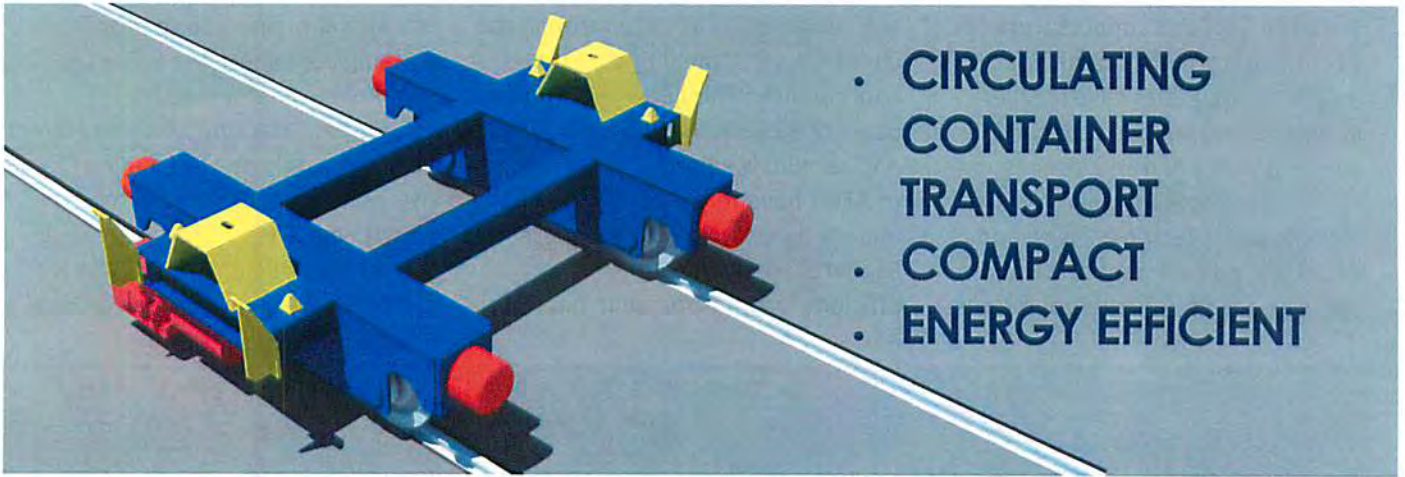


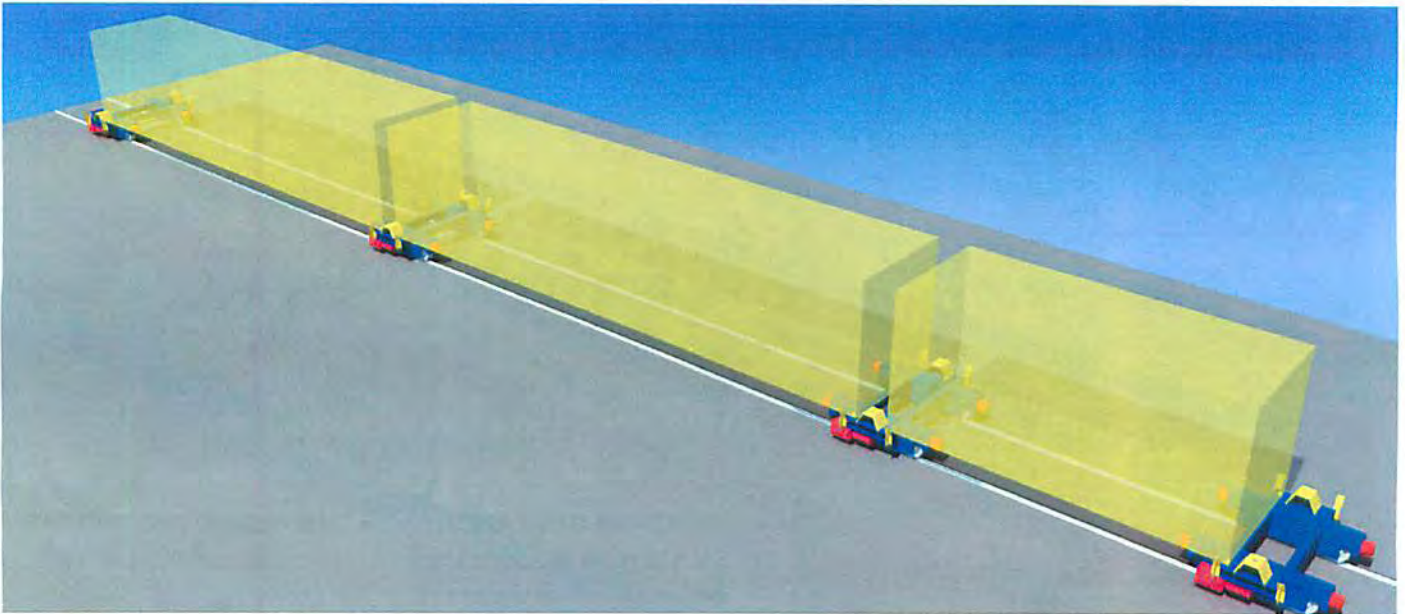


PACECO CORP.

SEGCART



- CIRCULATING CONTAINER TRANSPORT
- COMPACT
- ENERGY EFFICIENT



FEATURES:

- HIGH YARD PRODUCTIVITY (100% more than ASC's)
- LIGHT FRAME LOWERS GANTRY POWER USE (5% of ASC's)
- SMALL FOOTPRINT FOR EFFICIENT LAND UTILIZATION
- REDUCED LOAD ON YARD CRANES
- AUTOMATED STACKING YARD OPERATION

WHAT IS THE SEG CART:

The SegCart is an automated system that transports cargo containers within storage yards with improved efficiency and productivity. Since the SegCarts support the ends of a container rather than the entire length, the SegCarts have smaller footprints and weight, reducing power consumption and traffic congestion.

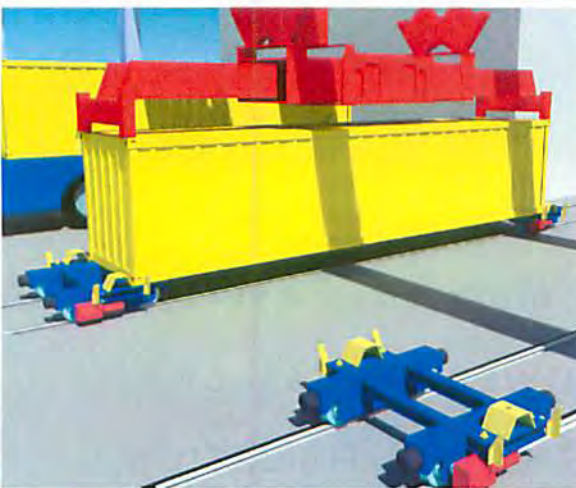
Each SegCart operates on a rechargeable electric battery, and uses a SegCart management system to organize and coordinate operations.

COMPARED TO ASC'S:

The SegCart system is more energy efficient and productive than conventional and Automated Stacking Crane (ASC) operations. More carts are available to circulate through the container yard, moving boxes continuously. This allows SegCarts to operate more efficiently, compared to ASC terminals where a limited number of ASC's have to perform transport and stacking. The smaller, lighter SegCarts are also more energy efficient for transport than heavier ASC's.

EXAMPLE OPERATION:

In a ship unloading operation, vehicles will bring containers to the Loading Cranes at the end of the containers stacks. Loading Cranes will transfer containers to the SegCarts, forming container trains. The SegCarts will move containers to the appropriate stacking crane. The empty SegCarts return to the Loading Cranes using adjacent, dedicated rails. This allows SegCarts to circulate through the terminal, acting as conduits for container transport within stacking yards.

**ADVANTAGES:**

- **HIGH LAND UTILIZATION:** Each SegCart supports the ends rather than the entire length of the container. This means less yard congestion and higher space utilization.
- **LESS ENERGY USE:** Since the SegCart is much lighter than an Automated Stacking Crane, it uses much less energy to move.
- **IMPROVED PRODUCTIVITY:** SegCarts operate on rails, providing continuous container transport. The system can group containers together into trains to move larger volumes of cargo.
- **EFFICIENT YARD HANDLING:** The system requires less container shuffling than ASC terminals.



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PACECO® CORP.
REVISION 1 (JULY 2010)

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Shorepower Transportation Electrification



Infrastructure Products and
Services

Shorepower Product Overview

ePump EV Charging Stations

- Multiple form factors
- Highly visible and easily recognizable
- Visually and technologically customizable
- Lower installed cost/space
- Open source



Truck Stop Electrification (TSE)

- 120/208 VAC Power
- Cable TV
- Wireless internet
- eTRU connections
- Monitoring and reporting





Electric Vehicle Charging Equipment

Level 2 ePump Stations

Cube



Tower



High-visibility retro fuel pump globe with auto illumination

8" touchscreen with payment control system (customizable)

Receipt printer (customizable)

Level 1 outlet (120v, 20 amp)



Custom decals/colors

Mag-stripe reader

Level 2 J1772 corded connector (240v, 30 amp)

High quality stainless steel



Specifications

	Level 1	Level 2
Certifications/Compliance	Pending NRTL (UL standard) / NEC	Pending NRTL (UL standard) / NEC / SAE J1772
Number of users	Up to four	Up to four (two L1 and/or two L2); customizable multi-user
Input power	208-240v 2-pole 40 Amp	208-240v 2-pole, up to 100 Amp
Output power	120v 15 Amp per receptacle	240v 30 Amp per receptacle
Communications	Ethernet (optional)	ShoreNet4G WiMax™, 3G CDMA , 802.11 WiFi, 802.15.4 (e.g. ZigBee™/X-bee)
Outlets/Connector	NEMA 5-15R GFCI receptacles	SAE J1772
Touch screen	No	Yes, 8" color, interactive
Alerts	N/A	Charge complete status, station status and unauthorized disconnect alerts via SMS text or email
Monitoring and reporting	Web-based portal; users with an account can access detailed online information about usage, access times, energy consumed and billing (optional)	
Charge level upgradeability	Yes, to Level 2	N/A

Specifications

	Level 1	Level 2
Safety/security	Overcurrent & GFCI protection	Overcurrent & GFCI protection; car-to-cord safety detection; locking cord and access doors (optional); video surveillance (optional)
Availability	Shipping now	By end of year
Payment system	Industrial outdoor card reader accepting all major credit/debit cards and/or proprietary cards (e.g. fleet, student or employee card)	
System error reporting	N/A	"Phone home" with critical maintenance and error information to station owner
Weight	Tower: 100 lbs. Cube: 40 lbs.	Tower: 130 lbs. Cube: 70 lbs.

Specifications

Visibility	Backlit outlets and globe with automatic photocell illumination
Operating range	-40°C to 85°C (-40°F to 185°F)
Design options	Tower or Wall Mount
Dimensions	Tower: 87" tall x 18" wide x 10.5" deep Cube: 20" tall x 16" wide x 9" deep
Materials and construction	High-quality, durable brushed stainless steel; weather and tamper resistant
Lead time	3-6 weeks from PO for items not in inventory

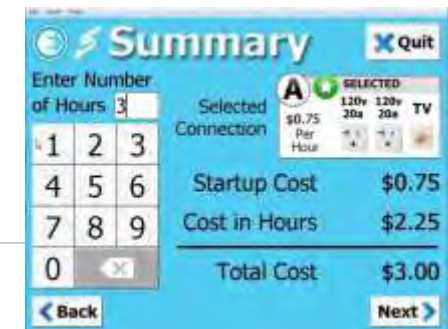


NRTL Certification

- ETL Certification Pending
- UL 2594
- UL 2231
- CSA C22.2 No. 107.1
- J1772
- NEMA 3R
- NEC 625



ShoreNet User Interface

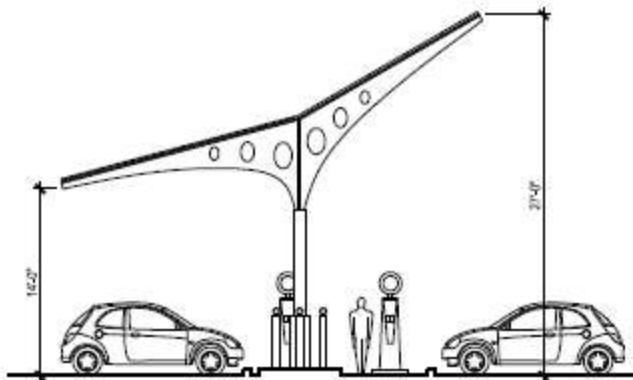


ePump Installations



Solar Carport Stations

- Renewable energy story
- Dual-purpose – shade + energy
- Multiple vendors



Lane Community College, Eugene, OR



Solar Carport Stations

Oregon Museum of Science & Industry, Portland, OR



Shorepower ePump Locations

Oregon

Portland
Lake Oswego
Salem
Coos Bay
Oregon City
Beaverton
Gresham
Hillsboro
Clackamas
Keiser
Milwaukie
Tualatin
Eugene

Illinois

Champaign

North Carolina

Raleigh

New York

Albany

Virginia

Richmond

New Jersey

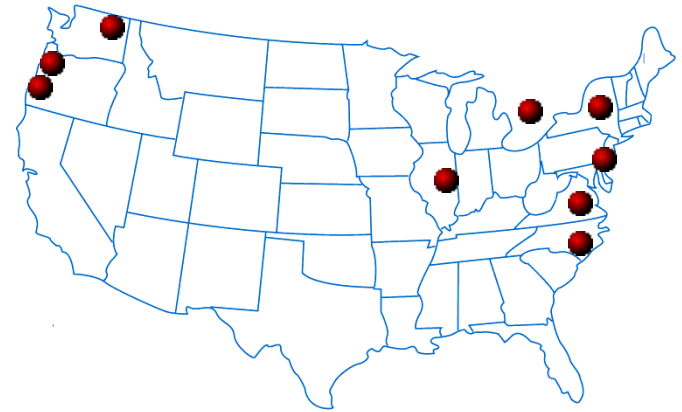
Pleasantville

Washington

Spokane

Ontario, Canada

Toronto



Site Considerations



- Safe and easy access
- Prominent location or ability to place signage
- Close proximity to existing panel with capacity
- Communications (CAT5 cable)



Truck Stop Electrification Equipment

The Problem

Environmental



Compliance

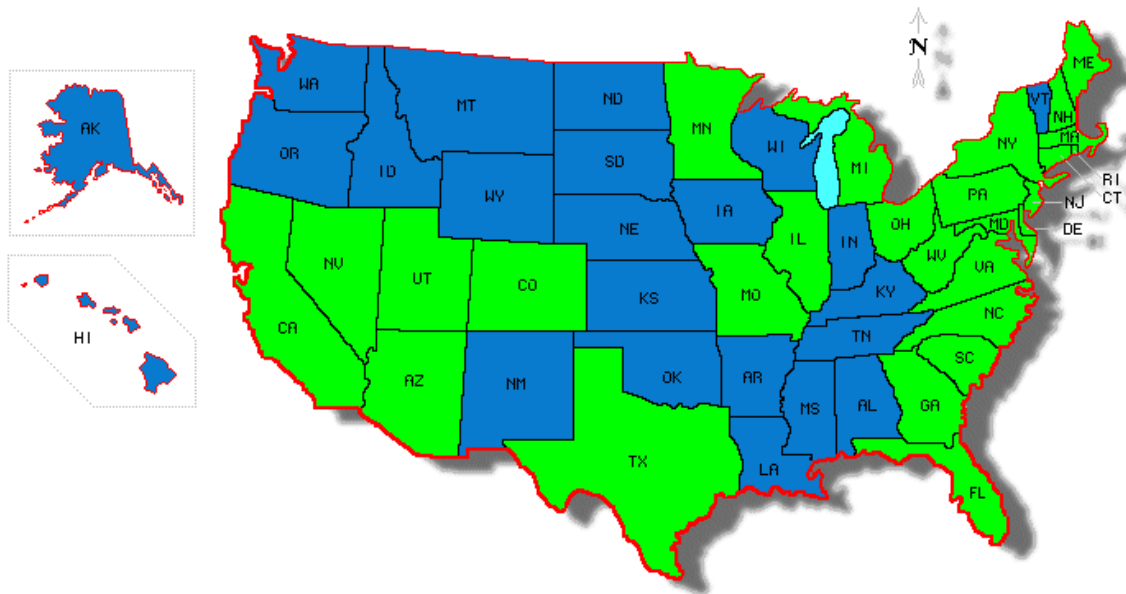


Cost



Anti-Idling Laws

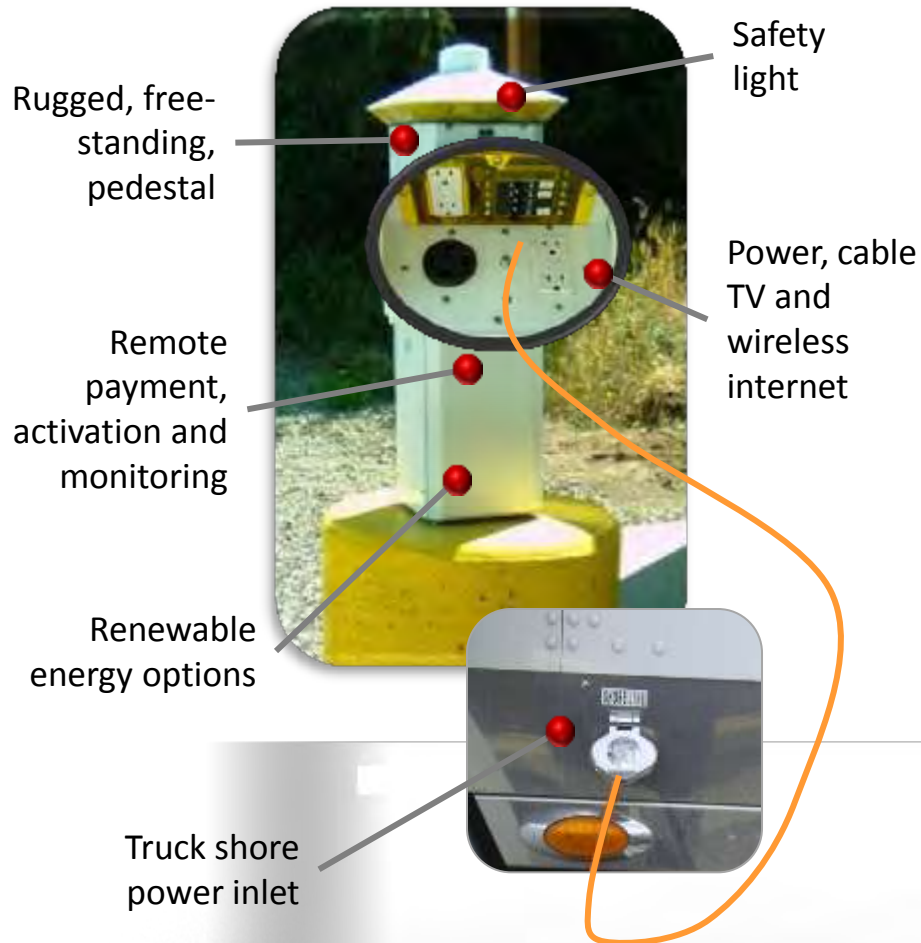
Currently 31 States / 47 jurisdictions



Source: American Transportation Research Institute

Shorepower TSE System

PRODUCT



BENEFITS

- ✓ Comfort & entertainment
- ✓ Significant savings
- ✓ Improved air and noise quality
- ✓ Compliance
- ✓ Host site revenues

FUEL COST PER NIGHT

Shorepower	\$11
Idling	\$31

Long Term Idle Reduction Solution

- No petroleum consumption
- Zero local emissions
- No undesirable noise
- Safe & proven technology
- Drivers have more freedom
- Focused on idle-reduction
- Most efficient
- Electric TRU standby power
- No recycled air
- Most cost effective technology
- Sustainable business model



Trucking Industry is Gearing Up

- 100% of trucks can plug into shore power with extension cord
- 20-30% of trucks have shore power “convenience” prewired
- All truck manufacturers and many APUs provide shore power options
- Retrofit cost: \$100 - \$2000
- Industry is providing incentives and rebates to upgrade



Shorepower Capable APUs



Travel Plaza Benefits

- New source of revenues based on gross sales
- Attracts customers
- Growth potential – modular expansion
- Increase revenues from sales of appliances and installation of kits
- No up-front investment required
- Toll-free call center – no on-site labor required
- No loss in parking spaces



Shorepower Advantage

- Business model based on cost-effective electric service
 - Fundamental utility service
 - Never obsolete
- Positive or low visual impact
- Simple installation
 - Minimal disruption to pavement
 - Fast construction
- Web based control system
 - Accessible anywhere in the world with an Internet connection
- Long Term Solution
- Simple = reliable; 98% up time
- Charging stations for EVs & PHEVs

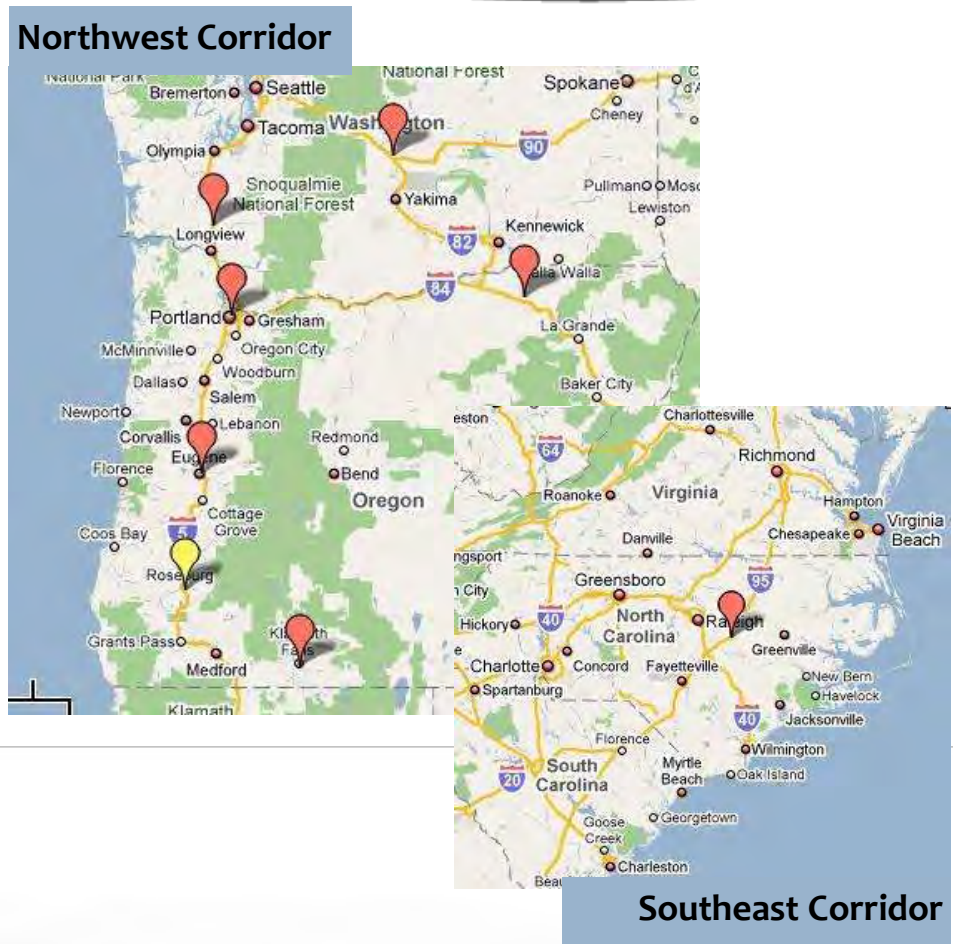
Network of TSE Facilities

Current Facilities

Gee Cee's Truck Stop, Toledo, WA
Flying J Travel Plaza, Ellensburg, WA
Jubitz Travel Center, Portland, OR
Truck N' Travel TA, Eugene, OR
Mollies Truck Stop, Klamath Falls, OR
Arrowhead Travel Plaza, Pendleton, OR
Big Boys Travel Plaza, Kenly, NC

Coming Soon

7 Feathers Truck & Travel, Canyonville, OR
Gurnee Fuel Stop, Gurnee, IL
R-Place Truck Stop, Wendover, UT
Baker Truck Corral, Baker City, OR



Shorepower Truck Electrification Project

- 4 year demonstration project (2 years deployment)
- Transformational technology
- 50 sites across major US interstates
- Currently selecting sites
- Infrastructure + on-board equipment
- Signing up “green” first-mover fleets
- Supported by energy, transportation and air quality agencies



Shorepower Truck
Electrification Project



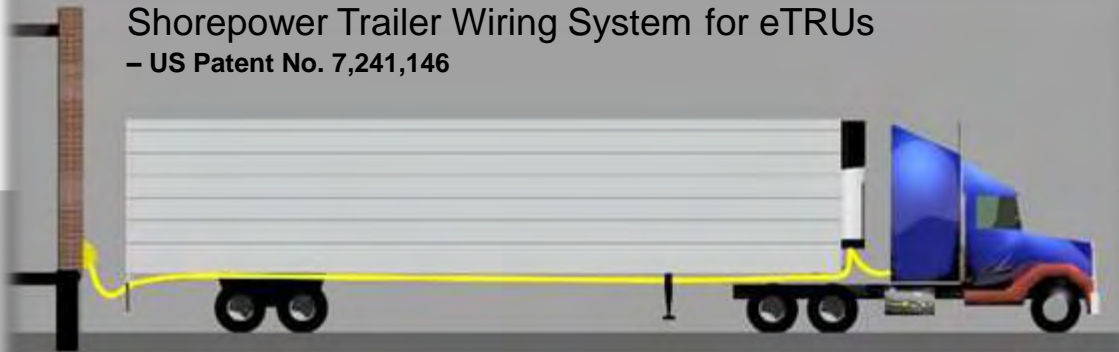
Expanding the Shorepower Network



Electric Standby Transport Refrigeration Unit eTRU



Shorepower Trailer Wiring System for eTRUs
– US Patent No. 7,241,146



Sponsors & Customers



OREGON
DEPARTMENT OF
ENERGY



Portland General Electric



NYSERDA

New York State
Energy Research and
Development Authority

THE CITY OF
GRESHAM
OREGON



Fred Meyer

Pleasantville, NJ
A City On the Move



OMSI
OREGON MUSEUM OF SCIENCE AND INDUSTRY



Dominion

MILWAUKIE
Dogwood City of the West



City of Lake
Oswego
OREGON

SolarCity

OREGON
CITY

NORTH PACIFIC MANAGEMENT

For More Information

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Independent Electrical Contractors (IEC)

National Electric Transportation Infrastructure Working Council



**Independent Electrical
Contractors**

John Masarick

Director of Codes, Safety and Workforce Development

IEC National



IEC and the Industry



- 3,500 IEC Contractor Members
- 66 Chapters Across the Country
- Electrical Contracting is a \$125 Billion Industry
- Merit Shop Electrical Contractors are 85% of the Industry
- IEC offers members education, networking opportunities, advocacy, and much more.

IEC Contractors Are Involved in All

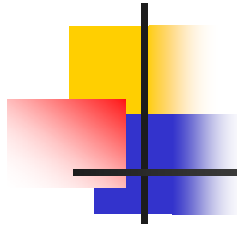
PRODUCT AREAS



- Alarm/Security Systems
- Building Automation
- Data
- Electrical – Low, Medium, High Voltage
- Elevators
- Lighting
- Renewable Energy
- Signs
- Telephone
- Video

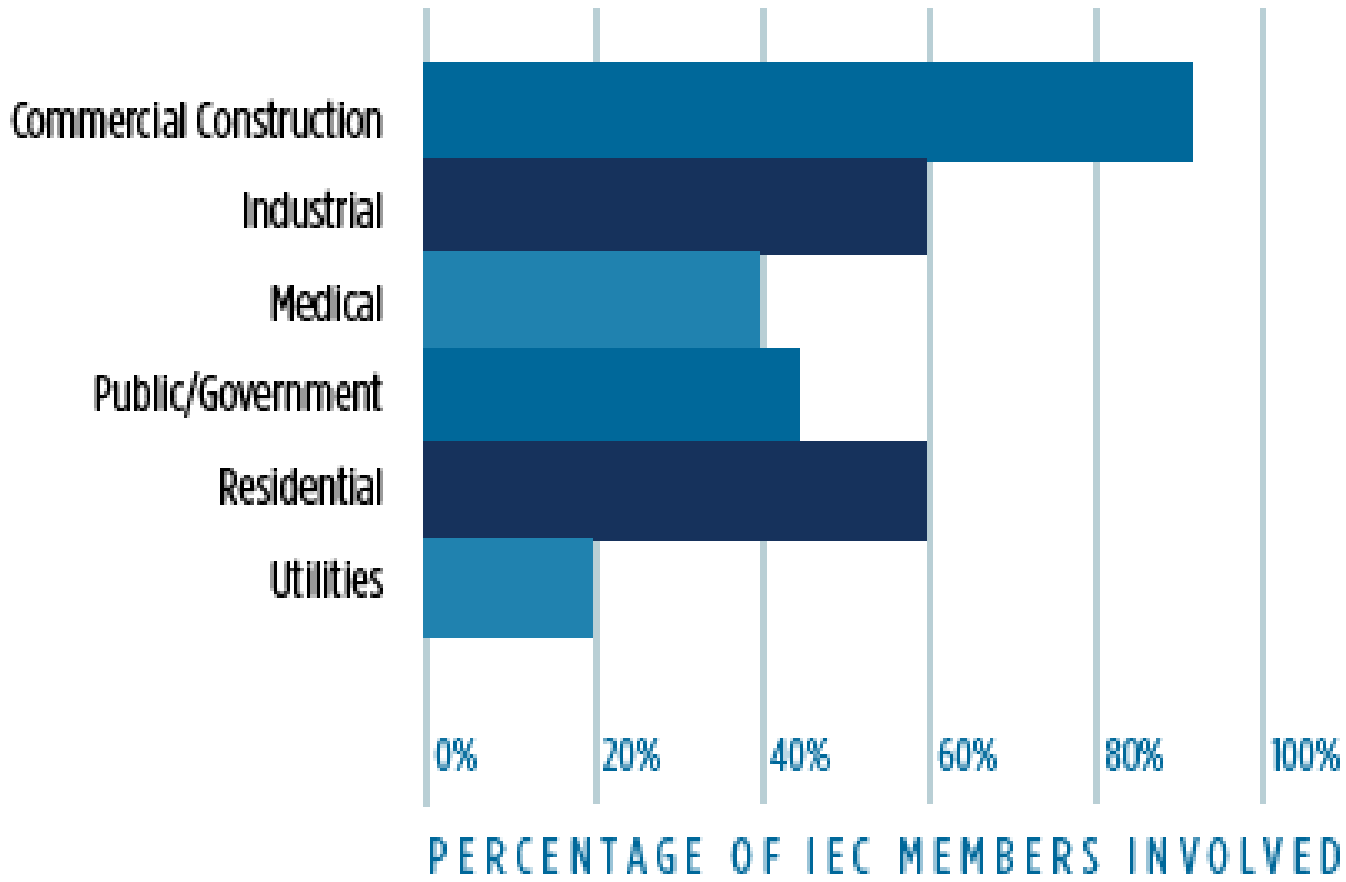


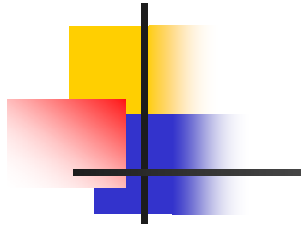
PERCENTAGE OF IEC MEMBERS INVOLVED



IEC Contractors Are Involved in All Major

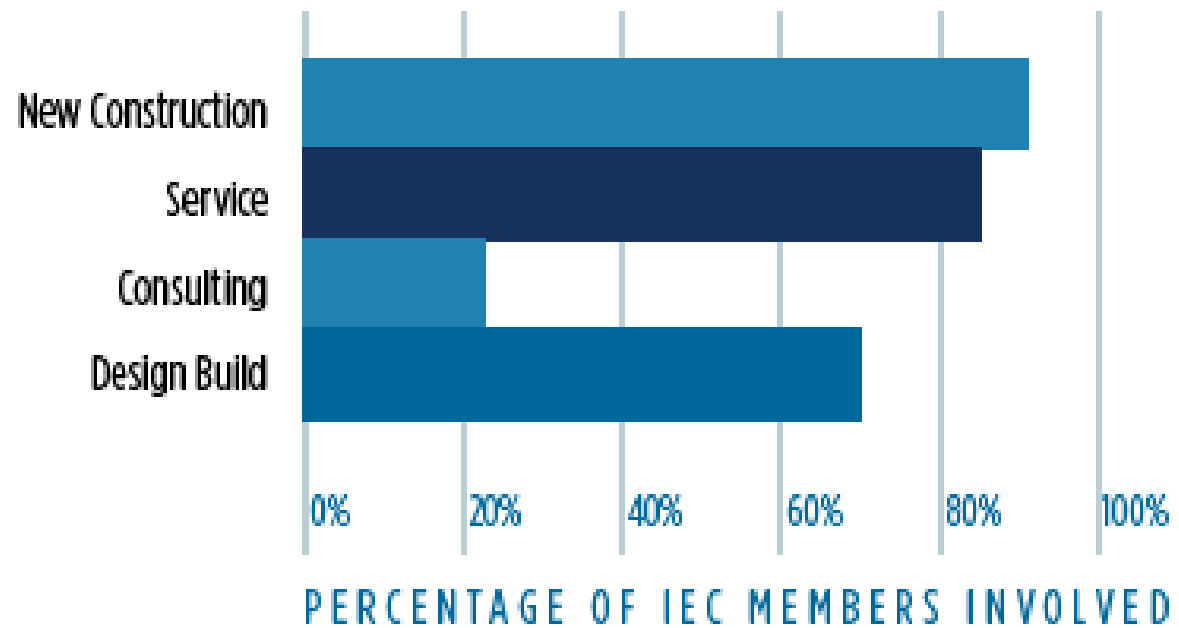
INDUSTRY SECTORS





IEC Contractors Are Involved in All Types of

CONSTRUCTION





Molding our Industry



- Government Affairs
 - Federal Government
 - Local Government
- Codes – National Electrical Code® (NEC), National Electrical Safety Code (NESC)
- Standards – Underwriters Laboratory (UL), National Electrical Manufacturing Association (NEMA), National Electrical Installation Standards® (NEIS), American National Standards Institute (ANSI) A10
- National Cable Splicing Certification Board (NCSCB)
- North American Board of Certified Energy Practitioners (NABCEP)



IEC is Focused on Safety



- Safety – OSHA
 - OSHA Regulations
 - OSHA/IEC Alliance
 - OSHA Challenge Program
 - SPARK Program
 - IEC/CNA Safety Award
 - ANSI A10 Construction and Demolition Standard



Green Energy is a Growth Industry

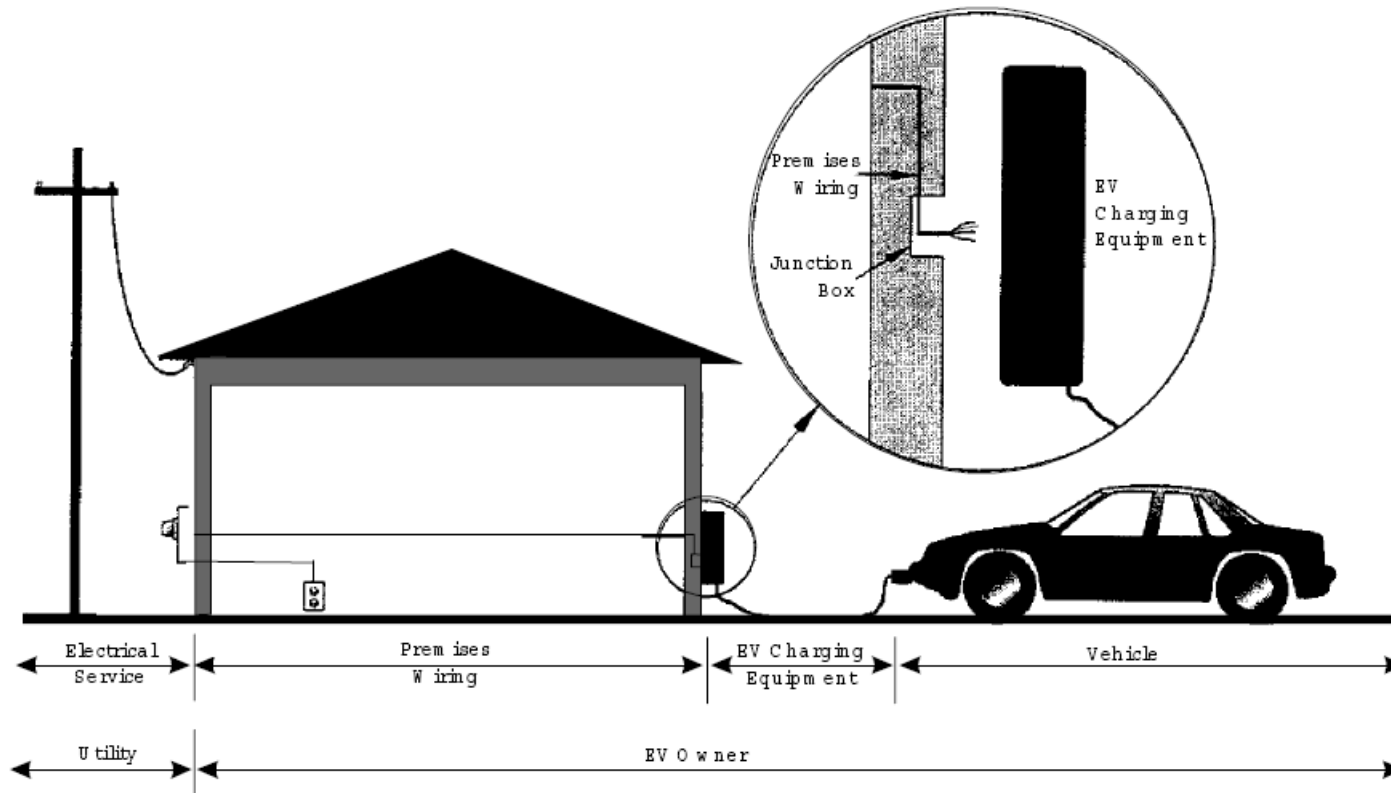


- Transportation
- Wind
- Solar
- Geothermal
- Residential
- Industrial
- Utility

EV Charging Stations



**Independent Electrical
Contractors**





IEC Standards Activities



- Products used in the Electrical Industry
- Products installed by Electricians
- Safety Standards for Electrical Workers



Electrical Code Activities



- National Fire Protection Association (NFPA) Technical Correlating Committee
- NFPA 70 - CMP 12 (19 panels)
 - Article 625 Electrical Vehicle Charging Systems
 - Article 626, Electrified Truck Parking Spaces
 - NFPA 70E (Standard for Electrical Safety in the Workplace)
 - NFPA 72 Fire Alarm and Signaling Code
 - NFPA 790 791 Electrical Equipment Evaluation Committee
 - NCSCB (National Cable Splicing Certification Board)
- IEEE NESC
 - Article 20 Electrical Supply and Communication Equipment

IEC and Green Standards



■ UL

- IEC Seated on following STP Panels
 - STP6141 Wind Turbine Generating Systems-Large
 - STP6142 Wind Turbine Generating Systems-Small
 - STP 6171 Wind Turbine Converters and Interconnection
- IEC pending of following STP
 - STP2202, Charging System Equipment
 - STP2231, PPE Systems for EV Supply Circuits
 - STP2251, Plugs Receptacles and Couplers for EV
 - STP2594, EV Supply Equipment



Communications



- Keep IEC members informed
- Promote IEC to:
 - The Industry
 - Magazine
 - E-Newsletters
 - Website (www.ieci.org)
 - Government
 - Inspectors
 - Students
 - Manufacturers

Apprenticeship and Training



- 7,000 to 10,000 Apprentices Trained per Year
- Revamped Curriculum
 - NEC Worksheet built into each session with Quiz
 - Safety training in each session with Quiz
- Department of Labor Recognized
- Apprenticeship & Training guidelines
- College Credits



Workforce Development



- Continuing Education
- Apprenticeship Training
 - Community Colleges
 - SkillsUSA
(Local, Regional, State, and National)
 - Veterans
 - 4H Counsel
 - National Association of Women in Construction (NAWIC)
 - Career One Stops – Workforce Boards
 - Job Corps



The Need for Skilled Workers



- Between 2006 and 2016 in U.S.
 - Electrical jobs will grow by 7.44%
- Retiring workers must be replaced
- Front line supervisors and managers
- Need over 100,000 new workers a year

Source: U.S. Bureau of Labor Statistics for 2006-2016



Industry Partners



- Industry Partnering Support the Association and Industry
- Partners gain by direct contact with the Contractors.
- Contractor Members gain by direct access to partners when they have questions or need to purchase.



Resources



- *Insights* magazine
- 2011 IEC National Safety Calendar
- IEC Workforce Recruitment Brochures
- Safety Manual Guidelines
- Safety Handbooks
- Business Journals and Guides



Questions

?



ENVIRODOCK[®]

The Simple and Flexible Idling Alternative

EPRI 2010 Presentation



Our Mission

2

“Our mission is to develop and deliver innovative ideas to the transportation industry that reduce idling and promote the use of alternative energy sources”

Who Is EnviroDock?

3

- Est. 2006
- Headquartered in Ashland, VA
 - Offices in NY and MA
- Successful & experienced management team with a long history of selling into our target market



The EnviroDock Solution to the Idling Problem

The E-Dock System

5

- ▶ A high quality product based on a simple approach:
“If the driver doesn’t use it then nobody wins.”
- ▶ Robust Unit
- ▶ User Friendly Design



E-Dock Stationary

6

- **Stand-alone unit designed for the truck and rest area market**
- **Installations:**
 - 5 units at Canaan Truck Stop in Canaan, NY
 - Future Site: 20 units Dandridge, TN
- **Swinging support arm for easy installation into window**
- **Highest delivered BTU's in industry**
- **Double filtration method that includes both electronic and standard filtration**



E-Dock Portable

7

- Designed for the distribution/warehouse & truck stop market
- 2 Units in Plaza 23
- Currently the only portable TSE product in the market



Window Service Module (WSM)

8

- Patent pending system involving one primary component and five attachments.
- Duplex 110 volt power outlet
- Easy to use switches to adjust temperature and fan speed



PowrDock™

9

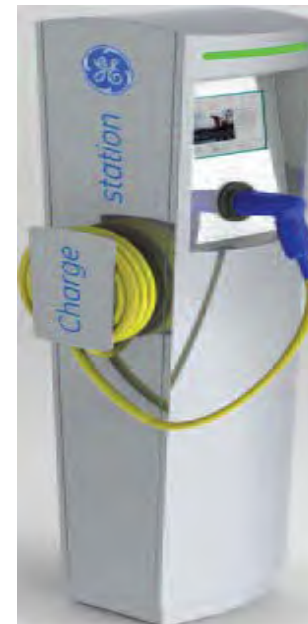
- **Shore power pedestals**
 - Power supply outlets for use with APU's, RV's market
- **Installations:**
 - One unit at Canaan Truck Stop
 - Future Install: 10 units at Dandridge, TN
- **Ability to offer complete line of off-board TSE products**



EnviroDock EVSE

10

- Partnered with EVSE manufacturers to deliver UL Certified EVSE
- Cord Connection in accordance with SAE J1772
- Indoor and Outdoor Enclosure
- Commerce & Card Reader capability
- Revenue Grade Metering with AMI Communications
- LED Lights & Display



Milestones

11

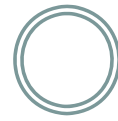
- After 2 plus years of research and development, completed first commercialized E-Dock unit in January 2009
- Sold first two E-Dock Portables in March 2009 to truck stop in Albany, NY
- Completed installation of five E-Dock Stationary units and one PowrDock through a grant with the NY State Energy Research & Development Authority in August 2009
- Received approvals for Stimulus Funds from TN Dept. of Transportation to install 20 E-Dock Stationary units and 10 PowrDock units at TR Truck Plaza in TN. Expected completion August 2010

Industry Hurdles

12

- **Caught between a full TSE and shorepower TSE world**
 - Cycling out of older trucks to newer shore power enabled trucks could be 10 – 15 years
- **Greater education of fleets to the fuel savings**
- **Industry standards:**
 - TSE providers that deliver HVAC
- **Idling Laws**
 - No uniform law and none on the horizon

Thank You For Your Time



QUESTIONS?

IEC Project Stages and Timetable for Standards Development.

Project Stage	Associated Document Name	Abbreviation	Minimum Timeline (for comment and/or voting)
Proposal stage	New Work Item Proposal	NP	3 months for voting
Preparatory stage	Working draft	WD	12 months recommended
Committee stage	Committee draft	CD	2-4 months for comment
Enquiry stage	Enquiry draft	IEC/CDV	5 months for comment and voting
Approval stage	Final Draft International Standard	FDIS	2 months for voting
Publication stage	International Standard	IEC or ISO/IEC	1.5 months

IEC – High Voltage Shore Power Equipment

International Electrotechnical Commission (IEC) Technical Committee No. 18

IEC TC18 MT26 - IEC/ISO/IEEE 60092-510 Electrical installations in ships - Special Features - High Voltage Shore Connection Systems (HVSC-Systems)

Last meeting November 2010 – Berlin, Germany

Brian Sisco to report.

60092-510 Status

After final editing of the draft CDV by the three (3) joint committee convenors in December, document will be forwarded to the IEC for review and circulation as a CDV for 5 months. If no negative votes are received the document will be circulated as a FDIS for two months followed by a published standard with a target date of the 3rd or 4th quarter of 2011

The combined committee of experts are from:

- IEC Project Team PT 60092-510: High Voltage Shore Connection Systems (HVSC Systems)
- International Organization for Standardization (ISO) Technical Committee ISO/TC 8, Ships and Marine Technology, Subcommittee SC 3, Piping and Machinery, Working group WG11: Cold Ironing
- IEEE, PCIC Marine Industry Subcommittee, P1713 Electrical Shore-to-Ship Connections WG

International Electrotechnical Commission (IEC) Sub-Committee SC23H

IEC 62613, Plugs, Socket-Outlets, Ship Connectors And Ship Inlets For High-Voltage Shore Connection Systems, (HVSC-Systems)

IEC 62613 has been divided into two parts:

- Part 1: *General requirements*. Contains constructional and test requirements for both 7.2kV and 12 kV plugs, socket-outlets (receptacles), connectors and ship inlets. Special requirements were developed to include:
 - **non-rewireable accessory** - accessory so constructed that the cable or wiring cannot be separated from the accessory without making it permanently useless
 - **field-rewireable accessory** - accessory so constructed that it can be rewired by skilled personnel as qualified by the manufacturer
 - **non-field-rewireable accessory** -accessory so constructed that it shall only be rewired by the manufacturer's authorized personnel

Preliminary CDVs were completed in August but are still waiting for final engineering drawings from the manufacturers before the CDVs can be issued for comment and vote.

Pending a positive vote to both the CDV and following FDIS, the Standard is expected to be published late in 2011.

**Control Module Industries
CabAire LLC
&
EVSE LLC**

**EPRI IWC Meeting
December 7, 2010**

Patents Pending

Control Module Industries

- Founded in 1969 in Enfield, CT
- Design-Build Electronic/Electromechanical Systems
- 44,000 sq. ft. Engineering & Manufacturing for Fortune 500
- Awarded 100+ US & Foreign Patents
- CabAire LLC – Truck Stop Electrification
- EVSE LLC – Electric Vehicle Supply Equipment

*Smart Charging Solutions
for Electric Vehicles*

Control Module Industries

Founded in 1969

EVSE LLC

CabAire's Configurable Towers HVAC, Shore Power, Plug-in Trucks

Air Filter & UV

Modular HVAC

Supply Hose

Service Unit

**Block Heater Power
Shore Power**



Optional Lights

Modular HVAC Unit

**Power Protection
Vehicle Detection
Anti-Idling Sensor**

**Pre-Cast Base
Corrugated Steel
Protection**

- **Nose-in/pull thru; Back-in/Nose-Out**
- **Angled, parallel**
- **Adapts to Small, Medium or Large Lots**

**Smart Charging Solutions
for Electric Vehicles**

Control Module Industries

Founded in 1969

EVSE LLC

CabAire Service Module

- Lightweight
- Easy install
- Display unit
- HVAC
- Ultraviolet Filter
- Two 110 outlets
- Payment
- Service On/Off
- Temp Controls
- Internet
- Cable



**Smart Charging Solutions
for Electric Vehicles**

Control Module Industries

Founded in 1969

EVSE LLC

CabAire Shore Power

30A with Two 20A Outlets, Service Activation
Web and Cable Port



**Smart Charging Solutions
for Electric Vehicles**

Control Module Industries

Founded in 1969

EVSE LLC

CabAire Project Updates

- Derrick, NC I-85: 44 TSE Spaces
- Delaware Travel Plaza I-95: 50 TSE Spaces
- PA Turnpike I-80: 24 TSE Spaces
- NJ Turnpike I-95: 86 TSE Spaces (construction)
- DE Smyrna Rest Area: 24 TSE Spaces (construction)

*Smart Charging Solutions
for Electric Vehicles*

Control Module Industries

Founded in 1969

EVSE LLC

The advertisement features a collage of electric vehicle charging equipment. On the left, a charging station is mounted on a metal arm with a gauge. In the center, a charging cable is plugged into a station. On the right, a charging station is mounted on a wall with a control panel featuring a red emergency stop button. Below that, a yellow ruggedized control unit with a keypad is shown. The background is a light green with abstract white lines.

**Control Module Industries
EVSE LLC**

***Smart Charging Solutions
for Electric Vehicles***

Control Module Industries
Founded in 1969
EVSE LLC

Reality

Cable Management & EV Service Equipment



*Smart Charging Solutions
for Electric Vehicles*

Control Module Industries

Founded in 1969

EVSE LLC

Marquees EVSE

Designed for Parking Lots



- Automatic retractable cable management
- Protects pedestrians from tripping
- Protects cable & connector from vehicles, ice, snow, salt & rain
- Protects from vandals & tampering
- Level 2 charges up to 32A or 74A
- Mounted on concrete pedestal to protect charger from vehicles
- Activation: ON/Off, Barcode, Mag Stripe, Prox, Key-fob
- Communications: Zigbee, Cellular, Wi-Fi, Ethernet
- Payment Options: Parking Ticket, Garage Payment System, Payment Kiosk with Credit Card, others

**Smart Charging Solutions
for Electric Vehicles**

Control Module Industries

Founded in 1969

EVSE LLC

Garage EVSE

Designed for Parking Garages



- Automatic retractable cable management
- Protects pedestrians from tripping
- Protects cable & connector from vehicles, ice, snow, salt & rain
- Protection from vandals & tampering
- Level 2 charges up to 32A or 74A
- Optional Activation: ON/Off, Barcode, Magnetic Stripe, Proximity, RFID, Key-fob
- Communication options: Zigbee, Cellular, Wi-Fi, Ethernet
- Payment Options: Parking Ticket, Garage Payment System, Payment Kiosk with Credit Card, others

**Smart Charging Solutions
for Electric Vehicles**

Control Module Industries

Founded in 1969

EVSE LLC

Residential with Power Share



- Many homes will require electrical upgrades for Level 2 Charging
- \$2,000 to \$4,000 plus per CT Chief Housing Inspector's Office
- Permits/Inspection six to eight weeks
- Power Share eliminates these costs and time delays
- Uses existing 240VAC appliance breaker
- When charging EV, Power Share senses power request from electric appliance and shuts charger off
- When appliance is shut off power returns to EVSE
- Good for OEMs, Car Dealers, Consumers

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EVSE LLC

Industrial EVSE



- J1772 Level 2 charges @32A/74A
- Ruggedized design for commercial vehicles, fleet yards, break bulk centers
- Switch-lock operation for maximum safety
- Cannot remove cable unless power is switched off
- Pole, wall or dock mounted
- Detachable cable for safe storage in the vehicle
- Tethered option available

**Smart Charging Solutions
for Electric Vehicles**

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Portable Power Tester For Inspectors & Electricians



- Simulates communication & load specs per NEC 625
- Auto tests safety leads
- RFID IDs inspector
- GPS IDs charger
- Transmits test report via email
- Cellular communications
- Instrument based documentation of EVSE installation
- For Inspectors and Electricians

**Smart Charging Solutions
for Electric Vehicles**

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EVSE LLC

Summary

- CMI EVSE LLC – A Connecticut Company
- 40+ Years in business
- Profitable, No Debt
- EVSE: One Form Does Not Fit All Locations
- Commercial, Fleets, Residential Have Their Own Needs
- CMI EVSE LLC – Smart Charging Solutions for Electric Vehicles

*Smart Charging Solutions
for Electric Vehicles*

Control Module Industries

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EVSE LLC

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*Smart Charging Solutions
for Electric Vehicles*

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EVSE LLC

Non-Road NEC 2014 Proposals

IWC/TEC Meeting
SRP/PERA, Tempe
December 7, 2010

Proposals

- State by state
- No specific issues with NEC Article 626
- No documented accident related injuries
- Need to identify standard reefer plug
- Same space for trucks and EV/PHEV's
- Change scope to include other loads
- 125volt level 1 referenced in 626

Proposals

- Include RTU connector in 626
- TSE implementers will not install RTU infrastructure until connector standard developed and adopted
- How do we cover combinations of 625 and 626
- Load diversity table
 - EV load vs. climatic tables
 - 120v-240v-208v
 - High power charger

Proposals

- What other issues need to be addressed?
- What are the truck stop operators planning to do?

Electrified Rubber-Tire Gantry Cranes (E-RTG) -Cable Reel Carrier (CRC) System-



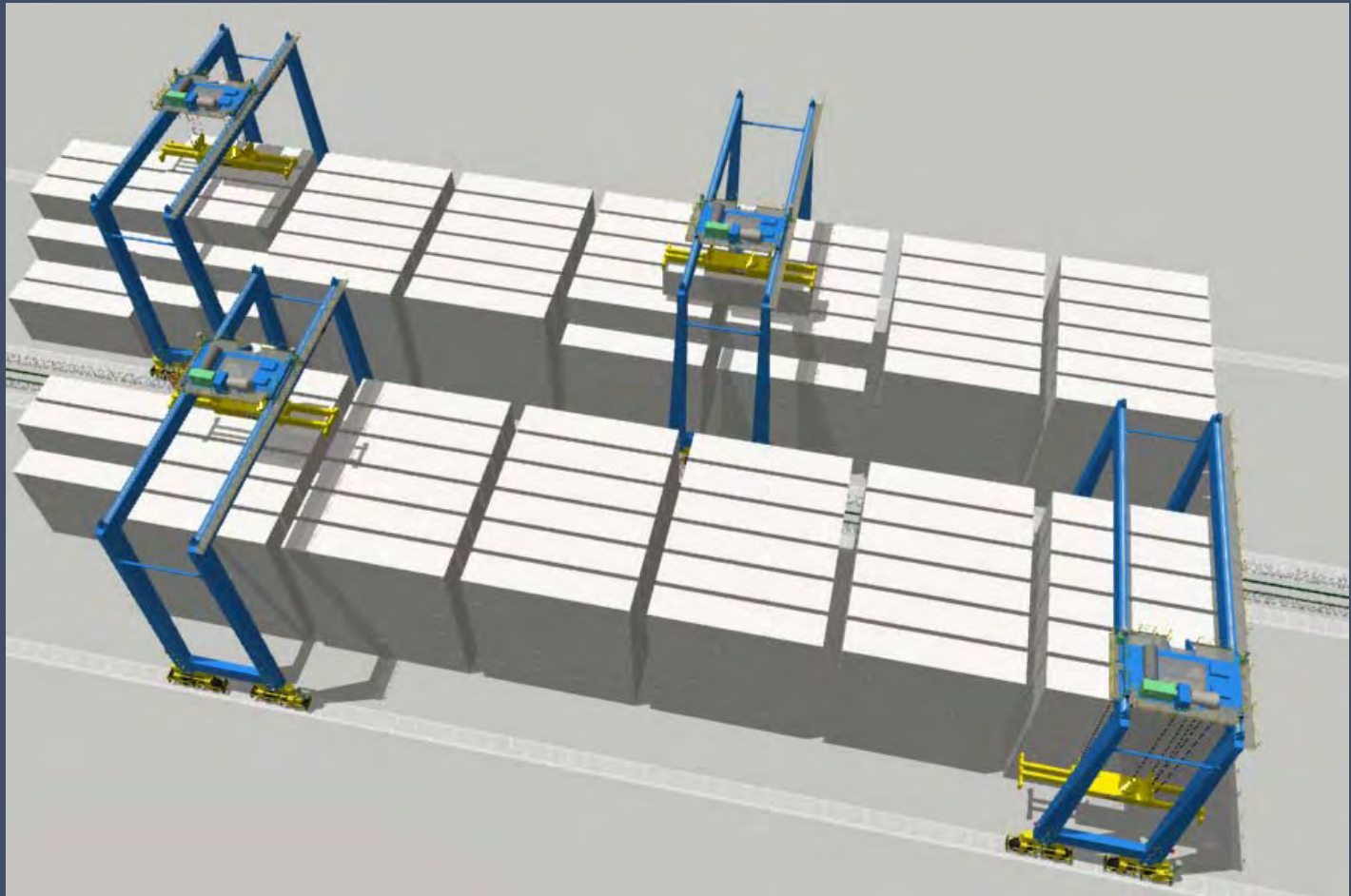
PACECO[®] Corp

Video



Conventional RTG Operation Method

Rubber tire, Diesel-Electric drive,
Straight steering by driver



Conventional RTG Emissions (per year)

Terminal Size (RTGs)	Small (3 units)	Medium (10 units)	Large (25 units)
NOx	21,000 lbs	70,000 lbs	175,000 lbs
PM	900 lbs	3,000lbs	7,500 lbs

Data: Engine: Cummins NTA855 G2 Diesel Engine, 420 BHP
Operation: 2,500 hours/crane (approximate)



ERTG: Almost Zero Emissions



E-RTG Operation Cost Savings (per year, per crane)

Cost	Conventional RTG	E-RTG
Diesel Fuel	\$80,000	
Electricity		\$10,000
Engine Overhaul	\$3,500	
Total	<u>\$83,500</u> (100%)	<u>\$10,000</u> (12%)



Data: Operation: 2,500 hours/year

Diesel Cost: \$5/gallon (As of 2nd quarter 2008)

Electricity Cost: \$0.085/kWh



Cable Reel Carrier (CRC) System

- Minimal Crane Modification
- No Costly Buried Cable Trench with Rubber Cover



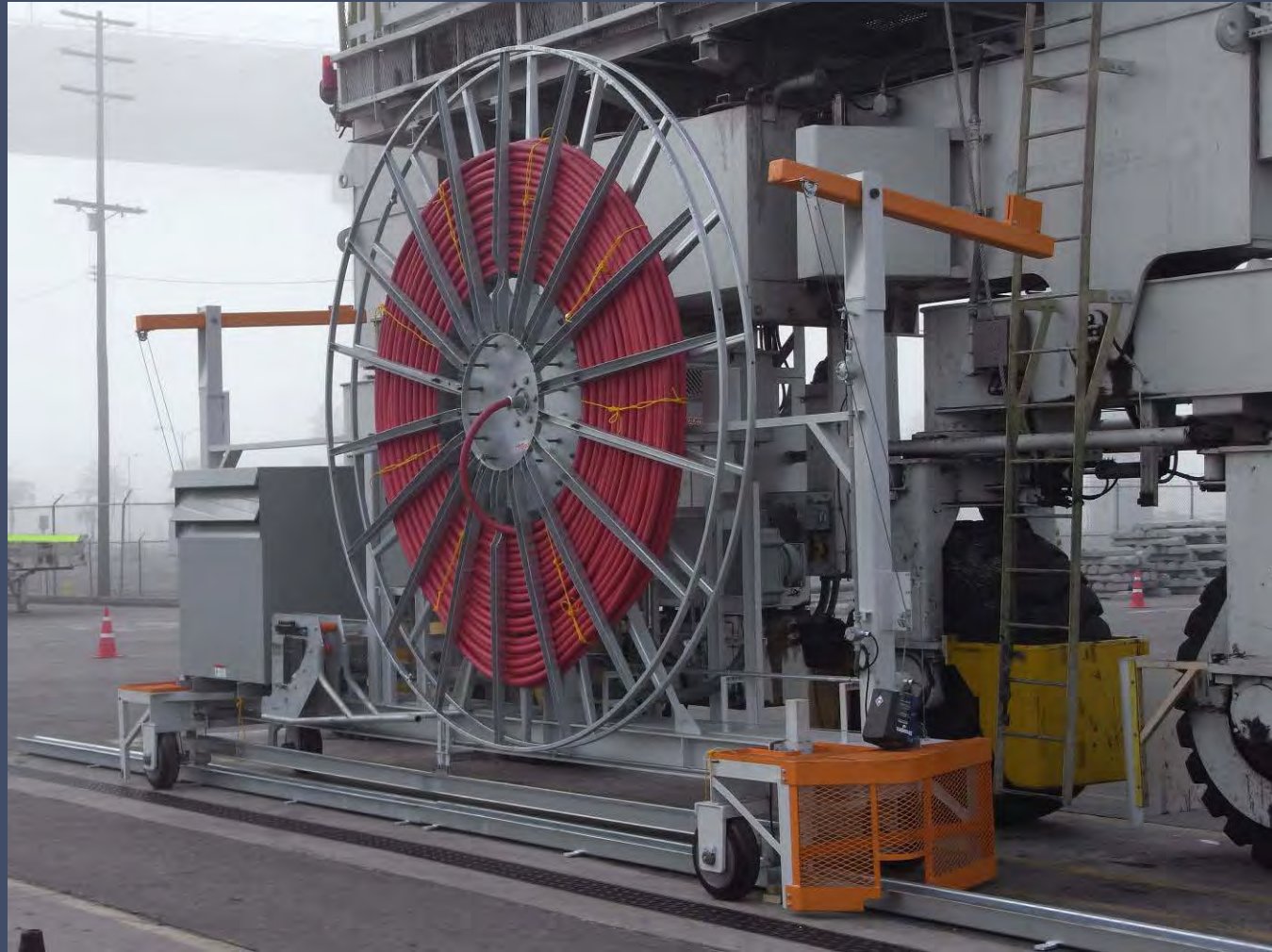
The Existing Solution:
Cable Reel onboard



PACECO's New Solution:
Cable Reel Carrier (CRC)



Cable Reel Carrier (CRC)

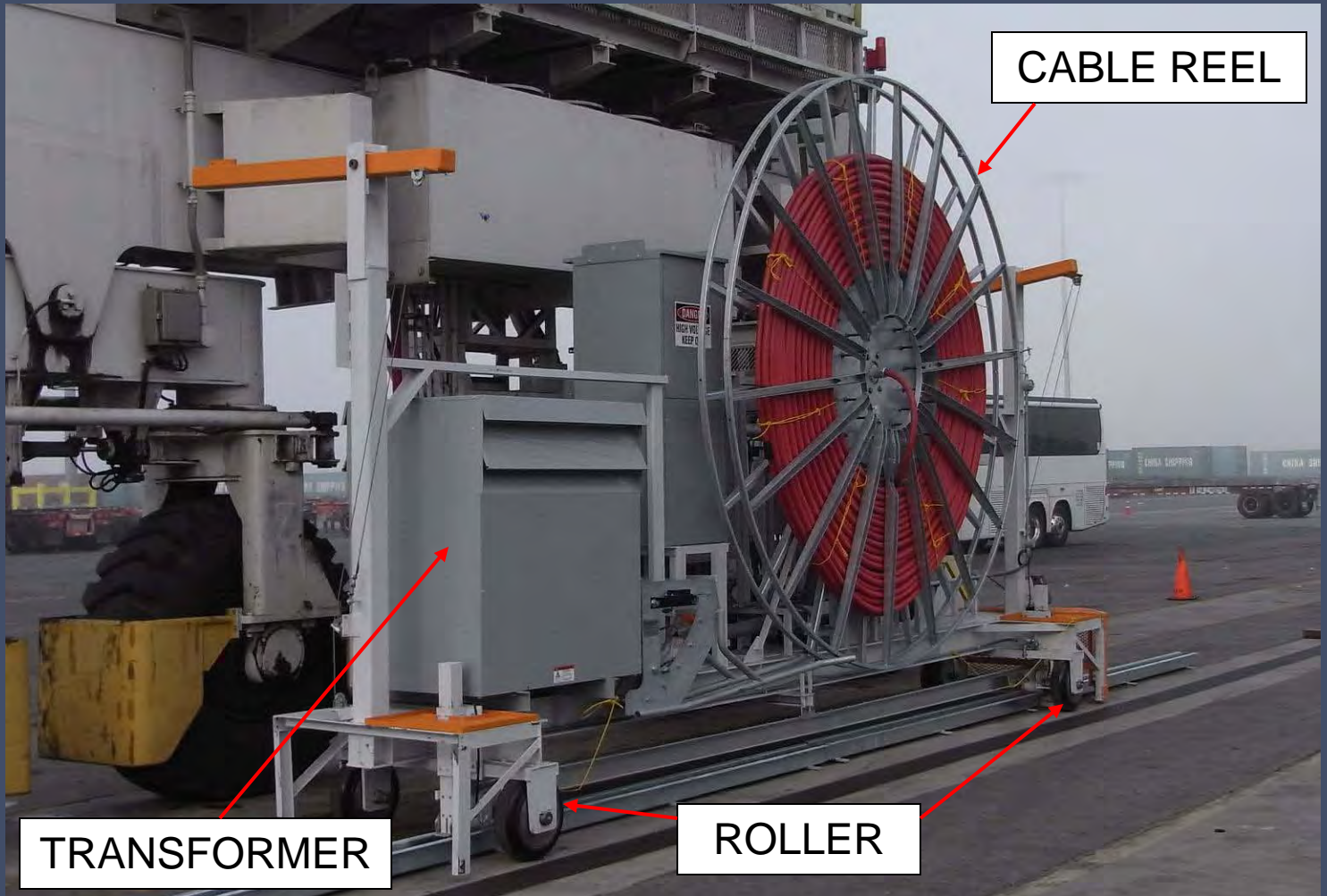


Advantages of CRC E-RTG

- Zero Emissions
- Operation Cost Savings
(Approximately 12% of Conventional RTG)
- Minimal Civil & Crane Modifications Cost
- No Certified Maintenance Staff required for Electric Cable Connection (460V AC)
- Easy Straight Steering with Auto-Steering System

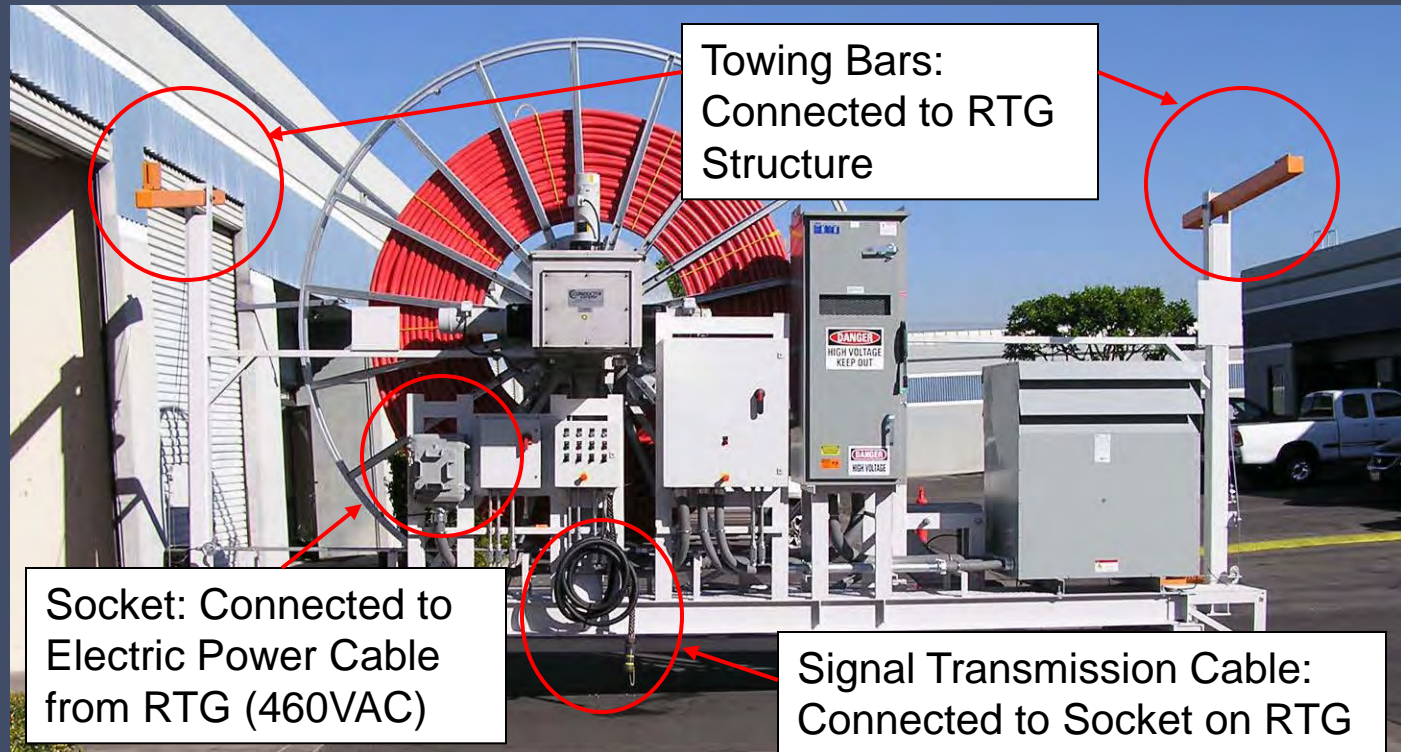


Cable Reel Carrier Components



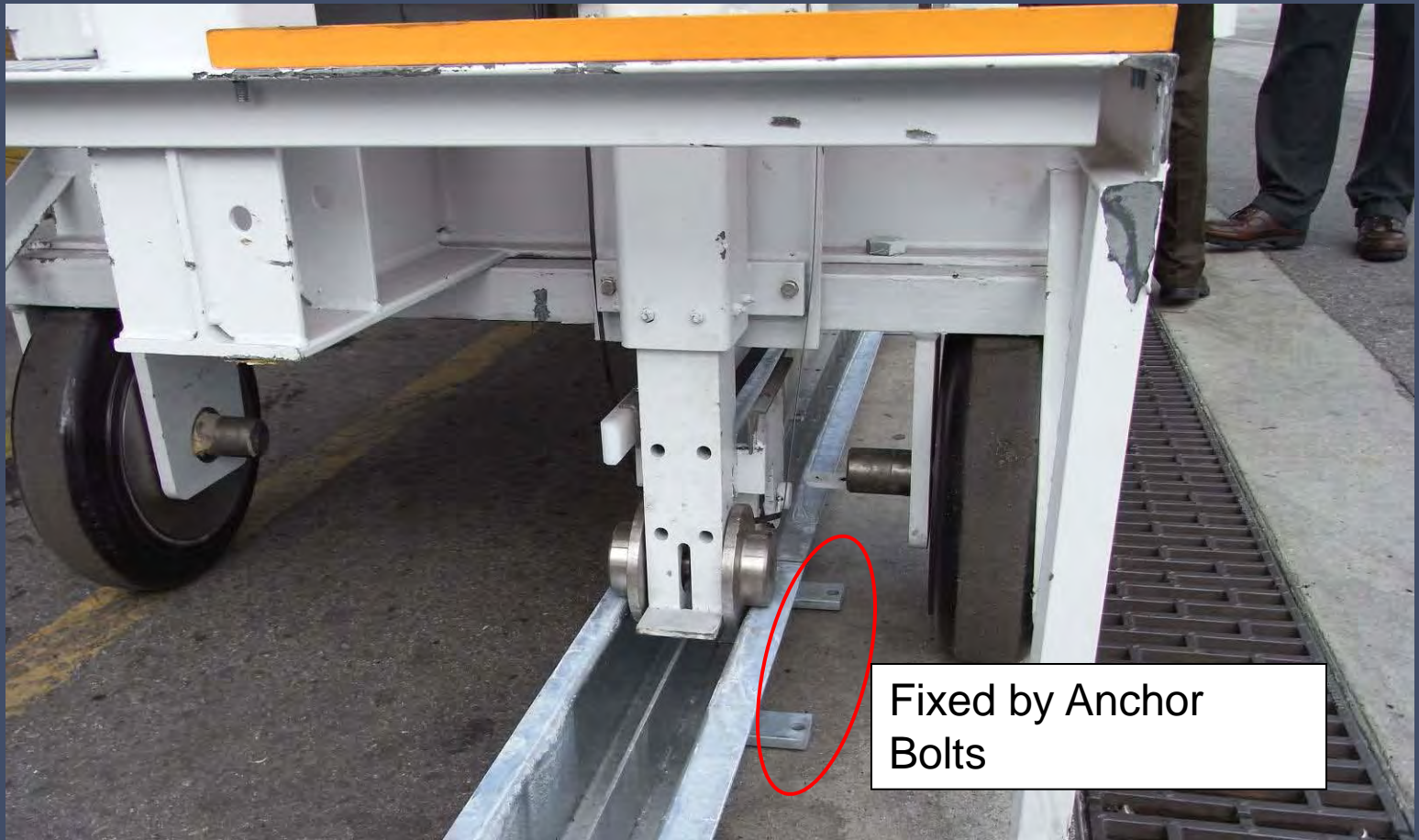
CRC Connection with RTG

- Electric Power Cable(460V AC)
- Mechanical Towing Bars
- Signal Transmission Cable



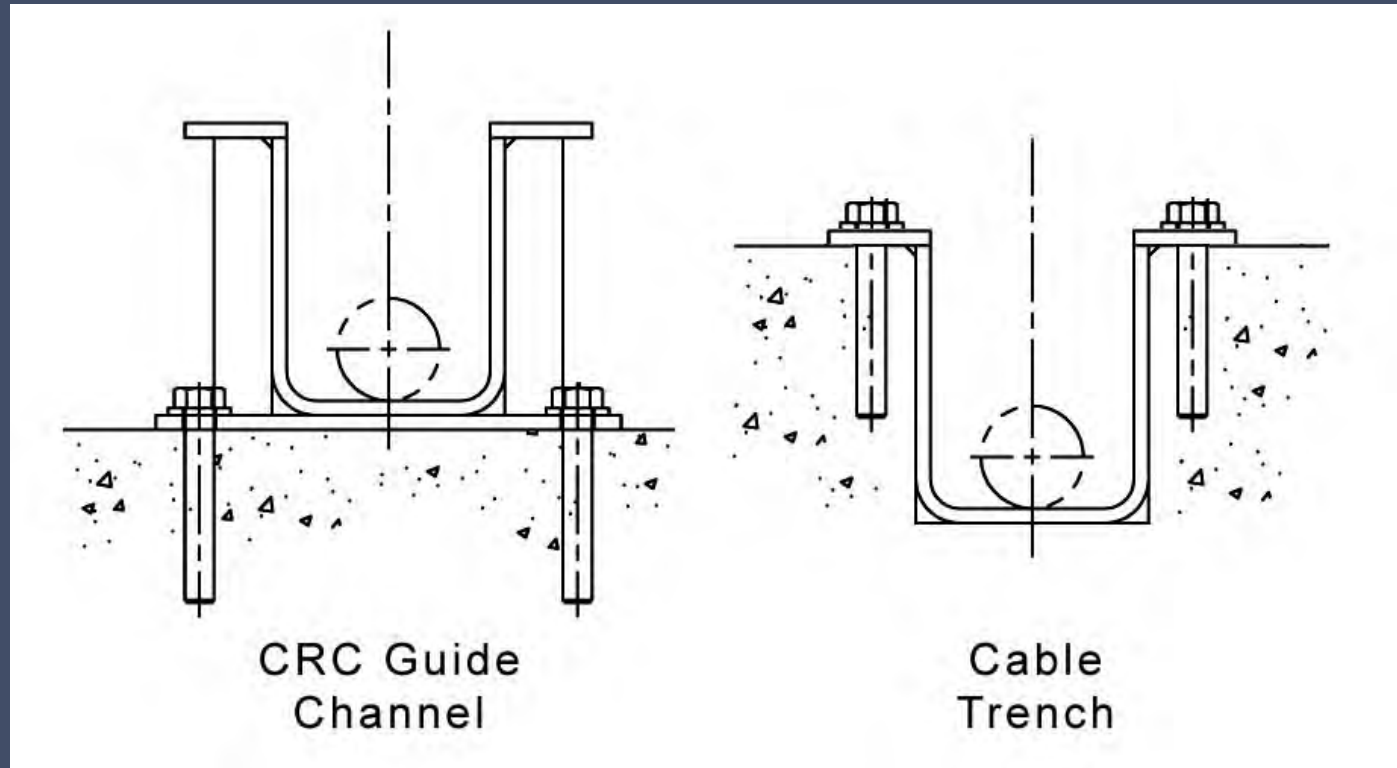
CRC Guide Roller & Cable Channel

Cable Channel is Fixed by Anchor Bolts



Guide Channel Mounting

The CRC Guide Channel is less invasive to the Civil Foundation



Existing RTG Yard Layout

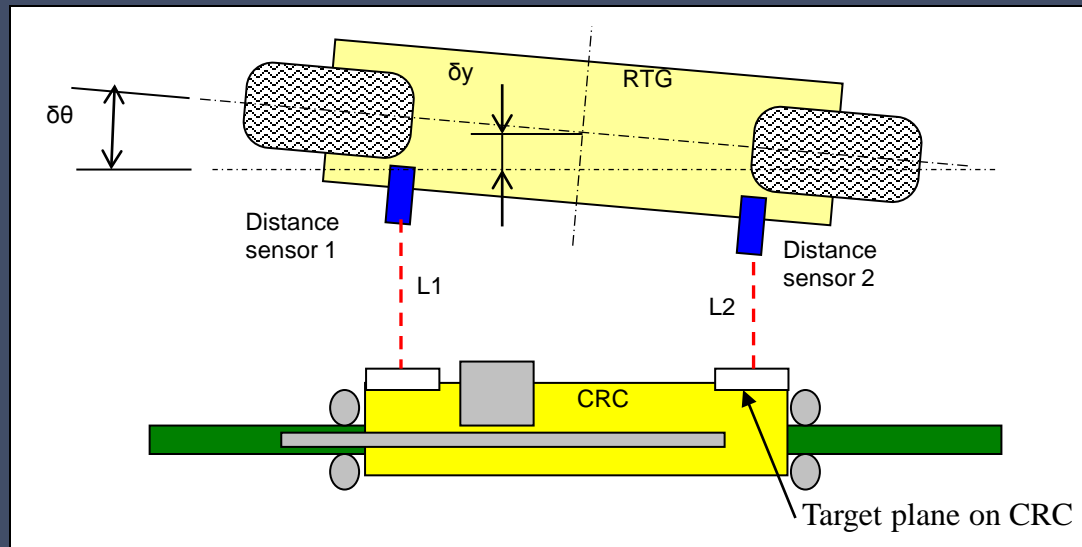
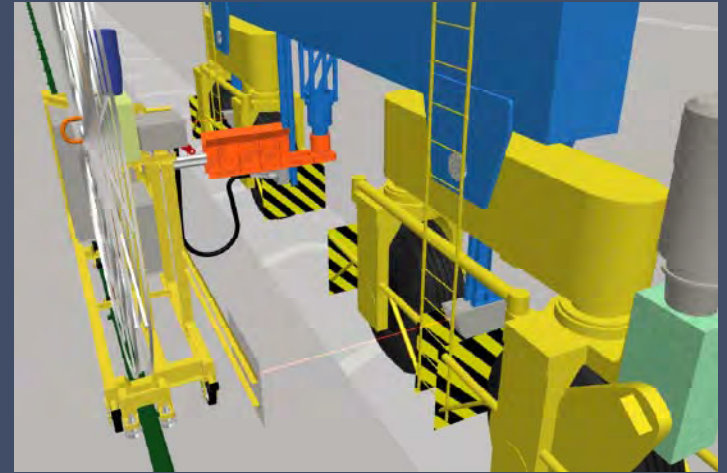


4 RTG's, 4 CRC's, 2 Container Blocks



Auto Steering System

Uses Twin Lasers to automatically align RTG Crane for Straight Travel



Conclusion: CRC is an Excellent Solution for Green RTG's

- Zero Emissions and Operation Cost Savings
- Simplest Retrofitting Solution for E-RTG's
- Less Crane Modification and Less Invasive to Civil Foundation
- No Certified Maintenance Staff required for Electric Cable Connection
- Easy Straight Steering Function



Thank you

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