

**CONTROL  
TECHNIQUES**



# SOLAR PUMP SOLUTION

Sustainable & highly efficient water management

**DRIVE OBSESSED**

# DELIVER WATER EFFICIENTLY ON OR OFF-GRID

Pump water without the need for an electricity source using the latest solar pump solution from Control Techniques, whether your need is to reduce operational costs, improve water security, or be more sustainable.

Applications involving the flow of water in remote areas, where unreliable or no electricity source is available, need a solution that will deliver reliability, efficiency, and a reduced energy requirement. Using solar power means that a pumping system can be installed almost anywhere, irrespective of power infrastructure availability and the associated costs. Harnessing the sun's natural energy is the most effective way to overcome the challenges of getting water where it needs to be when it needs to be there.

## Where we come in

Depending on the scale of the solution required, both Commander C and Unidrive M600 drive ranges provide a cost-effective and scalable set of features to meet solar pump requirements. Each deliver individual levels of power, communications, and specification capabilities across simple fixed speed to PID controlled pumping. **Simply order the standard drive that best meets your application requirements, download Connect commissioning software with the Solar Pump Solution embedded and use the wizard to set up.**

## How will you benefit?

If weather conditions aren't favorable, the drive will automatically select the AC power source, e.g. grid or generator, or a hybrid, to ensure the most efficient continued pump operation. With an environmentally friendly, pollution and noise-free solution all the features you'll need are already programmed into the drive. You'll see the benefits in reduced running costs, lower energy requirements and a quick return on investment.



### Reduce energy, extend life-cycle

On average, 85% of a pump's life-cycle cost is attributed to its energy consumption, therefore, optimizing energy usage can mean a significant reduction in the total cost of ownership. Along with enabling the use of solar power, our drives thrive on delivering more efficient ways of operating your variable torque application.



### Reduce risk

Control Techniques' Solar Pump Solution offers a host of dedicated features including dry-run prevention, pipe fill, pump cleaning and level switch control including control modes covering both single & parallel pump configurations. These embedded features will reduce operational risk and protect your pump for longer.



### Speaks your language

You don't need to be a drive specialist to set-up the Solar Pump Solution. Our Connect programming and commissioning tool makes this simple, with easy-to-follow guided pages. Our approach to clear parameter naming and structuring and the use of familiar terminology ensures an intuitive user-friendly solution.



### Drive for all motors

Our M600 drives are the perfect match for the most efficient motors on the market today, meeting IE5 efficiency levels, such as the Nidec Leroy-Somer Dyneo+ hybrid permanent-magnet motor. Our drives give you choice, to choose your preferred motor, with the confidence that the M600 drive range will enhance its performance and save you money every day.

# EXTEND THE LIFE OF YOUR PUMPING EQUIPMENT



Protecting your pump and minimizing downtime is key to ensuring continuous water flow. Ensuring that essential water supplies are not compromised due to recognized system failures, the features that Control Techniques' Solar Pumping Solution offers, will ensure that your system is fully operational day or night.

Add to this the benefit of reduced maintenance of your pump system with fewer on-site visits required to repair failing systems means not only are you saving on energy costs but also on running costs.



### Customizable unit scaling

Whether working with standard units of flow or pressure or an alternative feedback device, the drive offers fully customizable units, to ensure the drive will always work seamlessly with your application.



### Dry-run prevention

Prevents the pump from running dry by checking the load against a threshold; with flexible configurations to set an alarm or stop the drive.



### Pipe fill

Prevents spikes in pressure at start-up using a controlled ramp, to protect your piping system and the pump itself.



### No-flow detection

Where there is no-flow or low-flow, the drive can automatically enter sleep mode to save energy, based on the feedback of a pulsed flow transducer, or triggered by a flow switch.



### Cleaning

Time interval or manual commands can be used to trigger a cleansing cycle to clear the pump impeller and help avoid maintenance costs on cleaning pump blockages.



### Tank full/well dry control

Protection is provided by the drive in 'tank full' and 'well dry' scenarios, where the pump is automatically stopped. This protects hardware and minimizes energy consumption with pumping starting again once these conditions have passed, with a user set delay for smooth operation.



# USING NATURAL RESOURCES TO POWER AND CONTROL WATER MANAGEMENT IN AREAS THAT NEED IT THE MOST

In arid countries such as Spain and Turkey, Control Techniques Solar Pump Solutions have enabled areas, with either no or limited grid power supplies, to benefit from flow control applications. These provide essential water supplies that are environmentally friendly while minimizing energy costs.

## CASE STUDY: Txakoli Bikandi Winery Overview

### GUARANTEED FREE WATER SUPPLY TO WINER

Txakoli Bikandi a small wine producer in Durango, Northern Spain, is a family-run business that has been producing wine for more than 50 years. They pride themselves on the quality of their products. To ensure continued success and to enhance their reputation in the production of top-quality products, they are committed to making continuous automation improvements at their vineyard, covering more than 30,000 m<sup>2</sup>.





# Challenge

They needed a solution to enable them to take advantage of natural underground water, to raise it above ground level to a holding vat until it is needed in an area where no electricity source was available. Their two options were to make a big investment outlay to bring grid electricity to where it was needed or a more cost-effective method of using a solar pump solution, using drives and dedicated software that would enable them to harness the natural energy of the sun to run their pumps.



# Solution

Control Techniques' engineers in Spain set about designing a bespoke economical solution. Commander C200 drives equipped with intelligence integrated into its PLC and MPPT (Maximum Power Point Tracking) optimization software meant an efficient solution could be achieved for standard pumping applications.

The solution enabled them to take advantage of solar energy to manage an autonomous operation, without the need for any additional elements, which would serve their needs for both water extraction and irrigation.

Another consideration was the distance the drive would need to be away from the submerged pumps. Control Techniques were confident their solution could effectively handle these types of issues. Txakoli Bikandi now has installed two Commander C200 drives working independently of each other, powered by solar panels, and each of them driving a pump submerged more than 300 m underground.



# Benefits

A clear commitment to eco-efficient solutions has realized:

- **Ability to harness the sun as a source of electricity**
- **Low-cost solution versus installing grid electricity**
- **Reduced energy and maintenance costs**
- **Guaranteed water supply**
- **Solution that can be customized to suit an application**
- **Easy set up**

**THIS SUSTAINABLE AND HIGHLY EFFICIENT WATER MANAGEMENT SOLUTION ALSO BRINGS THE BENEFITS OF ADDITIONAL ADVANCED PUMPING CONTROLS AS HIGHLIGHTED IN THIS BROCHURE.**

# SAVE ON ENERGY

# LET YOUR SYSTEM DO

# THE WORK FOR YOU

**Control Techniques Solar Pump Solutions are highly efficient, meaning very little energy is lost in power conversion.**

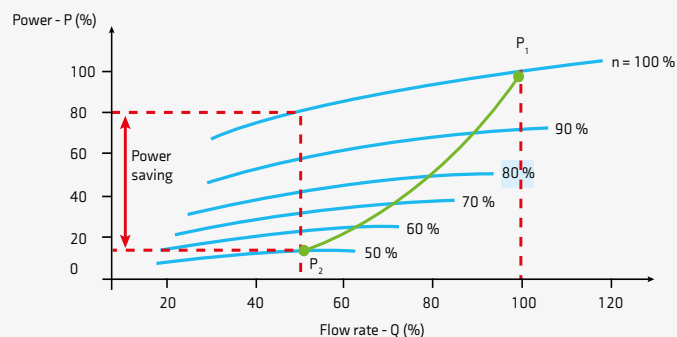
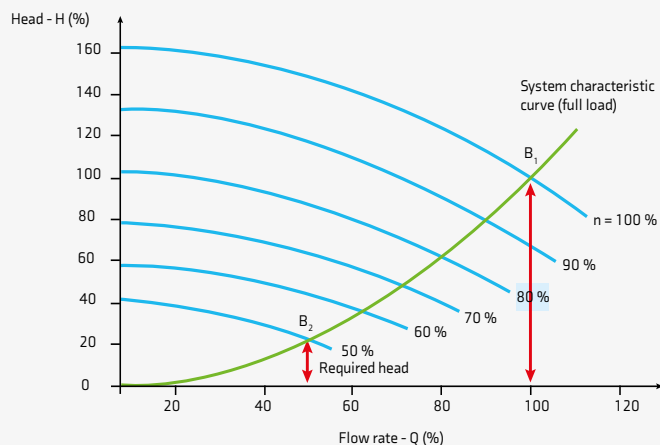
The real savings potential is enhanced with additional built-in features that can further reduce energy consumption.

## Low load savings

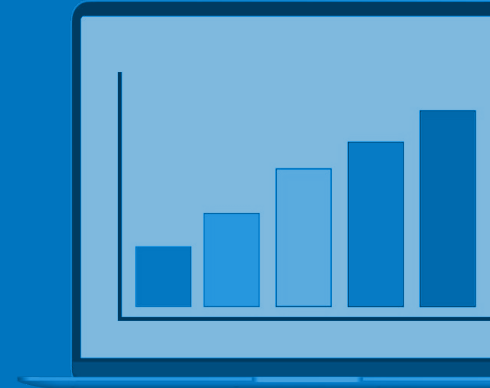
While running from an AC supply, our Solar Pump Solution helps maximize energy savings when demand is low. By activating Control Techniques' leading-edge Low Load Power Saving function, the drive dynamically reduces the voltage applied to reduce losses in the motor and make the system more efficient.

## Sleep mode

Using PID control, when demand falls below a specified set-point the drive will automatically enter sleep mode and restart itself once demand rises above the set-point. Not only does this greatly reduce the amount of energy consumed, it also saves on equipment wear to extend its lifetime.



# CONTROL TECHNIQUES PC TOOLS



## Energy savings estimation

Control Techniques' energy optimization software helps you analyze energy usage for flow applications and quantify the cost savings of using your Control Techniques drive.

- Estimation of energy usage using Control Techniques variable frequency drives for pump applications
- Identify the payback period through the energy savings from using our drives over conventional control methods
- Graphical representation of flow versus cost, hours and time



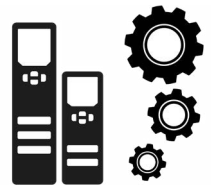
## Diagnostic Tool

The Diagnostic Tool App is a fast and simple tool, which allows users to quickly solve any error codes that the drive may show. Built within the app are easy to locate wiring diagrams for first time setup and fault finding with links to the relevant comprehensive manuals.

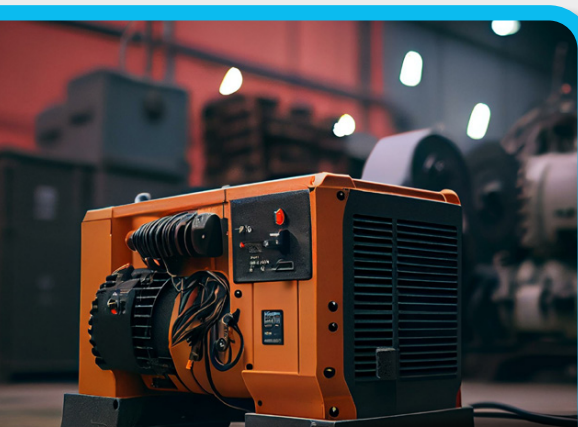
The app also has full contact details of the technical support teams around the world to aid you with technical assistance.

Available for iOS and Android, download the app for free at

[www.controltechniques.com/mobile-applications](http://www.controltechniques.com/mobile-applications)



# POWER SOURCE



# DRIVE OPTIONS

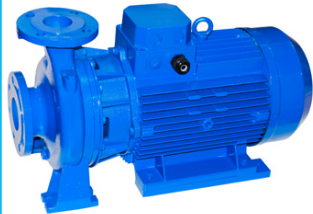


# SOLAR SOLUTION



# WATER MANAGEMENT

## PUMP



R PUMP  
ON S/W



# POWER OPTIONS FOR MAXIMUM EFFICIENCY



# HASSLE-FREE POWER FLEXIBILITY FOR CONTINUOUS OPERATION



Control Techniques Solar Pump Solution provides reliable pump control, no matter what the weather. Once set-up, the drive can be configured to automatically connect to an AC power source for operation outside daylight hours or as a 'Hybrid' System, blending Solar & AC to achieve maximum benefit of your solar investment without affecting performance.

## Flexible power supply

- AC only
- DC only
- Hybrid AC or DC
  - Requires indication when AC supply is connected

## Dedicated power supply features

- Handling for irradiation sensor to apply AC
- DC bus controller for DC from PV Array
- DC pre-charge

## System optimization

Whether it's the solar, grid/generator or hybrid supply powering the pump, full control of the system is ensured with the following features:

- DC bus control loop
- MPPT
- Low irradiation start/stop
- AC applied logic
- PV controlled stop ramp
- Restart delay timer

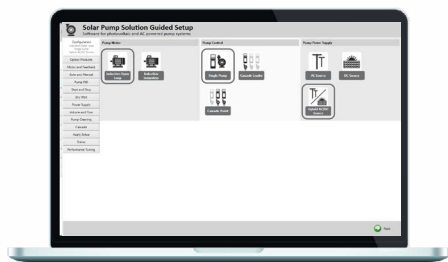
# SIMPLE COMISSIONING FOR HASSLE-FREE, EFFICIENT INSTALLATION

**Connect is an application-focused software designed with dedicated pump functions that mean optimum performance can be achieved straight out of the box.**

## Guided commissioning tool

Gain complete control of your drive with Control Techniques' Connect PC Software. The dedicated Solar Pump solution setup screens guide you through every step to quickly get your drive up and running.

Everything is covered in a simple, logical format, from configuring your multi-pump system, through to the input of motor characteristics. The pump features are easily accessible, providing intuitive setup in a single tool.



Guided setup screen within the Connect PC software

## Single setup menu

Setup using only the keypad couldn't be easier. There's no need to waste time looking for all the parameters - they are grouped together for you in one, streamlined menu.

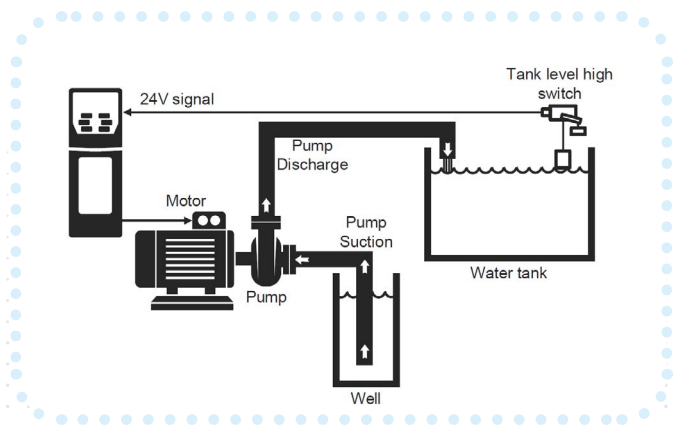
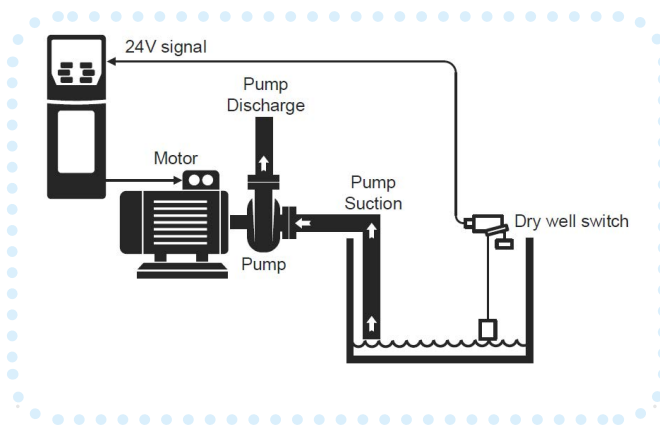
All relevant parameters are literally at your fingertips to easily configure and monitor your application.

All additional parameters are still accessible through the advanced menus, for un-precedented control and finetuning.

# CONNECT GIVES YOU ALL THIS

We know that having all the features you need easily accessible, in a language that you understand, will make your life easier. Connect is designed to cater for all the pumping features you will need for a fast and efficient system set up.

- Auto and Manual control from keypad, switched input or Control word.
- Tank full switch control
- PID control, setpoints, feedback, alarm and trip
- Dry Well
- Open and closed loop including sensorless operation.
- State display
- Wake and sleep system for PID control
- No Flow (switch)
- Pump control, status and alarm
- Pipe fill (for PID operation)
- Flow & Volume estimation
- Cascade control
- Pump to volume Threshold



# Standard Drives to deliver Solar Pump Solutions



## Commander C - General Purpose Drive

0.33 hp - 200 hp

115 V | 208 - 240 V | 380 - 480 V | 575 V | 690 V

### Flexibility for water management applications

Commander C combines efficiency and reliability to offer optimum performance for solar pump applications. With essential features built in such as dual STO safety function, braking transistor and PID control.

### Compact design

Commander C is one of the most compact drives within its category, taking up little space in the cabinet means installation costs are kept to a minimum.

### Super quick start-up

To get started in minutes, follow the simple guide in the Connect software tool to set-up both the PV array and pump control characteristics.

### Flexible connectivity

The plug-in communication modules enable integration with the most common industrial fieldbuses.

\*Warranty terms and conditions apply.

## Unidrive M600 - High Performance AC Drive

1 hp - 4,200 hp

208 - 240 V | 380 - 480 V | 575 V | 690 V

### Achieve maximum flow control with advanced motor control algorithms

Unidrive M supports sensorless control of induction, permanent-magnet, and hybrid PM motors, reducing system cost and improving robustness.

### Water management flexibility

With 3 option slots at your disposal, a comprehensive range of System Integration modules are available for easy integration into all major fieldbus ecosystems with additional I/O allowing you to tailor the drive to any application need.

### Don't loose out during conversion

Unidrive M600 is designed to improve energy efficiency by up to 98% in all applications by minimizing losses during the conversion process.

### Conform to safety standards with direct safety system integration

All Unidrive M600 drives have integrated Safe Torque Off (STO) inputs, certified to SIL3 / PLe.

Full drive specifications can be found in the product data sheets and brochures that can be found on the Control Techniques website.

# DRIVE OBSESSED



**Control Techniques has been designing and manufacturing the best variable speed drives in the world since 1973.**

**Our customers reward our commitment to building drives that outperform the market. They trust us to deliver on time every time with our trademark outstanding service.**

**More than 45 years later, we're still in pursuit of the best motor control, reliability and energy efficiency you can build into a drive. That's what we promise to deliver, today and always.**

**1.6K+**

**Employees**

**5**

**Global Manufacturing  
Sites**

**23**

**Drive  
Centers**

**70**

**Countries**

# #1 FOR ADVANCED MOTOR AND DRIVE TECHNOLOGY



**Nidec Corporation is a global manufacturer of electric motors and drives.**

Nidec was set up in 1973. The company made small precision AC motors and had four employees. Today, it's a global corporation that develops, builds and installs cutting-edge drives, motors and control systems in over 40 countries with a workforce of more than 114,000.

You'll find its innovations in thousands of industrial plants, IoT products, home appliances, cars, robotics, mobile phones, haptic devices, medical apparatus and IT equipment all over the world.

**114K**

**Employees**

**\$17.4B**

**Group Turnover**

**40+**

**Countries**

**300+**

**Companies**



## CONTROL TECHNIQUES. NO ONE KNOWS DRIVES LIKE WE DO.

Our drive obsessive representatives will drive you in the right direction and give you first class support whenever you need it.

For more information, or to find your local drive center, visit:

[www.controltechniques.com](http://www.controltechniques.com)

Connect with us



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