

**PowerPod is a low cost and highly controllable power-take off for the wave energy industry**

At the core of the technology is an optimised low speed ferrite-based linear generator, offering a competitive mix of performance and cost. The technology is modular, scalable and can be configured for a wide range of applications.



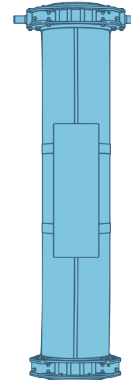
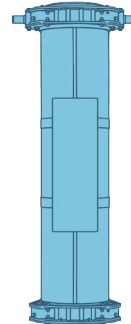
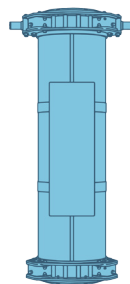
**Efficient**  
up to 90%

**Modular**  
arrangement

**Powerful**  
up to 360kW

**High**  
reliability

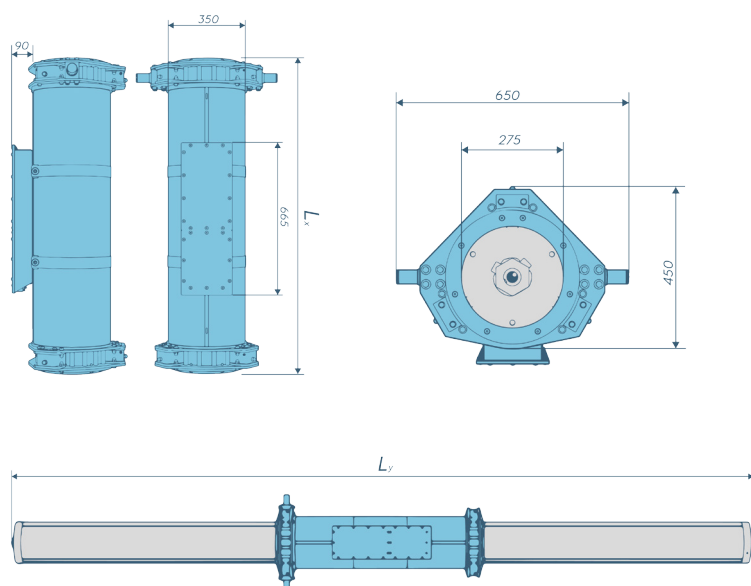
**Controllable**  
in real-time



30kW (1m) , 45kW (1.5m) and 60kW (2m) armatures available

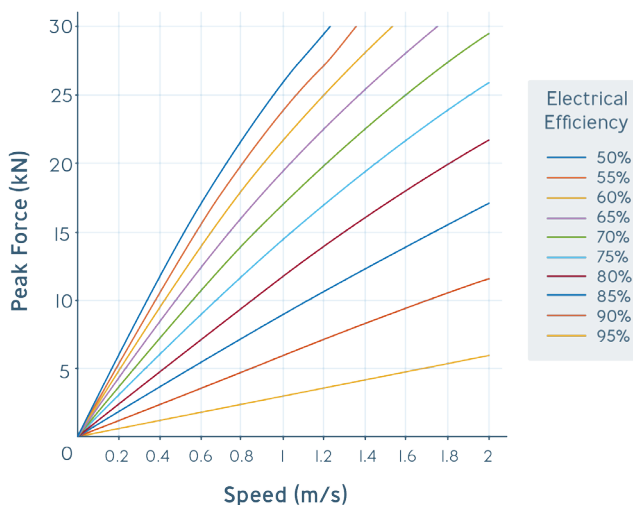
# Technical Data

## Dimensions



## Electrical Efficiency

Output for 30kW (1m) armature



## Generator Specification

		LG-F30	LG-F45	LG-F60
Maximum stroke	mm	4590	4090	3590
Peak force	kN	30.0	45.0	60.0
Peak velocity <sup>1</sup>	m/s	2.0	2.0	2.0
Peak acceleration	m/s/s	5.0	5.0	5.0

## Electrical Specification

		LG-F30	LG-F45	LG-F60
Nominal DC-Link Voltage	Vdc	625	625	625
Peak current <sup>2</sup>	Apk	144	216	288
Peak current	Arms	96	144	192
EMF Constant (line)	V/(m/s)	297	297	297
EMF Constant (phase)	V/(m/s)	188	188	188
Phase Resistance (@ 25°C)	Ω	0.75	0.50	0.40
Phase Inductance (@ 25°C)	mH	30.2	20.1	15.1
Max. winding temp.	°C	120	120	120
Max. duration with peak current	s	10	10	10

## Mechanical Specification

		LG-F30	LG-F45	LG-F60
Armature length, $L_x$	mm	1410	1910	2410
Armature diameter	mm	370	370	370
Armature mass	kg	340	487	633
Magnet stack length (min/max), $L_y^3$	mm	2000 / 6000	2500 / 6000	3500 / 6000
Magnet stack diameter	mm	277.8	277.8	277.8
Magnet stack mass	kg/m	338	338	338

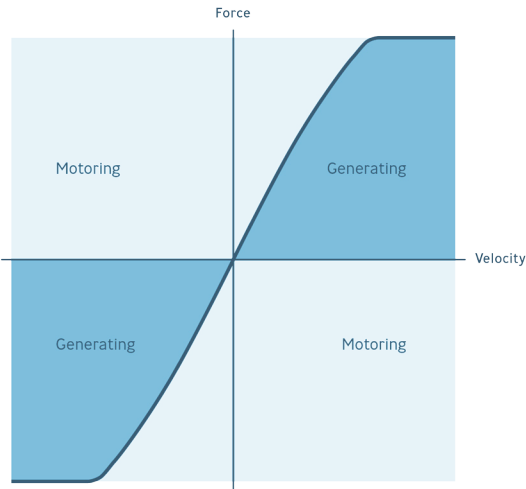
<sup>1</sup> Limited by DC link voltage, higher velocities are possible if the link voltage increased

<sup>2</sup> Real time calculation of winding temperature required (including monitoring)

<sup>3</sup> Magnet stack length available in increments of 500mm

# Technical Data

## Electronics, Control and Instrumentation



PowerPod includes real-time control, offering the capability to vary the generator force within milliseconds, whilst also providing a constant DC voltage output for connection to other generating equipment or a grid-tie inverter.

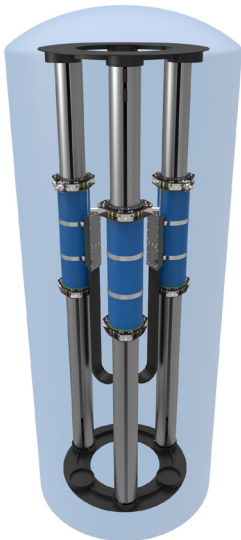
The control system can alter the physical resistance the generator offers to motion as well as the ability to instantaneously operate as a motor, i.e. it can be operated as a highly tunable damper and spring with full four-quadrant control.

## Modulation Information

The design is highly scalable; generators are available to suit individual applications and multiple units can be aggregated to together to provide tailored PTO solutions for WEC devices.



Specification		PP-N2			PP-N3			PP-N4			PP-N6		
		F30	F45	F60	F30	F45	F60	F30	F45	F60	F30	F45	F60
Rated Power	kW	60	90	120	90	135	180	120	180	240	180	270	360
Peak force	kN	60	90	120	90	135	180	120	180	240	180	270	360



## Product Specification

**PP - N4 - LG - F45 - L5000**

Number of Linear Generators  
e.g. 4 Linear Generators

Force / Size (kN)  
e.g. 45 kN force each

Magnet Stack Length (mm)  
e.g. 5000mm

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