

## Regenerative Load Banks

Back-to-Grid Battery and Fuel Cell Testing



*Load Bank*

Greenlight's series of power, high accuracy cyclers can be used to precisely test batteries, fuel cells and other electrochemical cells.

- Power levels from 20-500kW, parallel up to 1MW
- Voltages from 5-1000V, current from 0-1000A
- Single, double or quad channel configurations; all independently controlled, or in parallel
- Automated control with Greenlight's Emerald™ control software
- Power factor > 99%, with accuracy ≤ 0.1%



# Back-to-Grid Load Bank Features

Nominal power output	40kW, 75kW, 100kW, 160kW, 250kW, 320kW, 400kW, 500kW (Other values on request)
Rectifier type	IGBT, PWM, galvanic isolated
Power factor at nominal power	$\lambda > 0.99$
AC-Input voltage/ AC-Input frequency	380 / 400 / 440 / 480 / 500 / 690 V $\pm 10\%$ , 3-phase, (N), PE, 50 / 60 Hz $\pm 6\%$
Output voltage	min 5V up to various maximums: 200V/400V/600V/800V/1000V
Output current	various maximums: $\pm 600$ , $\pm 800$ , $\pm 1000$
Control accuracy	voltage 0.1% fs, current 0.1% fs
Voltage ripple (at > 10V)	$\leq 0.1\%$ fs rms
Current ripple (at > 10V)	$\leq 0.1\%$ fs rms
Typical current rise time	< 1ms (for 800V system)
Stand-alone interface	Analog 0 - 10V / CAN-Bus (Reaction time CAN-Bus max. 10 ms; sampling frequency 100Hz) Option: Profibus, Modbus, Ethercat, Ethernet
Overall efficiency at nominal voltage/ nominal power	up to 100kW: 94% >100kW: 95%
Allowable ambient temperature	0 to 40°C
Cooling	forced air cooling
Cabinet dimensions (W x D x H)	$\leq 100$ kW: 1400mm x 800mm x 1800mm >100kW to 320kW: 2400mm x 800mm x 1800mm 320kW+: 3600mm x 800mm x 1800mm
Recommended setbacks	200mm from walls, 300mm from ceiling
Protection class	IP20
Acoustic level (for IP20 enclosure)	71 to 78 db (A)



## Automated Testing Software



- Highly configurable software for single or multiple test channels
- Ability to control multiple testing devices from a single user interface
- Enables users to run dynamic tests 24/7, completely unattended
- Up to four levels of privilege control (user access)
- Alarm notification sent via email and SMS
- Multi-language support

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104A - 3430 Brighton Avenue  
Burnaby, B.C. Canada V5A 3H4  
tel +1.604.676.4000  
fax +1.604.676.4111  
sales@greenlightinnovation.com

The Test and Automation Specialists: [greenlightinnovation.com](http://greenlightinnovation.com)

