



ACCELERATING THE PACE TO
TOTALZERO™

2025 Total-Zero™ Locomotives

Diesel-Hybrid | Dual Fuel | Hydrogen | Battery-Electric

Fuel-efficient, reliable, FRA concurrent
equipment for a smarter, more profitable fleet



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**Grant-supported
upfront costs
won't last!**

ORDER TODAY

Choosing OptiFuel today is the smart business move that locks in savings and secures your fleet's future.

**FRA Concurrence & Locomotive
Delivery ~12 months after
contract order**

Maximize Profitability with OptiFuel Total-Zero Locomotives

Fuel efficiency, reliability, asset life, and maintenance costs drive railroad profitability. With industry-leading performance built for real-world operations, smart railroads are transforming operations now with OptiFuel Total-Zero locomotives.

Next-Generation Modularity, Maximum Flexibility

OptiFuel's industry-first modular power and fuel storage systems enable rail operators to swap engine modules trackside in under an hour, adjust horsepower, or switch power types as operational needs evolve.

Superior Performance, Lower Costs

With over 95% reliability and up to 40% greater fuel efficiency, OptiFuel locomotives significantly reduce operating costs while setting new standards in performance. They achieve near-zero criteria emissions, surpassing proposed Tier 5 standards, while our dual fuel technology enables net-zero greenhouse gas emissions, redefining sustainable rail.

Your Smart Business Move Starts Today

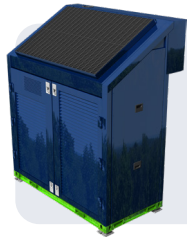
Whether you're modernizing an aging fleet, complying with new regulations, or optimizing profitability, OptiFuel delivers proven, FRA concurrent solutions tailored to your needs.

Revolutionary Modularity, Unrivalled Efficiency

Switcher, Road Switcher, & Line Haul Locomotives

4 Power Options

Unlimited Flexibility
Maximum Performance



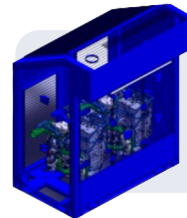
DIESEL-HYBRID

- Near-zero NOx & PM criteria emissions
- Battery-only mode in idle & Notch 1 & 2
- 690 hp per module



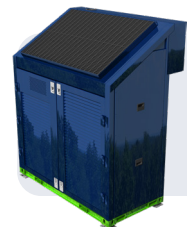
DIESEL-RNG DUAL FUEL HYBRID

- Net-Zero GHG Emissions with 30% RNG
- Run in diesel mode or dual fuel mode
- Battery-only mode in idle & Notch 1 & 2
- 690 hp per module



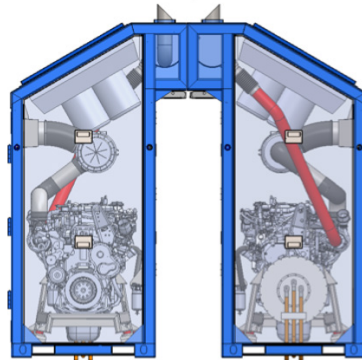
HYDROGEN FUEL CELL

- Battery-only mode in idle & Notch 1 & 2
- 480 hp per module



BATTERY-ELECTRIC

- 1-Hour Rapid-Recharge
- 1 MW per module



POWER MODULE

Swap out trackside in under an hour



FUEL STORAGE MODULE

On-platform storage for alternative fuels (RNG, CNG, Hydrogen)

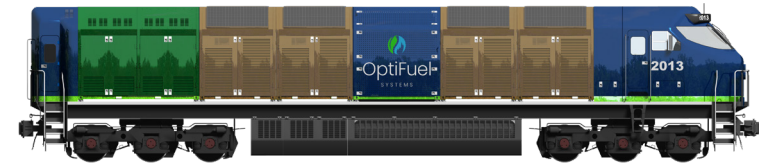


INTEGRATED HYBRID POWER

Standard in-platform integration across all models
0.5 - 1 MWh capacity



4500-5500 hp Commuter & Passenger, AC Traction



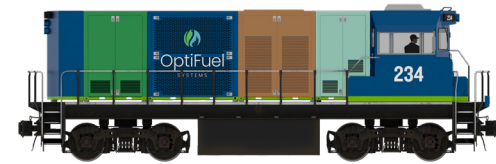
80' 5000 hp Line Haul Locomotive, AC Traction



72' 4600 hp Line Haul Locomotive, AC Traction



62' 2500-3500 hp Road Switcher Locomotive, AC Traction



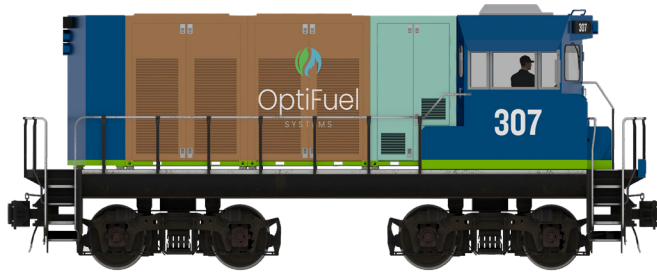
52' 1000-1800 hp Switcher Locomotive, DC Traction



42' 2500 kW Battery-Electric Switcher Locomotive

2025 Lineup

OptiFuel Total-Zero Diesel-Hybrid locomotives achieve emissions so low that they surpass the proposed Tier 5 standard for NOx & PM — while using up to 40% less fuel than single-engine Tier 4 locomotives for the same workload.

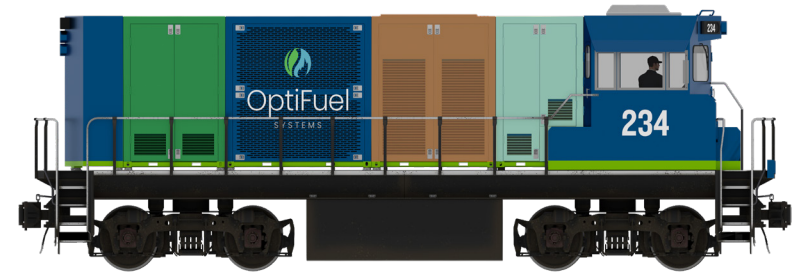


BATTERY-ELECTRIC
42' Switcher – Low/Medium Duty Cycle

2500 kW

- Continuous Power: (8-10 hours): 200 kw (260 hp)
- Peak Power (1 hr): 1750 kW (2300 hp)
- 2.5 MWh LFP Hybrid Batteries
- Advanced DC Traction
- 1 Hour Rapid Recharge
- Recharge Rate: 960 kW MCS

MSRP: \$1.7 to \$2.0 Million



DIESEL-HYBRID or DIESEL-RNG DUAL FUEL HYBRID
52' Switcher – Low/Medium Duty Cycle

1000 hp

- Continuous Power: 750 hp
- Peak Power (1 hr): 1100 hp

1500 hp

- Continuous Power: 1500 hp
- Peak Power (1 hr): 1800 hp

- Integrated LFP Hybrid Battery: 0.5 MWhr
- Advanced DC Traction (B-B)
- Ultra-low emissions: NOx (0.025) and PM (0.0035) – 220x lower than Tier 3, 52x lower than Tier 4, and 8x lower than proposed Tier 5
- Up to 40% less fuel consumption compared to Tier 4 locomotives

Dual Fuel Series Advantages:

- Net-Zero GHG Emissions
- RNG fuel supply guaranteed below diesel prices
- Minimal infrastructure expansion required

MSRP: \$2.3 to \$2.7 Million

Need it fast? No problem!

We deliver within 12 months of contract order!

ACCELERATING THE PACE TO **TOTALZERO**



DIESEL-HYBRID or DIESEL-RNG DUAL FUEL HYBRID 62' Switcher – Heavy Duty Cycle

1800 hp

- Continuous Power: 1380 hp
- Peak Power (1 hr): 1800 hp

2000 hp

- Continuous Power: 2070 hp
- Peak Power (1 hr): 2600 hp

- Integrated LFP Hybrid Battery: 1 MWhr
- Advanced DC Traction (B-B)
- Ultra-low emissions: NOx (0.025) and PM (0.0035) – 220x lower than Tier 3, 52x lower than Tier 4, and 8x lower than proposed Tier 5
- Up to 40% less fuel consumption compared to Tier 4 locomotives

Dual Fuel Series Advantages:

- Net-Zero GHG Emissions
- RNG fuel supply guaranteed below diesel prices
- Minimal infrastructure expansion required

MSRP: \$2.9 to \$3.5 Million



DIESEL-HYBRID or DIESEL-RNG DUAL FUEL HYBRID 62' Road Switcher

3000 hp

- Continuous Power: 3000 hp
- Peak Power (1 hr): 3500 hp

- Integrated LFP Hybrid Battery: 1 MWhr
- A/C Traction – 2 or 3 axle trucks (B-B) or (C-C)
- Ultra-low emissions: NOx (0.025) and PM (0.0035) – 220x lower than Tier 3, 52x lower than Tier 4, and 8x lower than proposed Tier 5
- Up to 40% less fuel consumption compared to Tier 4 locomotives

Dual Fuel Series Advantages:

- Net-Zero GHG Emissions
- RNG fuel supply guaranteed below diesel prices
- Minimal infrastructure expansion required

MSRP: \$3.7 to \$4.25 Million

Irrefutable Value

The future of rail is here. Make the smart move to OptiFuel Total-Zero™ Locomotives.

Buy new or retrofit to any existing switcher or line haul platform.

Efficiency & Cost Savings

- Every Total-Zero locomotive comes standard with an integrated 0.5-1 MWh in-platform battery, optimizing efficiency with hybrid power. In-platform battery has both self-recharging and rapid-recharge capabilities via plug-in ports on both sides of the locomotive
- Reduce total fuel costs by up to 40% compared to Tier 4 diesel locomotives by leveraging 20% fuel economy gains from hybridization, plus gains from advanced power systems, regenerative braking, energy management systems, and fixed-rate RNG pricing
- Smaller, more efficient engines and advanced engineering lower lifetime maintenance costs

Performance & Reliability

- Over 95% availability
- AC Traction with Regenerative Braking: Maintains full tractive effort even with the loss of one traction motor
- Redundant power ensures extreme high availability and reliability to guarantee tractive power (5500 hp diesel hybrid power & 1000 hp battery power for 6500 hp in total peak power)
- Long-range capability: Travel 2,500 miles – from the Port of Los Angeles or Long Beach to Chicago – without refueling or requiring a tender, preserving freight car revenue

Operational Efficiency

- 1-hour on-track engine module replacement or swaps between locomotives, minimizing disruptions and out-of-order assets
- Need more peak power? Add or replace engine modules with optional 1 MW battery-electric power modules

Seamless Infrastructure Integration, Minimal Modification

- Battery-electric and dual fuel locomotives come standard with a dedicated 960 kW to 3.5 MW MCS recharging system for seamless energy management
- For dual fuel locomotives, the battery charging system is fully integrated into RNG refueling infrastructure

Emissions

- Achieve 0.025 g/bhp-hr nitrous oxide (NO_x), 0.0035 g/bhp-hr particulate matter (PM) emissions, and NET-ZERO greenhouse gas (GHG) emissions

Warranty & Longevity

- 5-year standard warranty with a 30-year locomotive lifespan
- Future-ready: Simply swap out modules for upgrades, horsepower adjustments, future technologies, or power transitions

**OptiFuel's Total-Zero™
5000 hp Diesel-RNG Dual
Fuel Hybrid Line Haul
Locomotive is scheduled
to begin testing in 2026
at FRA's TTC, with full
production in 2028.**

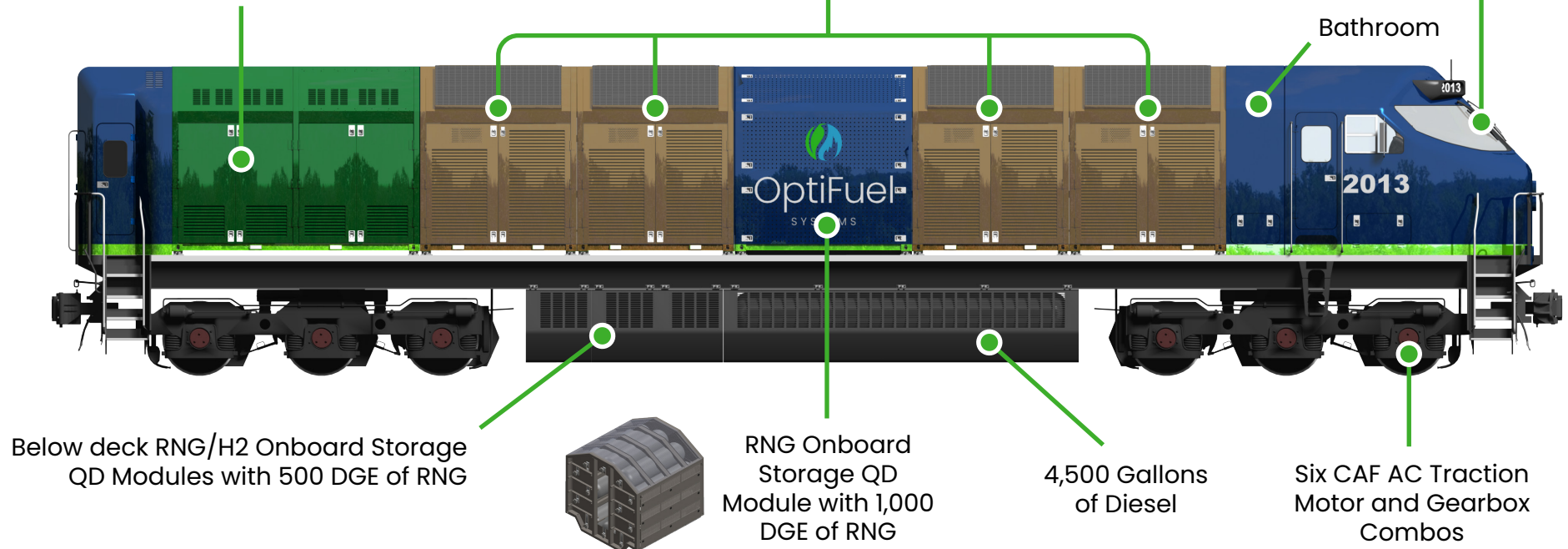


- CAF AC Traction System with IGBT Inverters (SiC electronics in 2028) with Regenerative Braking
- Standard 1 Mwh Hybrid LFP Battery In-Platform Storage Module
- 950 Vdc Link
- Dynamic Braking Grid

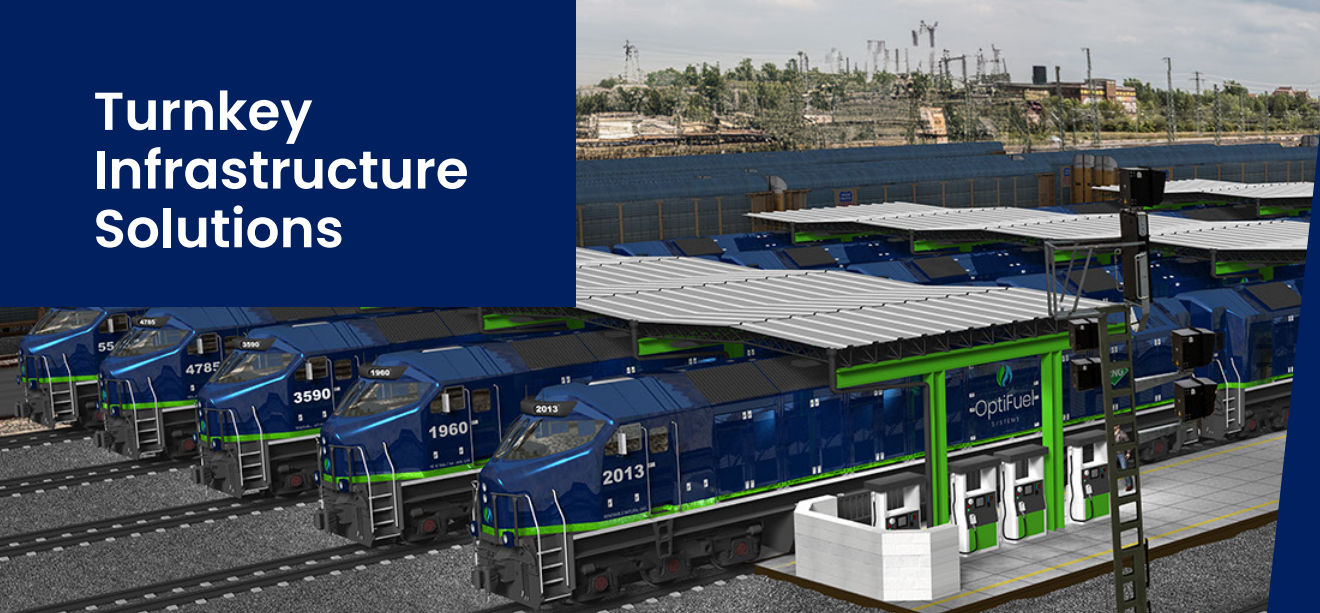
Baseline: Eight 690 hp Diesel-RNG Dual Fuel Quick-Power™ QD Modules (5,500 hp total)
Options: 100% RNG Modules, Hydrogen Fuel Cell Modules, or 2 MW LFP Battery Power Modules

Crashworthiness Cab & Platform

Bathroom



Turnkey Infrastructure Solutions



Effortless Infrastructure for a Smarter, More Profitable Fleet

OptiFuel makes the transition to cleaner, more efficient rail operations seamless with turnkey refueling and rapid-recharging solutions designed to maximize uptime and reduce costs. Best of all, we maintain all infrastructure equipment, so your team can stay focused on keeping freight moving efficiently.

Seamless, Scalable Infrastructure Solutions

- **Diesel-Hybrid Locomotives:** No additional infrastructure required.
- **Battery-Electric Switchers:** Our rapid-recharging stations deliver a full recharge in just one hour, keeping operations running smoothly. Battery recharging systems range from 960 kW to 3.5 MW MCS, providing scalable power solutions to meet your fleet's needs.
- **Diesel-RNG Dual Fuel Hybrid Locomotives:** Achieve net-zero GHG emissions with just 30% RNG - delivering sustainability without compromising range or performance. OptiFuel provides turnkey RNG refueling infrastructure and fuel supply at rates guaranteed lower than diesel. RNG pumps integrate into existing diesel islands, enabling simultaneous diesel and RNG refueling with no operational changes. The self-recharging hybrid battery supports plug-in rapid charging, with its charging system fully integrated into the RNG refueling infrastructure.

OptiFuel GrantPro™

Let's Secure Your Next Grant Together

Comprehensive, no-cost grant assistance program designed to streamline your grant application process and maximize your chances of success.

OptiFuel actively supports railroads by providing comprehensive grant support assistance, guiding you in identifying relevant grants and facilitating the preparation of grant applications through a collaborative process.



Grant
Identification
& Strategy



Proposal
& Cost
Development



Engineering &
Tech Support



Post-Award
Support

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