



AC/DC Power Delivery Case Study

GB Technology Pivotal in SPEN LV Engine Installation in Scotland



ERMCO-GridBridge, located in Raleigh, North Carolina, was chosen by Scottish Power Energy Networks (SPEN) to lead the LV Engine Program. GridBridge's Research and Development Center has been diligently working on the Unified Power Flow Controller (UPFC) for SPEN's LV Engine, a culmination of years of collaborative research, development, and testing.

In late October, the LV Engine was successfully installed at the Falkirk Soccer Stadium in Scotland, the home of the Falkirk Soccer Club. The real-world test demonstrates the effectiveness of the Grid-Bridge UPFC, allowing customers to integrate more wind and solar energy resources, thus reducing greenhouse emissions. Moreover, it delivers DC power for fast-charging electric vehicles (EVs).

Mark Ventura of GridBridge highlighted the significance of this cutting-edge technology. "It's the first of its kind to deliver both AC and DC services for Scottish Power. The UPFC is the result of a complex R&D collaboration between Scottish Power and ERMCO-GridBridge."

The successful installation marks a momentous achievement, with the system set to be commissioned and go into service in 2024.

Ventura also pointed out the strategic placement of the unit in an area with a growing demand for fast-charging DC, surpassing current capacity.

Ali Kazerooni, SPEN Engineering Manager, expressed gratitude for the successful project and highlighted the continuous demand for the 150kW DC fast-charger, anticipating constant use by many electric vehicles.

“I can tell you this 150kW DC fast-charger will be under load all the time. No pressure - many hungry EVs.”

ERMCO-GridBridge was selected by SPEN in 2019 through public bidding to lead the LV Engine Program. This initiative aimed to enhance ERMCO’s global market presence by developing UPFC for SPEN. The project spanned four years, and after successful field trial units in mid-2023, the UPFC unit, whose cabinet was manufactured in Dyersberg, underwent final acceptance tests at ERMCO’s Distribution Center in May 2023 before being transported to Scotland.

Rachel Born and Yizhe Xu, Power Electronics Engineers at ERMCO-Grid-Bridge, along with Manufacturing and Support Technician, Jeff Hopkins, conducted rigorous testing in Dyersburg.

Born highlighted the uniqueness of the UPFC, “We’re pushing the boundary of what’s available. The UPFC provides

DC power to the LV Engine project for a unique DC grid. The UPFC also helps filter to the AC grid. I don’t think anything else exists like it on the market.”

In July 2023, SPEN announced the successful integration of all components of the LV Engine, passing network testing. Ventura concluded by stating that while the first unit has been installed, additional systems will be commissioned and deployed in the coming year, with a twelve-month trial planned for 2024 in SPEN’s production LV network.



In late October, Scottish Power Energy Networks (SPEN) completed the installation of their LV Engine at Falkirk Soccer Stadium in Scotland, incorporating the Unified Power Flow Controller (UPFC) developed by ERMCO-GridBridge. The selection of GridBridge, ERMCO’s Research and Development Center in Raleigh, North Carolina, to lead SPEN’s LV Engine Program occurred in 2019. Following this, in November 2023, SP Energy Networks, a partner of GridBridge, and their Future Networks team garnered multiple accolades at the Institution of Engineering and Technology (IET) International Excellence and Innovation Awards. Notably, the LV Engine secured a gold medal in the Power and Energy category.