

Nidec

Drives

Water & Wastewater

Efficient, reliable and sustainable
water management



Why in the world wouldn't we look after our water

Manage water and wastewater effectively, reliably and sustainably using Nidec Drives specialist drive solutions.

With the increasing demands of climate change, to a growing population requiring more food, energy and generating greater levels of waste than ever before, it's imperative that water management solutions are dependable and efficient.

Where we come in.

With years of experience and expertise Nidec Drives is the perfect partner to support water solution providers. We supply highly efficient, compact and reliable variable speed solutions for the treatment and movement of water. Depending on the scale of the solution required Nidec Drives has a suitable drive solution to provide a cost-effective and scalable set of features to match your operational requirements.

How will you benefit?

We take the risk out of choosing a dependable solution. Our drives are packed with dedicated pumping features and protection giving you piece of mind that your water management system will continue to run efficiently and effectively even in challenging environments. Our knowledge and support are unquestionable giving you the confidence to choose Nidec Drives as your water management partner. This same level of confidence can be applied to both on and off-grid water management solutions with our dedicated solar pump solution. You'll see the benefits in reduced running costs, lower energy requirements, less stress on you and your equipment, reduced maintenance and a quick return on investment.





Energy savings, unlocking the potential

On average, 85% of a pump's life-cycle cost is attributed to its energy consumption, therefore, optimising the energy usage can mean a significant reduction in the total cost of ownership. Our drives thrive on delivering more efficient ways of operating your variable torque application. You'll see the benefits in reduced running costs and lower energy requirements.



Help when and where you need it

Our locally based water experts can provide detailed analysis of plant processes, pump performance, best practice advice and service packages. If you are at the bidding stage of a new or existing project, we are on hand to offer the support you need. This includes assistance in meeting demanding EMC regulations in any location, whether residential or sites far from an electrical sub-station. To combat supply harmonic issues, we also offer cost-effective Active Front End or 12 pulse solutions and supportive tools to help calculate emission levels.



High power ready-to-go solutions

If a hassle-free packaged system is what you're after, Control Techniques' modular drives provide compact solutions to match high power applications that allows for redundancy if required. We can offer the very best free standing, ready-to-use, pre-engineered high-power drives with all necessary system components included.



Drives for all motors

Our 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 our drive range will enhance its performance and save you money every day.

Case study: Giving back to nature



Success Electric PTE LTD





The Challenge

Singapore Botanic Gardens is the first and only tropical botanic garden on the UNESCO World Heritage List. Its new Gallop Extension is eight hectares of framed landscapes composed of native plants and forests, contributing to the gardens' rich heritage and its role in research, conservation, education, and recreation. As a natural extension of the gardens' nature area, it covers the Rain Forest and the Learning Forest, educating visitors on forest ecology and conservation significance.

With the new addition to the visitor attraction, the Botanical Gardens required an irrigation booster pump system to supply water to the entire Gallop Extension field of plants and forests. On winning the contract, Success Electric set about the mission to find the right drive for the job.



The Solution

Nidec Drives' Commander C200 drives are integrated into Success Electric's Irrigation Booster Pump system controller. C200 controls and regulates the pumps to distribute the water supply to the entire field of native plants and forests at programmed times of the day and night, keeping the plants watered while saving energy and natural resources. C200 provides a low starting current while ramping up to full speed at 50Hz, thus reducing the overall energy consumption. The easy-to-use LED keypad and a parameter guide on the front of the drive allow the gardens' maintenance team to modify the pressure settings for the pump sets.



The Benefit

"The solution has reinforced the energy saving benefits that variable speed drives deliver. In this case, Singapore Botanical Gardens is making energy savings of 30%. With the compact and programmable Commander C200 drives, we were able to reduce the panel footprint, leaving more space for nature that visitors can enjoy."

Anthony Yeo, Success Electric Business Manager

Treat it, move it, drink it

Water, whether sourced from underground wells, surface water supplies such as rivers, lakes and reservoirs or the sea, must be collected, cleansed and transported. The quality of raw water and its intended use determines the complexity of the treatment process required.

Typical Water Plant & Process Applications include:

Sea Water Desalination

Desalination plants are a growing and are a critical operation in barren regions, where a lack of drinkable water coupled with a rising population have generated an intense demand for desalted water.

Typical applications include:

- Sea Water Intake
- Reverse Osmosis Process
- Boosters
- Auxiliary Water Movement

Water Transmission Systems

The transportation of water from storage facilities to distribution networks through a series of water transmission pipelines. Often located in remote areas over large distances, highly efficient pumping solutions are required to ensure constant but variable flow to meet its intended destination's demands.

Typical applications include:

- Pump Stations
- Irrigation Systems



Water Treatment Plants

The demand for more water & wastewater treatment plant capacity is due to a lack of, or aging, infrastructures against the demand of a growing global population. The steps required in the treatment of water can involve many processes.

Typical applications include:

Water Treatment:

- Intake and Influent
- Effluent
- Boosters
- Elevate Tanks

Wastewater Treatment:

- High and Low Lift Stations
- Clarifiers
- Influent pumps or screws - Pumping sewage to the wastewater treatment plant
- Sludge pumps - Transporting “wet” sludge into the centrifuge to dry
- Surface aerators/compressors – Oxygenating sewage water to activate bacteria
- Submersible mixers - Keeping the sewage water moving through aerations tanks
- Effluent pumps - Pumping purified water in the river or canal

Flood Control Systems

Extreme weather conditions are commonplace in virtually all regions, with heavy rainfall and rising sea levels causing extensive flooding, risking lives, homes, essential services and sources of sustenance in densely populated areas. It is becoming increasingly necessary for flooding to be taken seriously and efforts made to reduce risk to life.

Typical applications include:

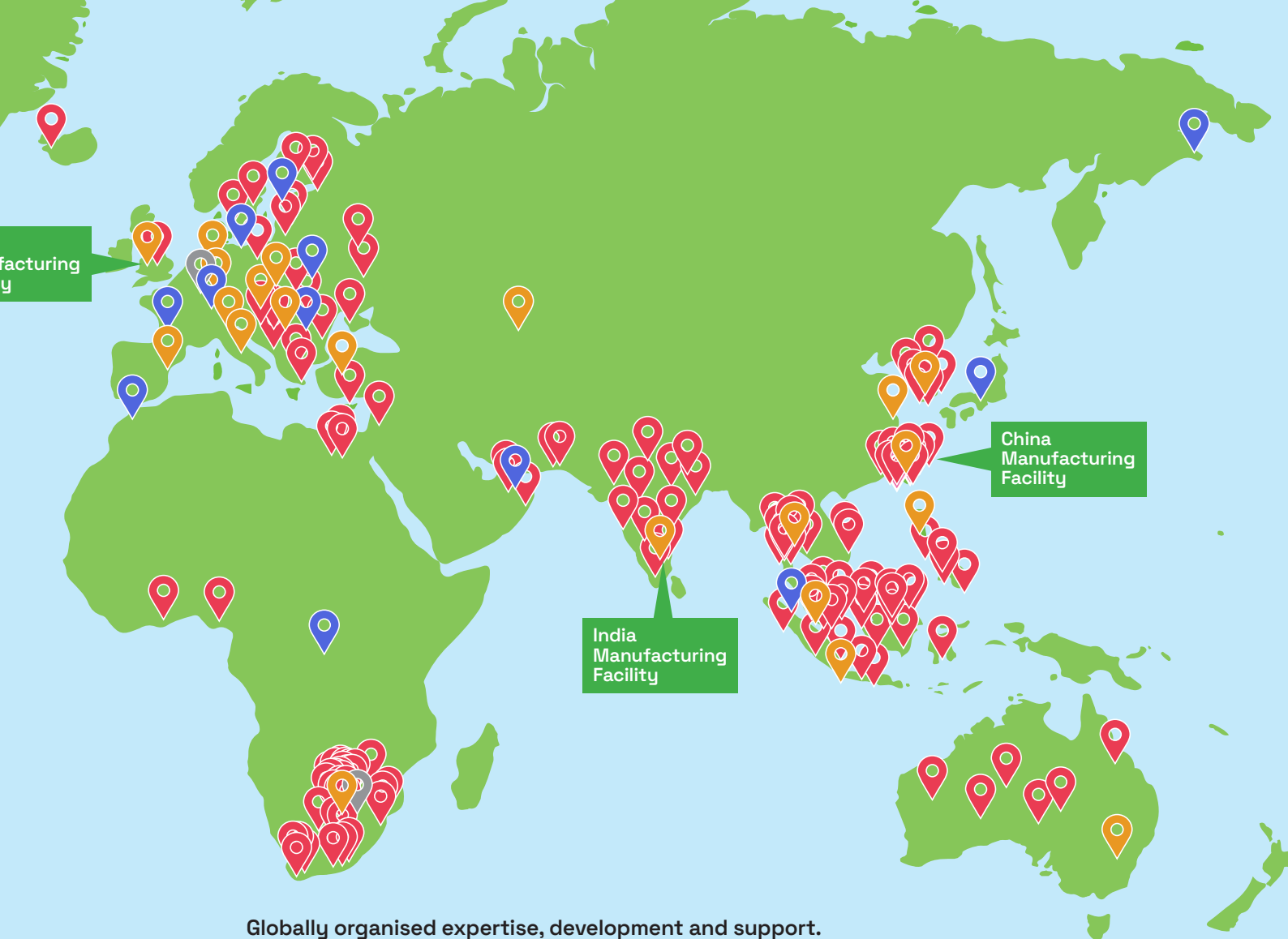
- Pumping stations for level drainage
- Tidal energy turbines



Need support? We're situated right where you need us

Nidec Drives global Drive Centre and partner network make us ideally placed to:

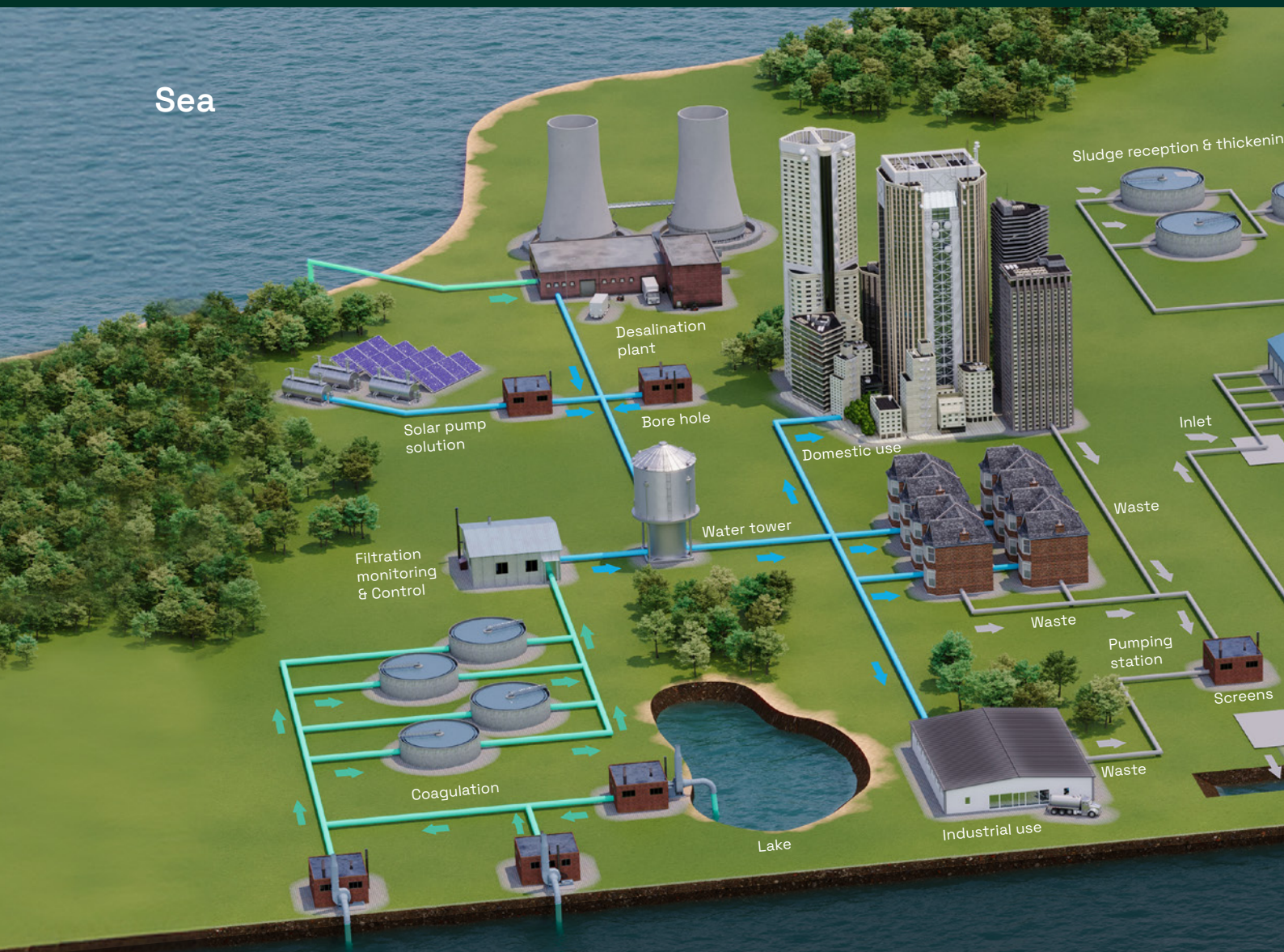
- Support in the bidding stage of new and existing projects
- Provide local and specialist support for multinational water transmission projects
- Provide service packages to meet local regulations
- Deliver specialist, high IP and customisable products where efficiency and reliability are guaranteed
- Give technical expertise in flood defence applications, supporting local authority initiatives in high-risk areas



Globally organised expertise, development and support.

-  Drive sales, technical support, repair and application expertise
-  Drive sales
-  Country Partners
-  DFS Panel Shop

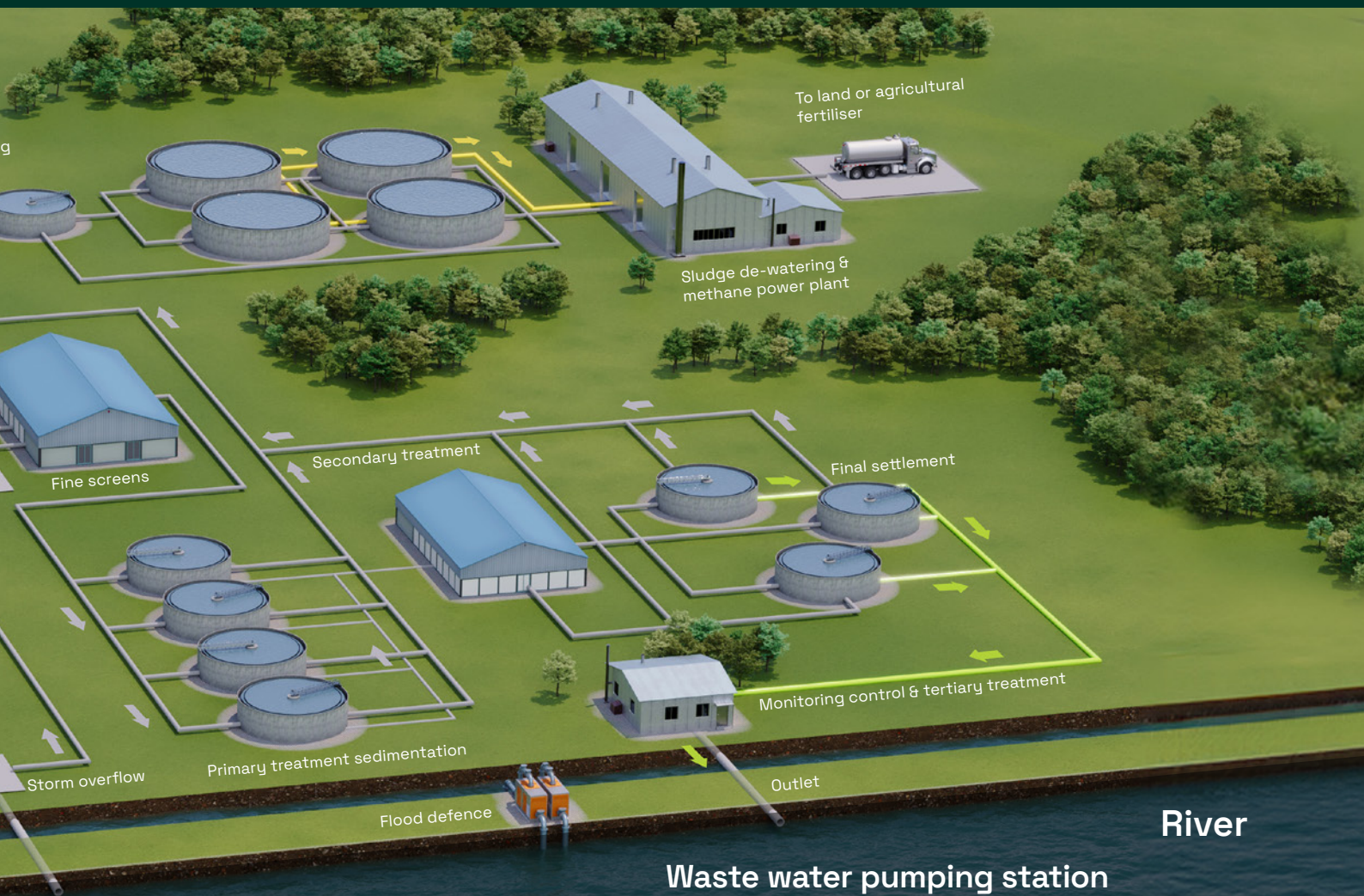
Clean and waste water p



Nidec Drives' variable speed drives may be used to control pumps, fans and other motors throughout the water cycle to improve energy efficiency and process control. The diagram illustrates some of areas where Nidec Drives offers unique advantages.

- Untreated water
- Treated water
- Dirty/waste water
- Methane
- Semi-treated water

umping using drives



Water pumping stations

- Variable speed drives for energy efficient pumping
- TCP/IP based telemetry for network control and monitoring

Centralised control

- Intelligent water resource monitoring and management
- High speed telemetry for drive system monitoring and control

Waste water pumping station

- Continuous system monitoring will trigger a drive-based cleansing cycle to clear any fouling of the pump impeller, to avoid maintenance costs and maintain efficient pumping
- TCP/IP based telemetry for network control and monitoring

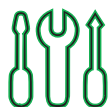
Water treatment

- Variable speed drives providing energy efficient operation
- Variable flow enabling process optimisation
- Precise chemical dosing using variable speed drives

Extend the life of your pumping equipment

Protecting your pump and minimising downtime is key to ensuring continuous water flow. Ensuring that essential water supplies are not compromised due to recognised system failures, the features that Nidec Drives' 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.



Automatic error recovery

In the unlikely event of detecting an error our drives have the ability to dynamically recover and resume normal operation.



Transducer loss protection

In the event of losing connection to the transducer, our drives can stop, continue to run at a fixed speed or ignore the fault depending on the requirements.



Limit protection

If the feedback exceeds the limits defined for your application, our drives have the ability to raise an alarm or stop the drive to protect your equipment.



Fire mode

Fire mode allows the drive to disable all trips and to continue to run uninterrupted during emergency events if the application requires.

Integrated pumping features in a single solution

Pipe Fill

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

Over-cycling protection

Optimise drive, motor and pump sizing, and regulate pump wear by limiting the number of start-stops per hour. Flexible configurations allow to dynamically alter cycling reference limits, set an alarm or stop the drive when a limit is reached.

Cleaning / de-ragging

Live, continuous monitoring of the system is used to trigger an automatic drive-based cleansing cycle to clear the pump impeller and help avoid pump blockages.

Dry-run prevention

Prevent the pump running dry by checking the load against a threshold; with flexible configurations to dynamically adjust output, set an alarm or stop the drive.

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 flow a switch, or detected by the software alone.

Level switch control

Provides critical protection for tanks in the event of the level reaching a "high" switch, whereby the pump is stopped, or a "low" switch, whereby the pump is started, to ensure pumping within tank levels.

Save on energy

Everyday of the week

20% of the world's electric consumption is purely down to pumping systems and 94% of the total energy used in water management is attributed to pumping. It's no wonder water solution providers are under pressure to optimise investment and operating costs, reduce expensive maintenance intensive equipment, while complying with increasingly stringent and costly regulations.

Nidec Drives Pump Solutions are highly efficient, meaning very little energy is lost in power conversion.

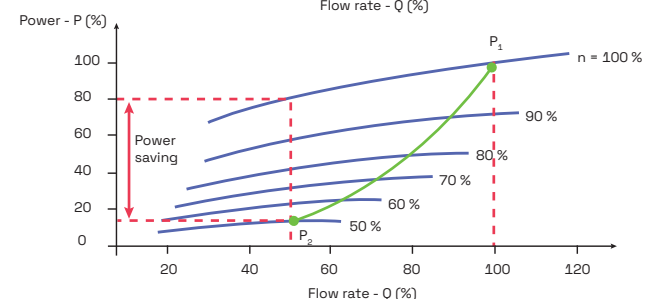
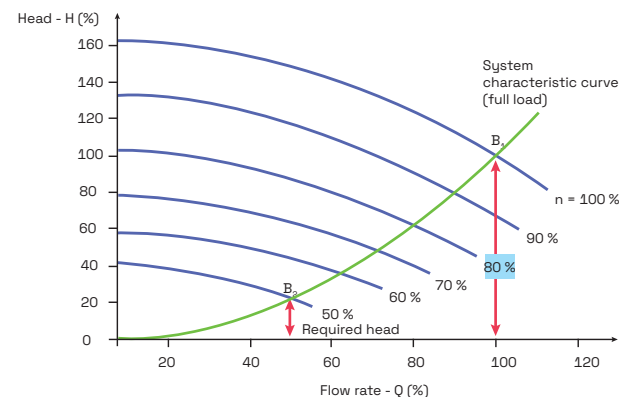
The real savings potential is enhanced with additional built-in features that can further reduce energy consumption:

Low load savings

While running from an AC supply, our Pump Solution helps maximise energy savings when demand is low. By activating Nidec Drives' 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.



Your system can & should save you money

The use of Nidec Drives drives to control water flow results in more than just energy savings, there are many hardware cost savings too.

Drives are 35% more efficient when compared to a throttling valve, which, along with valve control systems, can be eliminated entirely from modern water management.

This also means simplified pipe layouts can be used and there is no need to oversize pump systems which is often common place to cater for high demand.

On top of this, water leaks are much less likely due to lower operating pressure, which also extends the life of existing infrastructure.

Nidec Drives can save you money and quickly recoup initial investment.



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 Nidec Drives' Connect PC Software. The dedicated Pump Drive or Solar Pump Solution setup screens guide you through every step of quickly getting your drive up and running.

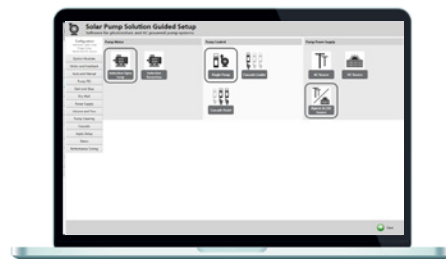
Everything is covered in a simple, logical format, from configuring your multi-pump system, through the input of motor characteristics, to setting up the PID process control loop. All the pump features are also readily available, providing intuitive setup with contextual help through a single tool.

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.



Guided setup screen within the Connect PC software

Nidec Drives PC Tools



Energy savings estimation

Nidec Drives' energy optimisation software helps you analyse energy usage for flow applications and quantify the cost savings of using your drive.

- Estimation of energy usage using Nidec Drives 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.



Free
download

Diagnostic Tool

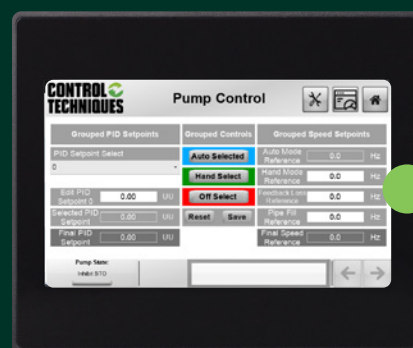
The Diagnostic Tool App is a fast and simple tool, which allows users to quickly solve any error codes that the drive may show. Built within the app are easy to locate wiring diagrams for first time setup and fault finding with links to the relevant comprehensive manuals.

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

Available for iOS, Android and WindowsTM, download the app for free at www.controltechniques.com/mobile-applications



*For Microsoft users, please note that this mobile app operates with Windows 10 only.



Pump Drive F00 - Dedicated Pump Drive

1.1 kW - 2.8 MW

The F600 packs all the features you'll need, presented using terminology you'll understand. This isn't a generic drive with pump features tacked on; it's a dedicated, specialist pump drive, designed from the ground up to deliver the reliability and efficiency you need. Along with a wide range of energy saving and flow protection features, Pump drive F600 provides flexible support for every system with Single Pump (Simplex), Cascade (Duty Assist) and Multi-leader (Multiplex) modes built-in.

Pump Drive F600 IP65

1.1 – 22 kW

The IP65/NEMA4 variant is one of the most protected drives on the market and provides protection from total dust ingress and low-pressure water jets from any direction, making it a simple choice for harsh environments and the outdoors.
(Shading from direct sunlight is required.)

DFS – Free Standing Drive

55 - 540 kW

Ready to use pre-assembled high power drives requiring no additional engineering resource, easy integration with common cubicles, light weight and available with both F600 and Unidrive control modules.

High Power Modular Drive

Our modular offering gives you never before seen flexibility in building compact, reliable high-power solutions. Paralleled together, they can control asynchronous and synchronous motors up to 2.8 MW. At the top of the modular drives range, the Frame 12 is a 500 kW single module that delivers unmatched power density, while keeping both footprint and system costs to a minimum. Modules can be paralleled together into a wide range of flexible solutions to solve all system needs.

F600 HMI

Designed specifically for pumping applications, the F600 HMI supports configuring the F600 in Single Pump (Simplex), Cascade (Duty Assist) and Multi-leader (Multiplex) modes, connecting via Modbus RTU or Modbus TCP/IP with the option for remote access via the OPC-UA protocol. The pre-configured pages are comprehensive in supporting drive configurations, application configurations, pump control and more.



Packaged Solutions For Pumping Applications

Save engineering cost, resources, and time through pre-engineered packaged drive systems to control single and multiple pump applications without a costly PLC. Nidec Drives' pre-configured pump packages contain our industry designed F600 Pump drive developed with easy-to-use pump application specific software functions, real-time clock, Hand/Off/Auto LCD keypad, input disconnect switch, and space for several power options inside a robust UL Type 3R enclosure.

Solar Pump Solution

This software solution can be implemented on a range of our drives, scaled to the specific capability required in your pumping application, providing hassle-free power flexibility for efficient continuous operation. Our Solar Pump Solution provides reliable pump control, no matter what the weather. Once set-up, with no additional user effort, the drive automatically selects the power source between grid and solar panels, providing fast & adaptive responses to irradiation levels, ensuring energy consumption is minimised without affecting performance.

Unidrive - Universal High Performance AC Drive

0.75 kW - 2.8 MW

Unidrive is the accumulation of half a century of motor control expertise, and it is the embodiment of what Nidec Drives is all about. Unidrive is our crown jewel, that helps achieve maximum flow control with advanced motor control algorithms. More than a million motors across the world rely on a Unidrive. Unidrive integrates, with all of its benefits, seamlessly into your system. Plus, with its scalable control architecture, it's the drive for what you need today and for where you want to go tomorrow. Unidrive also provides the platform for our most comprehensive Solar Pump Solution.

Commander S – General Purpose Micro Drive

0.18 - 4 kW

With a feature set optimised for simple pump applications, Commander S provides a cost-effective and energy efficient solution for installations that require plug and play convenience straight from the box. Commander S is the first drive to come with an app interface as a standard feature. The Marshal app is our revolutionary way to interface with the drive covering commissioning, monitoring, diagnostics and support.

Commander C - General Purpose Drive

0.25 - 132 kW

Simple and compact AC motor speed controller that meets advanced requirements for a wide range of applications while optimizing the user experience. Used in many pump applications in water and wastewater treatment processes, with SCADA communication capabilities and often only 4 parameter adjustments required to set-up. Commander C combines efficiency and reliability to offer optimum performance for Solar Pump applications. With many essential features built in, dual STO safety function, braking transistor and PID control, it provides a compact solution.



Autom

Innovati
environn
comfort

The world's leading global manufacturer of electric motors and controls

Nidec, the world's largest motor brand.

Nidec is in everything, everywhere.

If you drive a car, wash your clothes, watch movies or talk on a smartphone, you're using Nidec technology. Almost anything that spins and moves, no matter how big or small, does so thanks to a Nidec product.

Our shared values of passion, enthusiasm and tenacity guide us on our collective journey to be the best.



Appliance, commercial & industrial motors

Energy efficient motor and drive technology for commercial, industrial, and home appliances

otive

ng to help improve safety,
mental protection and
required for automobiles



Small precision motors

DC motors for all industries
and applications



Motion & Energy

High-performance motors, drives,
generators & energy management
solutions for renewables, automation,
infrastructure, and electric vehicles

Machinery

Machines, factory automation
equipment, measuring, and
testing devices



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