

HYPERSCALE LOAD BANKS



HAC400-200PX

UK design and manufacture by Hillstone

Available from the Hillstone European Load bank Rental Fleet

Who are Hillstone?

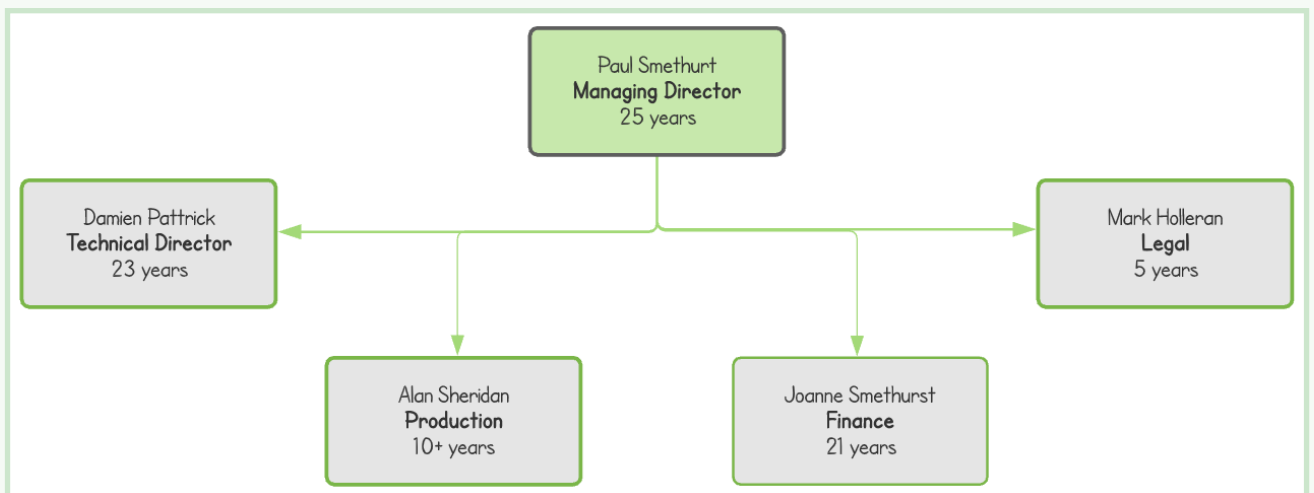
Established over 25 years ago Hillstone have always designed and manufactured load banks for testing Batteries, UPS Systems and Gensets, within industries such as:

Aerospace | Telecoms | Datacentres | Renewables | Oil & Gas | Power Generation

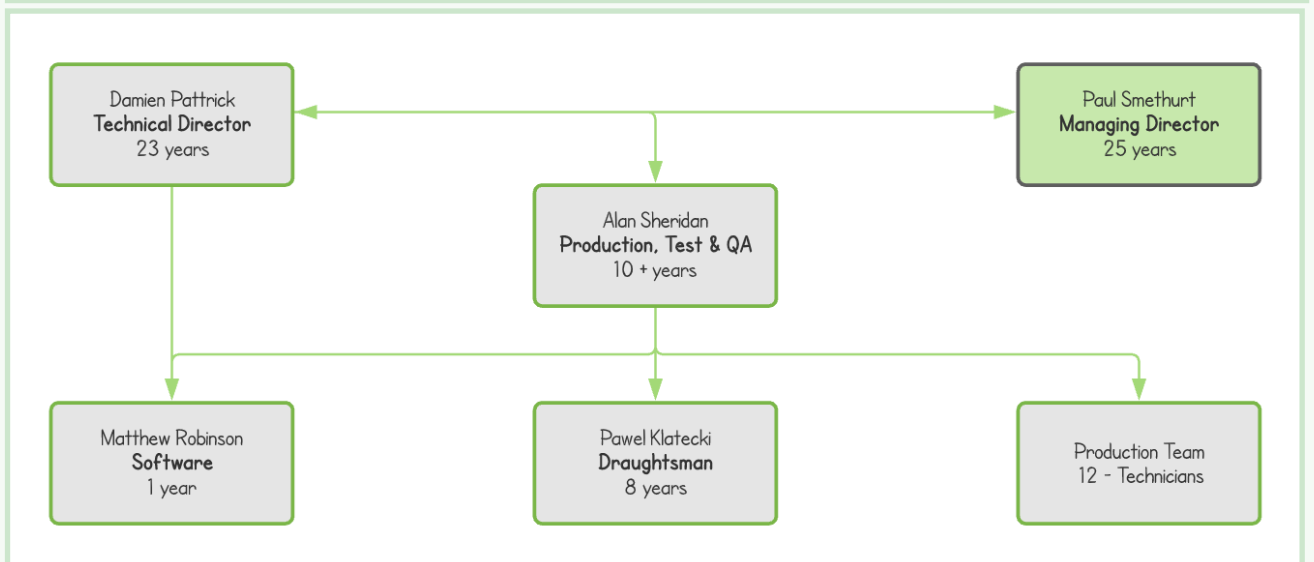


Our datacentre load bank service team have over 12+ years of heatload commissioning experience in and around the datahall white space

Management Structure



Engineering Team



UK Facility

Production: 12,000 sq ft
 Rental: 1,500 sq ft
 Office: 3,000 sq ft

Ireland Facility

June 2021: 2000 sq ft rental;
 Dundalk Co Louth

The History of Data Centre Heatload Testing

Over the past 12+ years Hillstone have delivered rental load bank services to hundreds of datacentre projects globally across 5 continents

Heatload Sale & Rental

IST delivery

Uptime Certification support



A summary of major projects we have supplied, load banks to deliver datacentre IST

Year	Major Projects	Clients	Equipment
2021	4500kW IST Heatload	Google, Colt	HAC230-6RM
2020	54V DC 19"rack 10kW Constant Power	BT - UK	HDC9kW-56V-ATS
2019	Hyperscale - 100kW Loadbanks 54V DC 3kW, 4kW rack loads	Equinix - UAE, BT - UK	HAC400-100PX HDC3kW-56V-ATS HDC4kW-56V-ATS
2018	Hyperscale - 100kW Loadbanks	Equinix - UK	HAC400-100PX
2017	Hyperscale - 175 & 200kW Loadbanks	KAO, NTT, AWS, Spotify - UK	HAC400-200 HAC400-175
2016	Hyperscale - 110kW Loadbanks	DigiPlex Norway & Sweden, Google UK	HAC410-100PX HAC230-6RM
2015	Hyperscale - 110kW Loadbanks	Microsoft - Europe	HAC400-110PX
2014	Research Centre Flagship HQ - UK	Digiplex / Leeds University, Apple -UK	HAC230-6RM
2013	Commissioning— Level 5 IST & UTI Rack Heatload 2000kW IST	STC, Maccu Casino China	HAC230-6RM
2012	Commissioning	Digital Reality - UK	HAC230-6RM & HMT-20
2011	Commissioning Level 5 IST & UTI	Mobily, Blackberry - KSA, Etisalat, UAE	HAC230-6RM
2010	Commissioning - Level 5 IST	DU & Sky News Arabia - UAE	HAC230-6RM
2009	Loads - 230, 6.6kW & 20kW Mini-tower	Telecity - UK	HAC230-6RM
2008	Rack Loads - 240V 3kW, 4KW	BT - UK	HAC240-3RM HAC240-4RM

"Many thanks for your timely support and all your help over the last few years"

Network Accommodation, BT Technology

"Hillstone is a good reliable supplier of Loadbanks and one that I can recommend for this equipment and service"

Senior Project Manager Hyperscale Norwegian Data Centre

"This is the first time we have seen this type of Heatload equipment for testing our datacentres. We would like Hillstone to be our datacentre load bank partner for all our future projects"

Datacentre Delivery Manager , Mobily - KSA

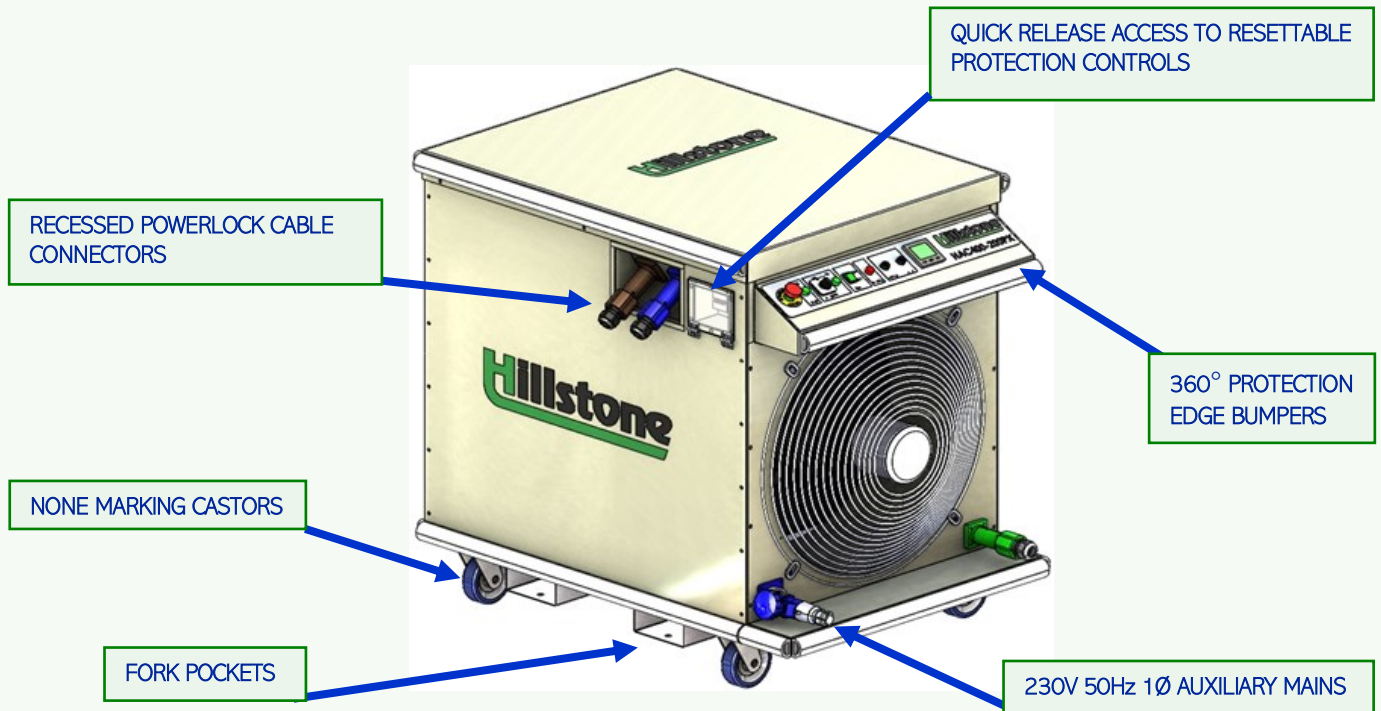
ISO9001:2015 QA Loadbank
Manufacture & Rental



The Future of Hyperscale Datacentre Heatload Testing

In 2020 Hillstone have designed & manufactured the latest advancement in hyperscale heatload testing with the HAC400-200PX load bank.

With advanced software technology, developed by Hillstone, the range of 200PX load banks drives the commissioning tests with flexible control and operation from 2 operating modes: - **Broadcast** or **Cluster Control** for zonal incremental granular heat load dissipation across the white space.



User operation is via the supplied remote control **iHHC2-PX hand held controller** which gives 5kW load resolution across the load bank cluster array.

	Power at 400V	Amps at 400V	Frequency	Min Step Increment
HAC400-200PX	5kW to 205kW	7A to 297A	50Hz	5kW
Continuous duty cycle operation with no limitations				

The HAC range of load banks are cluster controlled by the intelligent **iHHC2 - PX Hand Held Controller**

Adjustment control

5kW up / down load selection
User defined 'On The Fly' load value selection

The user selected Load Step Profile is applied to all load banks in the connected array

Trueload displayed on PX hand held controller

Display: 4 x 20 oLED

- LoadStep
- Load Array (kW)
- Connected (Loadbanks)
- Total kW across the cluster



Powerlock Connectors

Industry standard compatible single pole power connectors are designed to provide safe, reliable and quick connections from the load bank to the busbar tap off boxes

Panel mounted DRAIN connectors on the load bank are angled for ease of connection

Cables are fitted with a free plug SOURCE mating connector and colour coded for EU AC voltage ratings L1, L2, L3, N, E.



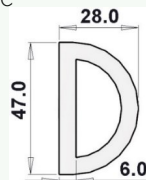
Details of Protections Bumpers

The load bank is protected with D type Bumpers fitted across 8 edges; top & bottom

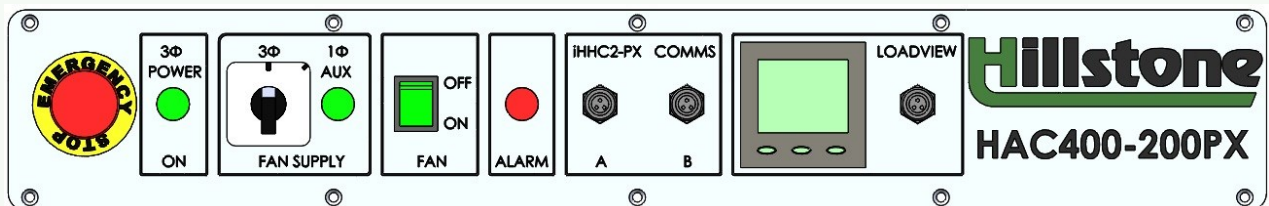
PVC D-Fenders DO NOT mark or scuff surfaces it comes into contact with
Fenders are UV stabilised, phthalate free and 100% recyclable

Hardness: 80 ShA Density: 1.9 g/cm³

Bumper Width: 47mm Bumper Height: 28mm



Control Panel



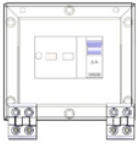
Key: 1 2 3 4 5 6 7

Key	Control Panel Description	Key	Control Panel Description
1	Emergency Stop Button	2	3Ø Load On Enabled when power is live on the 3phase powerlock connections
3	Fan Supply 3Ø 400V, 50Hz powered from test source 1Ø 220-240V, 50 Hz	4	Fan On/Off Switch Fan selector cam switch for 1Ø or 3Ø operation, with indicator lamp to show 1Ø power is applied.
5	Alarm Over Temperature Alarm, Fan Alarm All alarms are electrically interlocked with the load application controls to prevent load from being applied if an alarm condition is present	6	Comms 1 x iHCC2-PX 1 x parallel load bank cluster port
		7	Digital Power Meter DIN72 meter

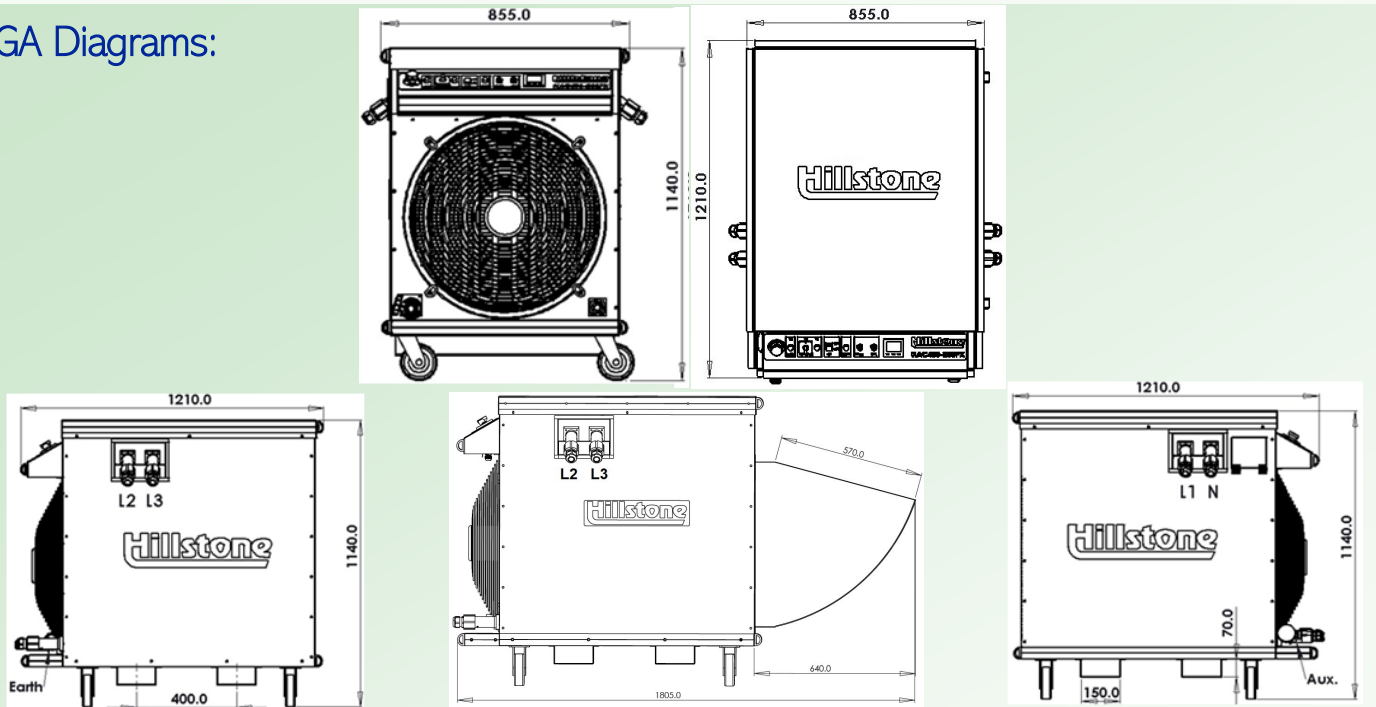
Made in Britain brings together the British manufacturing community, united with the use of the registered collective mark.



Additional Technical Details

Electrical	Nominal Ratings Voltage 400 volts, three phase Power 205kW Frequency 50 Hz Power factor 1.0 resistive	Maximum Ratings Voltage 425V Power 232kW
Cable sets	<p>5m or 10m power cables, L1, L2, L3, N, E; 120mm² HO7RN-F double insulated trailing cable fitted with Powerlock free plug drain and source connectors</p> <p>5m or 10m auxiliary cable fitted with screw fit IP67 CEEFORM 16A single phase male and female connectors</p> <p>5m or 10m length comms cables for load bank remote control with inline metal screw connectors and 4 wire shielded comms cable</p>	
Cooling Fan	<p>1Ø 220-240V, 50 Hz, horizontal forced air cooling fan, TEAO type</p> <p>Selectable via panel mounted cam-switch for user selection of the test source or auxiliary 16A 1Ø supply</p> <p>Fan overrun to cool elements during the run down period</p> <p>Airflow 234 m³/min @ 100Pa</p> <p>Intake openings designed to prevent objects >12mm diameter from entering the unit</p> <p>Fan blade material cast aluminium / non-corroding material</p>	
Element type	<p>Removable, insulated, air cooled, incoloy stainless steel, sheathed resistor elements designed for continuous air cooled duty in black heat and is insulated to prevent short circuit or electrocution</p> <p>Insulation tested to 500V</p> <p>Standard resistance element tolerance +/- 7.5%; load bank design for +0% / -7.5%</p>	
Circuit Protection	<p>Fan motor overload and control circuitry circuit breaker protection are accessible from a quick release control panel on the side of the load bank</p> <p>Interlocked Alarms</p>	
Engineering Mode	<p>Hillstone Software Service App:</p> <p>Load bank PC interface for technician verification of the load bank operation and to create a PDF report for completed load bank service</p>	

GA Diagrams:



HAC400-200PX

Length	Width	Height	Approx. Weight
1210mm	855mm	1140mm	170 Kgs

Enclosure Specification:

Environmental Protection:	Electrical Control Chamber	IP54		
	Element Heat Chamber	IP21		
	Recessed Connector Panel	IP67 (with cables connected)		
	Sloping Control Panel	IP54		
Case Construction:	Lightweight aluminium frame with recessed side panel connectors and stainless steel exhaust grill			
Markings & notifications	Rating Label: Silver background, black letters; hitack polyester label, high temperature resin print, weatherproof Reflective UV coating, - 25°C to +120°C			
	Safety Label: Yellow background, black letters; ultra bond vinyl thermal transfer, - 40°C to + 80°C, weatherproof outdoor rated			
	Engraved Control Panel: Brushed aluminium with back ink filled letters			
Finish:	Powder coated, textured finish RAL 5002, 120 micron coating			
Temperature:	Operating	0-60°C	Storage	0-80°C
Movement:	None marking braked 5" swivel castors with side loading forklift pockets			

Warranty and Service Details:

With advanced diagnostic software we can prolong the working life of the load bank with targeted servicing of parts during normal and extended warranty periods

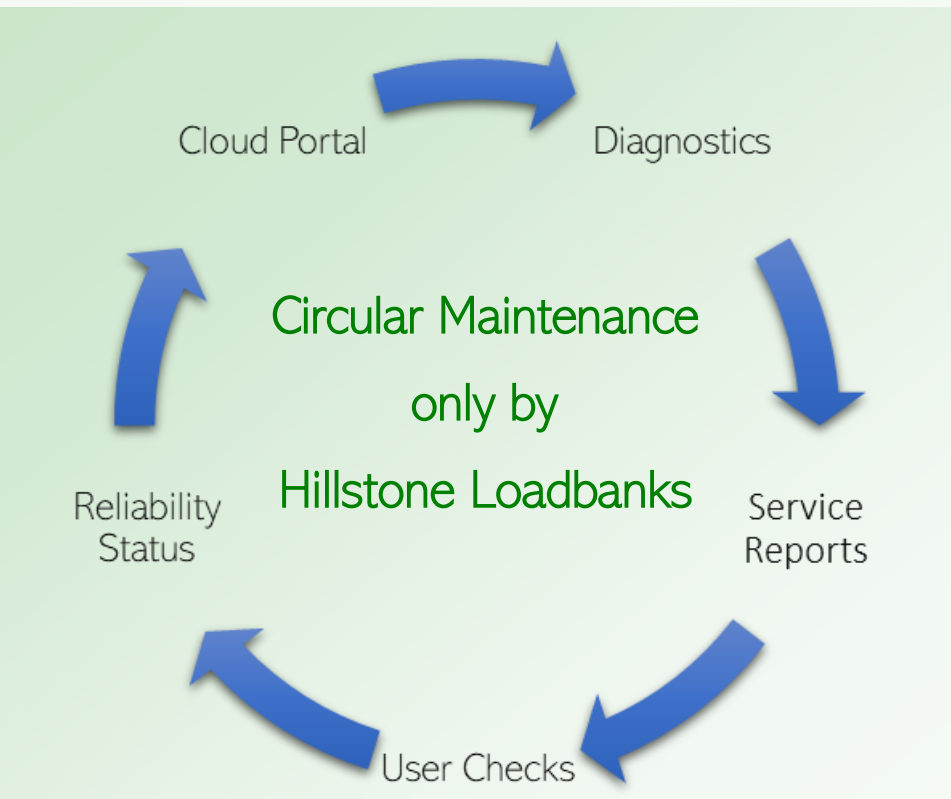
Over a 10 year life cycle the load bank with scheduled servicing and testing will allow successful operation

The calculated MTBF gives a greater than 730 days of IST testing, based on a nominal 12 hours load bank operation per IST day

The calculated MTTR, based on bi-annual servicing and spare part availability being available during servicing, gives between 1hr and 1 day



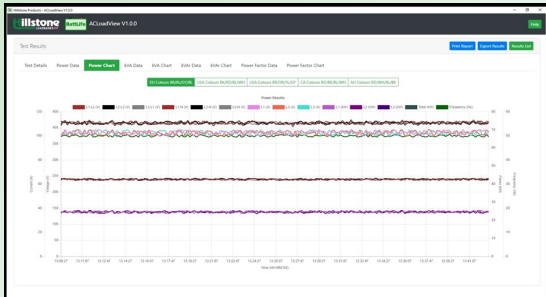
5 Year Service Plan



- Hillstone Engineering Europe
2021
- HAC400 —200PX
2020
- 54V DC 19" Rack Load
2019
- Hyperscale PX Loadbanks
2015
- Hillstone Middle East
2011 - 2019
- IST Commissioning
2010
- 19" Rack Mounted Server Simulator
2009
- Hillstone Products Limited
1995

AC LOADVIEW

daily datacentre IST load performance reporting



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