

CASE STUDY

MAKINEX PORTABLE POWER BOX AND CONCRETE CORING



The Evolution of Portable Power: Battery Solutions Transforming the Construction Industry

Currently, the landscape of portable power is undergoing a remarkable transformation, shifting from traditional gasoline generators to advanced battery-powered solutions. This evolution has been fuelled by growing concerns over environmental impact, noise pollution, and the need for more efficient, cost-effective energy sources. One standout example of this shift is exemplified by the real-world testing of the Makinex Portable Power Box (PPB) in collaboration with Construction Sciences (CS), showcasing the efficacy of battery power in traditionally gasoline-dominated environments.

The Rise of Battery Power in Construction

Traditionally, gasoline generators have been the staple choice for powering equipment and tools on construction sites. However, their noisy operation, harmful emissions, and dependence on fossil fuels pose notable challenges, especially in environmentally sensitive areas or confined spaces such as tunnels. This evolution is not only reshaping the way construction projects are powered but also significantly impacting operators who now need to review their current fleet of machines and embrace environmentally friendly alternatives that offer significant advantages.

Real World Testing: Makinex Portable Power Box and Concrete Coring

Construction Sciences (CS) embarked on a trial to assess the viability of battery power for coring operations on concrete pavements, a task traditionally dominated by gasoline generators. The Makinex Portable Power Box (PPB) was selected for its dual advantages: zero noise generation and emissions, making it ideal for use in



tunnel operations and other environmentally sensitive areas.

During the trial, CS conducted coring operations on various types of concrete, including high-strength aircraft base concrete, R83 base concrete and R82 lean mix concrete subbase (with asphalt layer). The results were promising, demonstrating the PPB's capacity to power core drills and vacuums efficiently while consuming minimal battery energy.

High-strength aircraft base concrete:

Measuring up to 4.8 MPa flexural strength and 480 mm thick with thickened concrete edges at isolation joints. The PPB operated the drill and vacuum with a draw on the battery of 3.2 KW. Only 10% of the battery was consumed for three 110 mm diameter cores of concrete that were 500 to 550 mm thick. This indicated sufficient battery capacity for vacuum + drill operations for 30 cores of aircraft pavement.



R83 concrete base: Measuring 4.5 MPa flexural strength and 240 to 260 mm in thickness. Cores extracted under R83 are typically 75 mm diameter. Results indicate the PPB equivalent R83 coring capacity would be up to 60 cores, potentially double without vacuum drawing energy. A strong comparable strong performance compared to a traditional petrol generator.

R82 Lean mix concrete subbase: Described as thick asphalt over R82 lean mix concrete subbase measuring a compressive strength of 5.0 MPa with a thickness of between 220 to 230 mm. The PPB drew 1.7 KW when using only the drill, consuming only 7% of the battery for 20 cores. A full charge of 100% would be equivalent to extracting 280 lean concrete cores, potentially 140 cores if using the vacuum with the drill.



These findings underscore the PPB's reliability and endurance in demanding construction environments, showcasing its potential to replace traditional gasoline generators with a quieter, cleaner, and more sustainable alternative.

Transforming the Industry Landscape

The success of the Makinex Portable Power Box (PPB) is indicative of a broader trend reshaping the global construction industry. As operators increasingly prioritise sustainability and eco-conscious solutions, equipment companies must adapt by offering battery-powered equipment that aligns with these values.

Embracing a Greener Future

The evolution of portable power from gasoline generators to advanced battery solutions heralds a new era of sustainability and innovation in the Construction industry. As businesses embrace

environmentally friendly alternatives like the Makinex Portable Power Box (PPB), they are not only

reducing their carbon footprint but also driving positive change within the industry. By prioritizing clean, efficient, and cost-effective battery-powered solutions, without compromising on performance, construction companies can position themselves at the forefront of the sustainable revolution, shaping a greener future for generations to come.

About the Makinex Portable Power Box (PPB):

The future of portable power. The PPB is a quiet and clean power solution built with safety in mind. Experience noise-free, fuel-free, emissions-free power, extremely suitable for indoor and confined spaces. This versatile device offers up to 15kWh of battery capacity, empowering operators across various industries and applications. It charges via 120V and 240V mains or connected solar photovoltaic (PV). It's equipped with 3x30 (240V, 120V), 2xGFCI 20A outlets, 1x USB-A, 1xUSB-C outlets, RCD protection, and a battery management display. With thermal overload protection, a spring-actuated brake, and a durable frame, manoeuvring and storage is effortless. This IP44-rated unit provides weather resistance, ensuring reliability and durability for a long operational experience. Charge overnight and enjoy an 6kW output wherever, or whenever you need quiet & emission free power.

PPB Specifications	
Product	Makinex Portable Power Box
Dimensions	972mm x 516mm x 931mm
Capacity	14.4kwh
Output	6kw
Outlet sockets	3x30 (240V, 120V), 2xGFCI 20A outlets, 1x USB-A, 1xUSB-C
Inlet sockets	1 x 10amp, 4kw solar
Charging time	8 hours