25°C to +70°C |
| Relative humidity | Maximum 95% |
| Motor protection | Built-in motor protection against  
overvoltage and undervoltage  
overload  
over-temperature |
| Leaking current | < 3.5 mA |
| Power factor | 0.97 |
| Earth-leakage circuit breaker | If the pump/motor is connected to an earth-leakage circuit breaker (ELCB) as an additional protection, this circuit breaker shall detect AC fault currents, pulsating DC fault currents and smooth DC fault currents. |
| Installation outdoor | The motor/pump must be installed under shield to avoid direct sunlight, rain, hails and snow. |
| Enclosure class | IP 55 |
| Insulation class | F (IEC 85) |
| EMC Compatibility | EN 61 800-3 |
| Sound pressure level | < 42 dB(A) |
| Marking | CE |
Grundfos Renewables

Innovative technology and nature hand in hand.

Human existence and business prosperity in remote locations depend largely on the availability of clean water to people, livestock and crops. But in many parts of the world reliable power can be as short supply as the water.

Instead of working against nature, you can work with it – for the benefit of you, your business and the environment in general. Turn harsh conditions into your advantage by using the sun or the wind to create power for your water supply system.

You can count on quick and efficient service from your local Grundfos dealer/installer and quick delivery of spare parts no matter where in the world you are. We have a close-knit service network with own service organisation in more than 40 countries combined with hundreds of Grundfos Service Partners, installers, and dealers worldwide, so whenever you need us, we’ll be there to assist you.