

VEH-360

ELECTROMECHANICAL VIBRATION ENERGY HARVESTER

For applications where battery replacement is costly, difficult or hazardous, Ferro Solutions introduces the VEH-360 Energy Harvester. The unit combines a compact generator that converts vibration to electricity with storage capacitors and a precision, regulated DC power supply. The VEH-360 delivers 3.3 VDC and includes energy storage to ensure smooth power delivery even with an intermittent vibration source.

The VEH-360 produces maximum power at 60 Hz. This vibration frequency is typically found in motors, compressors and generators in the power and process industries. VEH-360 can also be used in transportation, aerospace, and other environments to power equipment health monitoring, asset tracking, and wireless sensor systems.

Ferro Solutions can deliver harvesters for frequencies other than 60 Hz, typically in the range of 20 -120 Hz. We also offer a complete development kit that includes a vibration table, vibration data collector and accessories.

POWER OUTPUT @ 60 HZ (raw AC from generator)

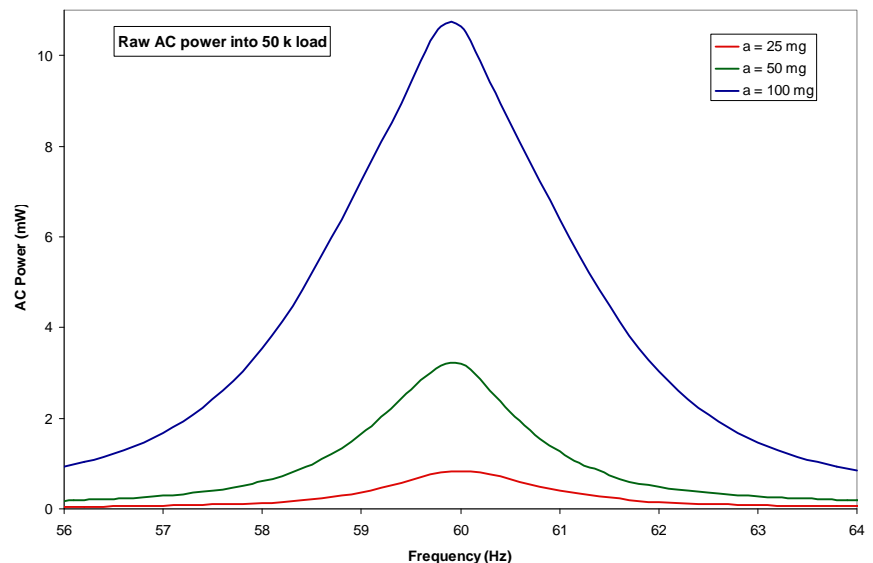
Acceleration	25 milli-g	0.8 mW
	50 milli-g	3.1 mW
	100 milli-g	10.8 mW

BANDWIDTH ($\Delta f = 3$ Hz)

Peak frequency	60 Hz
50% power delivered	+/- 1.5 Hz
Q @ 100 milli-g	28

DIMENSIONS

Height	1.52 in	39 mm
Diameter (base)	2.59 in	66 mm
Diameter (body)	2.09 in	53 mm
Volume	5.26 in ³	87 cm ³
Mass	10.2 oz	289 g



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Evaluation Power System Specifications

The evaluation circuits work with the harvester to make a complete power system. While these demonstration units perform well under a wide range of conditions, Ferro Solutions works with customers to optimize VEH power systems for specific vibration environments, voltage or current requirements, and storage demands.

We also offer sensors, using low-power magnetometers and passive counters for a wide range of uses and power transfer systems for sending power to implanted medical devices and embedded sensors.

Since our founding in 2002, Ferro Solutions has worked closely with the U.S. Navy and commercial clients to develop new technologies and bring new products to military and non-military markets. Our team's expertise with magnetic materials is the common thread between our energy harvesters and our sensors. We are working with aerospace, oil, and medical device customers to optimize and package our technologies for specific applications.



MAXIMUM SUSTAINABLE CURRENT (3.3VDC)		
Acceleration	50 milli-g	0.3 mA
	100 milli-g	1.6 mA

ENERGY STORAGE	
Evaluation circuit	0.66 mAh

POWER DENSITY*		
Acceleration	50 milli-g	0.009 mW/cm ³
	100 milli-g	0.017 mW/cm ³

SPECIFIC POWER*		
Acceleration	50 milli-g	4.0 mW/kg
	100 milli-g	8.5 mW/kg

DIMENSIONS*		
Height	2.88 in	73 mm
Diameter (base)	2.59 in	66 mm
Diameter (body)	2.09 in	53 mm
Volume	10 in ³	165 cm ³
Mass	12.5 oz	355 g

* including volume and mass of circuit housing, which has room for third party radio boards and sensors.



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