CASE STUDY

WiBotic finds a solution to 1 kW wireless charging with Advanced Energy

INDUSTRY	SOLUTION	EQUIPMENT
Robotics	LCM1500 Series	Robotic Transmitter Unit

BACKGROUND

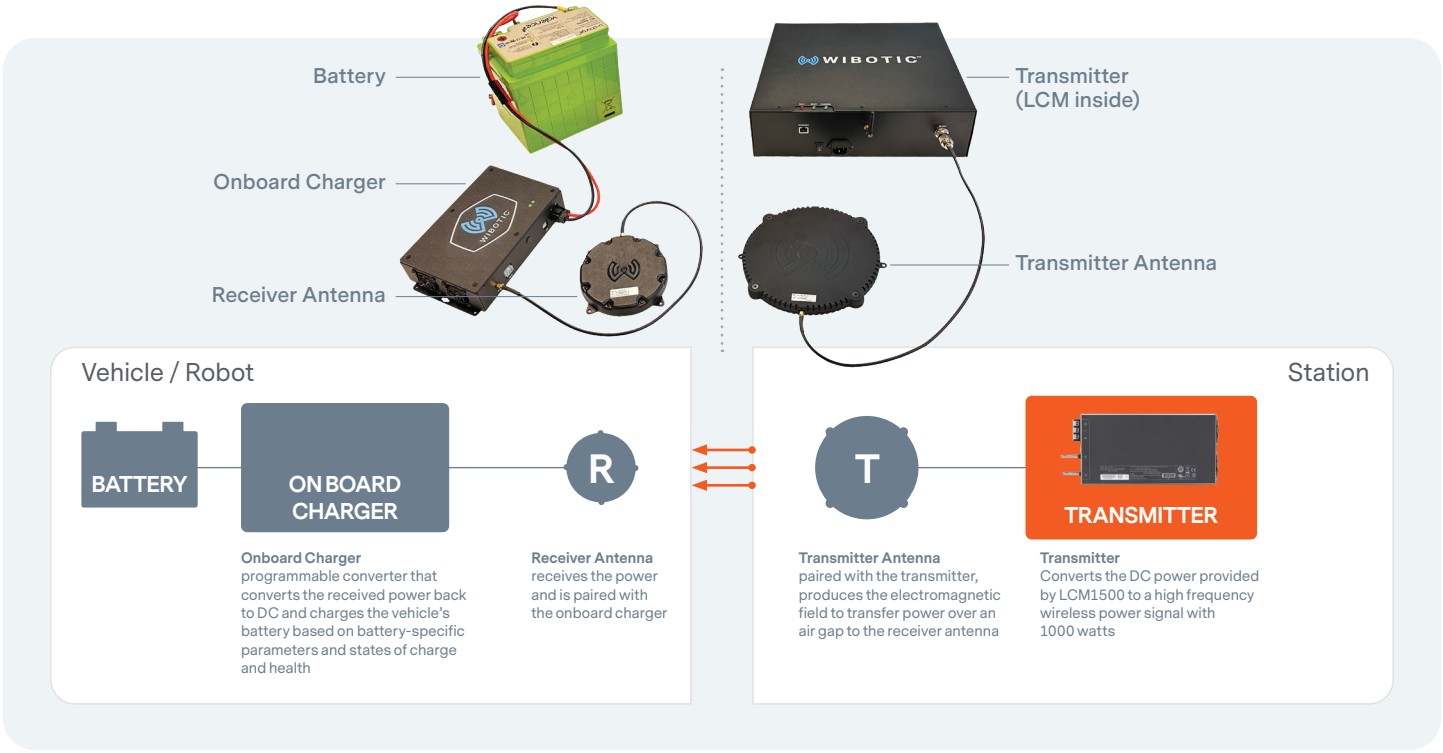
WiBotic develops wireless charging systems and specializes in near field wireless power hardware and fleet battery management software for the industrial sector. Wibotic's wireless charging systems can be used with any battery-operated mobile vehicles and robots in transportation and logistics, AGVs/AMRs in manufacturing facilities, and service, agriculture and cleaning robots.

CHALLENGE

The PSU is located in the stationary transmitter unit and provides the power required for converting and transmitting

- The wireless charging systems are to be offered in AMER and EMEA which makes a wide operating input range of the PSU necessary, due to regional differences in grid voltages
- Depending on regional quality of the electricity supply, the grid voltage can fluctuate while charging the battery requires a stable output
- A high efficiency across different load conditions (charging with up to 1,000 watts) was desired to minimize losses and heat generation as well as increase the cost-effectiveness of the charging process
- The PSU had to be able to handle conducted emissions that can appear -due to high frequency switching of power for converting and transmitting- and travel back to the PSU, degrading its performance or causing failures
- The audible noise of the PSU fans needed to be below a certain dB value for the overall system to be considered in more quiet commercial settings

AE is willing to modify standard products according to the requirements of the application. These modifications can be relatively simple changes to the firmware to maintain or achieve required values or modifications to the hardware itself, such as different connectors, or other mounting options. We can furthermore modify enclosures to match customer needs or add interfacing capabilities with specific bus protocols.



SOLUTION

WiBotic's chose Advanced Energy's LCM1500 series product to use in their transmitter because:

- LCM1500 has reserve power capacity (wireless charging system's power output 1,000W) without introducing unreasonably higher cost and enables the system to handle bouncy loads
- The ability to regulate fan speed based on temperature leads to lower noise when idle, which allows WiBotic to sell the wireless charging system to operating environments with lower noise requirements such as service robots in hospitals or libraries.
- The digital interface is clear and fully documented, allowing WiBotic to implement it quickly and easily.
- Efficiency requirements across different input voltages are met

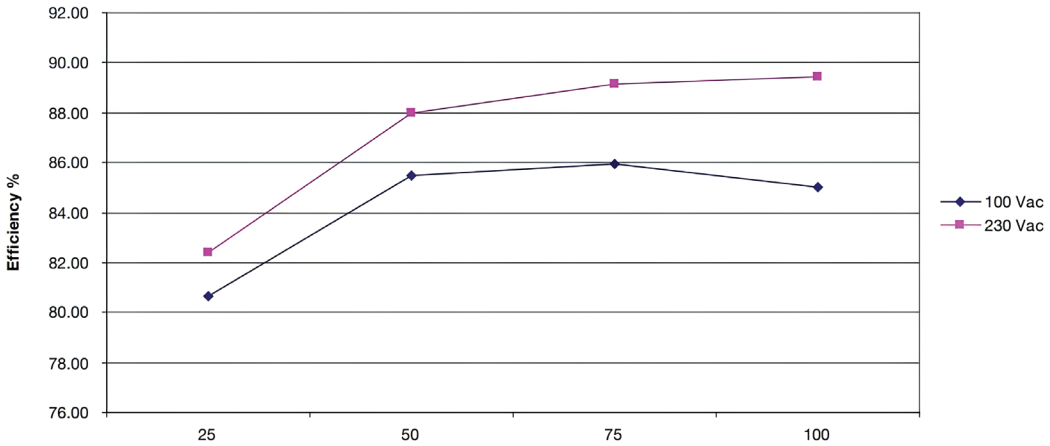


Figure 1. LCM1500Q Efciency Without the 5 Vsb

- The end user of WiBotic's wireless charging systems, for example, robot manufacturers, can now simply plug in the transmitter without having to experiment with their own PSU solutions or dealing with passing emissions tests.

LCM1500 SERIES

SPECIFICATION

1500 W output single output

12 Watts per cubic inch (2.5” × 5.2” × 10.0”)

High efficiency: 89% typical

Variable speed smart fans

Minimum MTBF of 300,000 h

Industrial & Medical Safety

CONCLUSION

Advanced Energy provides modifiable solutions for robotic systems ranging from changes to the firmware to modifications to the hardware itself, such as different connectors, or other mounting options. We can also modify enclosures to match customer needs or add interfacing capabilities with specific bus protocols.

Connect with Advanced Energy and power up your industrial robots!

Meet our industrial robot power supply expert, Haydar. Kartal@aei.com.With Haydar’s technical expertise and product understanding he helps customers identify the AE products that meet their exacting demands.

Advanced Energy

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