



POSITIVE PROBLEM SOLVING **+** **=**

## DURING TESTING OF THEIR POWER ELECTRONICS, NIDEC DRIVES REQUIRED PROGRAMMABLE DC SOURCES TO OVERCOME THE INERTIA OF MODERNISATION.

Electric drives are critical across many industries, consuming around half of the world's electricity. They regulate the output of motors to deliver precise motion control. Devices they are typically found in include pumps, electric vehicles, elevators, and industrial automation.

Drive configuration has traditionally been time consuming, requiring users to read through lengthy manuals. Settings often need to be recorded manually, which could lead to some red faced engineers if their handwritten notes were lost.

Nidec Drives' latest development is a shift in gear for VSDs (variable speed drives). Their Commander S micro drive is the world's first to come with an app interface as standard, allowing plug and play operation. Known as Marshal, the app uses NFC (near field communication) for wireless connectivity.

This enables drives to be set up without being removed from their packaging, even when powered off. Once configured, they can be monitored, diagnosed and optimised via the app. Settings are stored in the cloud, providing easy access and added resilience. Parameters can also be transferred between drives with a simple tap. Together, these features minimise the time and expertise needed to set up drives.

VSD designs comprise many power electronic components, which need to be rigorously tested. To support this, Nidec Drives purchased three LAB-HP DC sources, adding to their existing ETPS power systems.

Project Engineer Rhys Williams explained "The LAB-HP is very versatile and can be used in a wide range of test applications. We primarily use them for testing switched-mode power supplies and pulse testing power semiconductors. This includes IGBTs and MOSFETs for inverter output stages."

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# CASE STUDY

## NIDEC DRIVES

### PUTTING IDEAS INTO MOTION

Pulse testing can be used to assess the switching performance of power electronic devices. It involves applying precisely controlled, repeatable electrical waveforms. The results provide valuable insights for refining design, leading to improved efficiency and reliability.

Rhys Williams stated “Integrating the LAB-HP into an autonomous pulse testing setup was incredibly simple. Interfaces including Ethernet and USB allow us to streamline programming.”

“Ensuring test and operator safety is paramount. The preset feature enables users to preview high voltage output values before applying them to the DUT.”

Williams added “Using a 2A current output allows our smaller VSDs to be powered directly and spin relatively small motors. This enables testing of the products with a further level of control over the DC bus voltage.”

Headquartered in Newtown, Mid Wales, Nidec Drives is the largest employer in the local area. Originally established as Control Techniques, the engineering hub consists of electrical, mechanical and software engineers working on VSD developments.

For over 70 years, the company has been at the forefront of motor control innovation. In 1952, it introduced the world’s first mechanical VSD.

From its humble beginnings, the site is now part of the global Nidec enterprise with operations in over 70 countries, and R&D facilities in five locations.

Beyond circuitry testing, the team carries out thermal, electromagnetic compatibility, and conformance evaluations.

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### ABOUT THE LAB-HP

The LAB-HP is a series of programmable DC sources. Each unit is incredibly compact, with up to 21kW of power in just 3U of rackmounting height. The product family features voltages up to 2000V, as well as high current versions. Models are available from 3kW to 63kW.

A systems interface is provided as standard for master/slave operation up to 504kW. Setting values can be equally shared between up to 8 units configured in parallel. Up to 8 units can also be connected in series, up to 1000V.

A large colour touchscreen HMI displays all relevant output quantities simultaneously. Rotary pulse encoders allow for straight forward front panel operation.

An optional front panel USB port provides a convenient method of implementing predetermined voltage and current curves. Data can be programmed on a PC using text or .WAV formats. It can then be simply transferred to a USB drive and recalled from the LAB-HP.

The USB drive can also be used for datalogging of actual output values. The front panel display indicates when the unit is logging data. It will alert the user if the USB drive becomes full.

Modules can be operated in constant voltage and constant current modes. Adjustable power limit and resistance modes are also provided, as is a solar array simulation mode as standard.

A wide range of options are available including high speed models, an integrated protection diode, and reversible output polarity.

ETPS have one of the most comprehensive selections of DC sources, loads and bidirectional power systems on the market. Products start at a few hundred watts, with systems up to 6MW/3000V possible.

If you’d like to discuss how our DC power systems could drive your testing forward, please contact ETPS today.

