

RYPOS Advanced Level 3+ Diesel Particulate Filter RTG Crane Demonstration

Technology Manufacturer

RYPOS, Inc.

Co-Participants

Port of Long Beach, Port of Los Angeles

Background

Since 2009, RYPOS Inc. (RYPOS) initiated a number of different project demonstrations in an effort to evaluate the effectiveness of their Hybrid Diesel Particulate Filter/Catalyst (HDPF/C™) system in various port equipment applications. These projects include:

- Installation of the HDPF/C™ system on an RTG crane at International Transportation Service, Inc. at the Port of Long Beach in 2009;
- Installation of the HDPF/C™ system on a top handler and a side handler at Seaside Transportation Services, LLC (STS) at the Port of Los Angeles in 2010; and
- Installation of the HDPF/C™ system on an RTG crane at STS terminal in early 2011.

In August 2011, the RYPOS ActiveDPF/C™ was verified by CARB to reduce particulate matter in the RTG crane application at CARB Level 2-plus verification (50 percent, but actual test results showed 83 percent reduction effectiveness).

Project Objective

In 2013, RYPOS initiated a new project under the TAP to achieve verification for a reengineered RYPOS ActiveDPF/C3+™ in RTG crane applications at CARB Level 3 (i.e., 85 percent reduction effectiveness).

Technology Description

The system was installed on a RTG located at the TraPac terminal in the POLA where durability hours were accumulated and source testing was conducted.

The RYPOS HDPF/C™ was originally designed as a passive/active-regeneration diesel particulate filter estimated to reduce particulate matter emissions by more than 85 percent. The system incorporated a microprocessor-controlled, electric heating element to regenerate and burn off accumulated DPM captured by the filter without additional action by the equipment operator. A diesel oxidation catalyst (DOC) attached to the outlet of the particulate filter was used to remove the soluble organic fraction of particulate matter while also reducing hydrocarbon, carbon monoxide, and nitrogen dioxide emissions.

RYPOS redesigned and upgraded the HDPF/C™ for RTG cranes with an all-electric charged, active regeneration filter—the ActiveDPF/C™. The ActiveDPF/C™ is designed to regenerate at any exhaust temperature and is not affected by idle operation.

Results

RYPOS received CARB verification for Level 3-plus¹ for RTG crane applications on February 13, 2014, thus completing this TAP project. The project's final report is posted on the TAP website.

Benefits

In September 2013, the RYPOS ActiveDPF/C3+™ was verified by CARB to reduce particulate matter in the RTG crane application at CARB Level 3-plus verification (85 percent PM reduction, while limiting NO2 emissions to 20 percent).

Project Costs

The TAP supported the RYPOS verification effort with project co-funding in the amount of \$36,130 per port. TAP funding was matched by RYPOS in the amount of \$72,260, for a total project cost of \$144,520.

Commercialization and Applications

The RYPOS ActiveDPF/C3+™ achieved CARB verification and is available for use in California. The project final report is available on the TAP website.

Contact Information

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¹ See Verification DE-13-002-01: <https://www.arb.ca.gov/diesel/verdev/companies/rypos/de1300201.pdf>