Oakland International Airport
eGSE Charging Stations
Terminal 1

The installation of new charging stations to serve electric ground service equipment was completed by SilMan Industries for the Port of Oakland.

(Click here to view a video of this project)

The Situation

The Oakland International Airport has long been a proactive community member in regard to environmental sensitivity, including noise abatement, wildlife protection, and air quality.

Their move to electric ground service equipment ("eGSE") reflects this commitment. The transition began in 2007 at Terminal 2 and continued in 2017 with the installation of 25 charging stations for Terminal 1, the subject of this article.

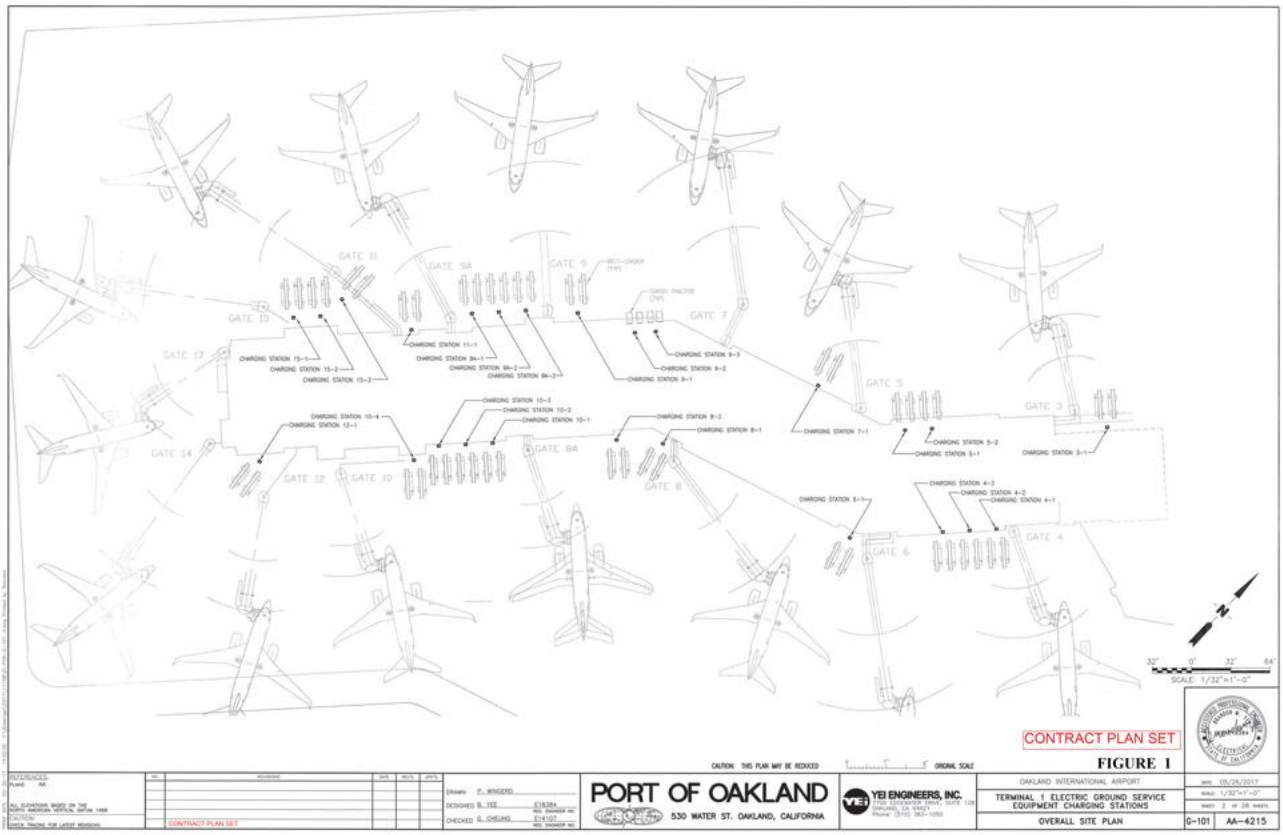
SilMan Industries has a history working with the Port of Oakland, which owns and operates the Oakland International Airport. As neighbors and committed community members, SilMan is pleased to be awarded this vital project.

eGSE Charging Stations – Scope of work

The Charging Stations, formally known as "TERMINAL 1 ELECTRIC GROUND SERVICE EQUIPMENT CHARGING STATIONS," required the procurement and installation of 25 charging stations, situated throughout the entire footprint of Terminal 1. See diagram below.

In support of the stations themselves, the project included improvements to facilities and infrastructure. SilMan deployed their team resources and key partners in four areas of work:

- Mechanical installation
- Electrical installation
- Facility Improvement
- Site & Project Management



The successful operations of the new charging station unit network required an updated power and electrical system.

- Power Distribution Panels (PDP)
- Multiple raceways and accompanying 600 kcmil feeders
- Power management system, including data collection and reporting capabilities
- Retrofit existing switchgear for power circuit breakers

Further facility improvements addressed safety systems to support parking and movement of vehicles through a mixed pedestrian-vehicle work area, including installation of concrete bollards and pavement striping.

Lastly, several critical areas of performance provide support to the Port's operations and compliance:

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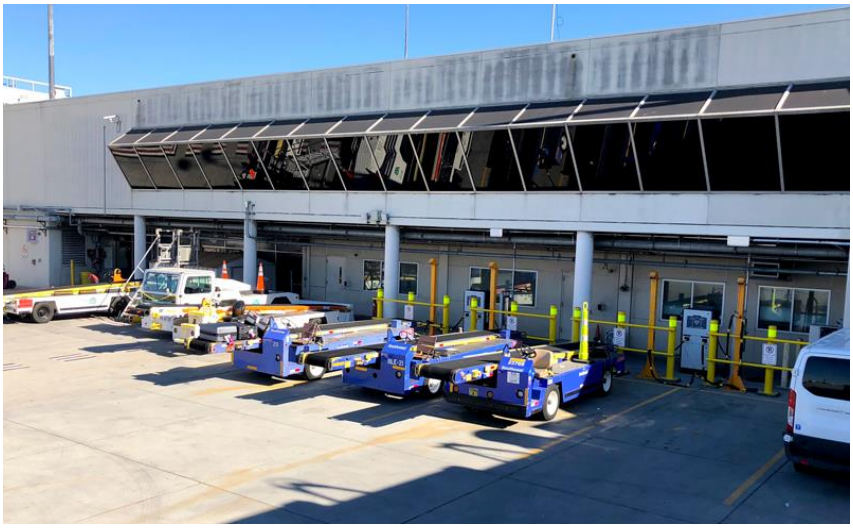
- Perform Field Acceptance Testing
- Perform Short Circuit Study/Coordination Study/Arc Flash Study for Power Systems
- Electrical testing
- Training: Charging Stations
- Training: Power management system.

eGSE at Oakland International Airport



The charging stations project continues Oakland International Airport's desire to protect air quality in the East Bay.

In the airport's press release announcing the project, Bryant L. Francis, Port of Oakland Director of Aviation was quoted saying, "We are so pleased to have the support of our airline partners as we work to reduce the Airport's carbon footprint…we are improving air quality for our fence-line communities and making a positive step forward in contributing to worker health and safety for those employed to operate ground service vehicles at OAK."

The installation of eGSE charging stations immediately benefited the airlines who had already embraced the non-fossil fuel vehicle. However, the stations have been offered without charge to the remaining airlines to encourage the adoption of electric vehicles. The updates affect 16 gates at Terminal 1 and the conversion of dozens of vehicles.

Funding for the project was provided by the FAA "Airport Improvement Program" (AIP) through a Volunteer Airport Low Emissions (VALE) grant. The AIP, created in 1982, is the most recent incarnation of Federal assistance to airport infrastructure. The history of the program dates back to the Federal Airport Act of 1946. Learn more about AIP.

Challenges of working within a TSA sterilized zone

- Daily security protocol and tool inspection are regular disruptions to construction operations.
- Commissioning and Startup were performed at night – 10 pm-5 am – for several weeks in order to avoid interruption of air operations.

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About the Port of Oakland

The Port of Oakland is a vibrant community organization and a major economic player in Northern California. Here is an interesting overview of the Port's history, including vintage video and photos.

Meet our Partners: VERTIV and Minit Charger

We are pleased to have the opportunity to work with **VERTIV** on the Oakland Airport charging stations project. They are a leading worldwide Electrical Reliability Services company, headquartered in Columbus, Ohio.

VERTIV was a major contributing partner as the testing agency for the project.

They continually went above and beyond, patiently working through the testing requirements. And most conspicuously, treating our client with respect, responsive to every request by the Port of Oakland.

Larry McCullough represented VERTIV as their on-site lead.

Testing was extensive, requiring over 400 individual tests to ensure operation without incident.

Similarly, the **Minit Charger** team came onsite for commissioning of the charging units.

We are grateful for the expert insight provided by Kip Shearer, not only to troubleshoot but guiding our team into the flawless performance of the equipment.

Based in Tempe, Arizona, Minit Charger is a pioneer in the motive power industry.

Subcontractors and Partners

We are grateful for the unique contribution of key partners on this project.

Partner	Project Element
Conveyor Concepts	Bollards
Edges Electrical Group	Power management, 24 hr/day data collection, reporting
Minit Charger	Charging units
VERTIV	Reliability Services, electrical system test

About SilMan Industries

SilMan Industries (previously SilMan Construction) is based in San Leandro, Calif. Founded in 2008, the firm operates nationwide in three divisions – Construction, Material Handling and Site Services – and partners with "best in class" companies nationwide providing integrated solutions in the Industrial, Manufacturing, Distribution, and Public Works sectors. For more information, please visit www.silmanindustries.com/about.