



2025 Series Locomotives

Diesel-Hybrid | Diesel-CNG Dual-Fuel Hybrid | 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 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 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.

Your Smart Business Move Starts Today

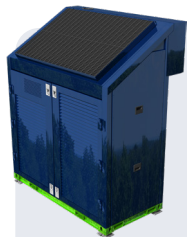
Whether you're modernizing an aging fleet, or optimizing profitability, OptiFuel delivers proven, FRA concurrent solutions tailored to your needs.

Revolutionary Modularity, Unrivalled Efficiency

Switcher, Road Switcher, & Line Haul Locomotives

4 Power Options

Unlimited Flexibility
Maximum Performance



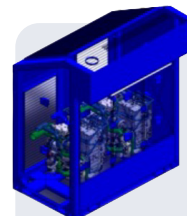
DIESEL-HYBRID

- Ultra-Low NOx & PM
- Battery-only mode in idle & Notch 1 & 2
- 690 hp per module
- Ideal for switch, road switch & line haul operations



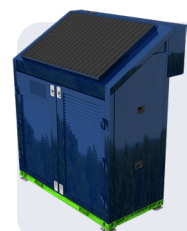
DIESEL-CNG/RNG DUAL FUEL HYBRID

- Run in diesel mode or dual fuel mode
- Battery-only mode in idle & Notch 1 & 2
- 690 hp per module
- Ideal for line haul operations



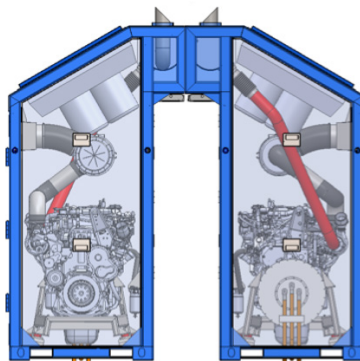
HYDROGEN FUEL CELL OR 100% NATURAL GAS

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



BATTERY-ELECTRIC

- 1-Hour Rapid-Recharge
- 1 MW per module
- Ideal for switch & short haul road switch operation



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



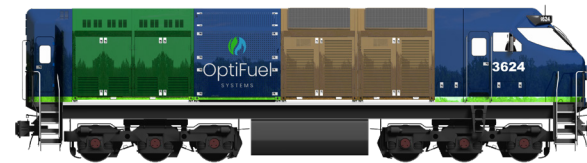
4500-5500 hp Commuter & Passenger, AC Traction



80' 5000 hp Line Haul Locomotive, AC Traction



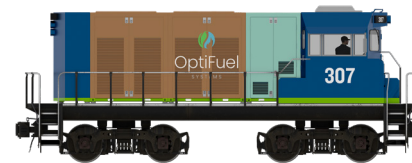
72' 4600 hp Line Haul Locomotive, AC Traction



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



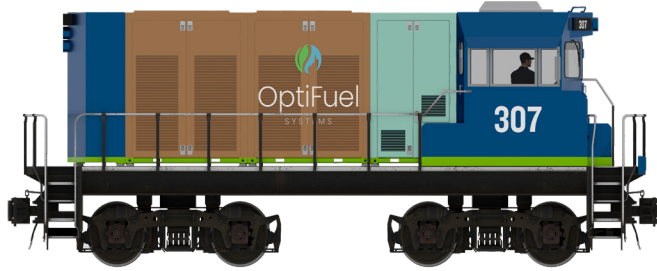
52' 1000-1800 hp Switcher Locomotive, DC Traction



42' 2500 kW Battery-Electric Switcher Locomotive

2025 Lineup

OptiFuel 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.

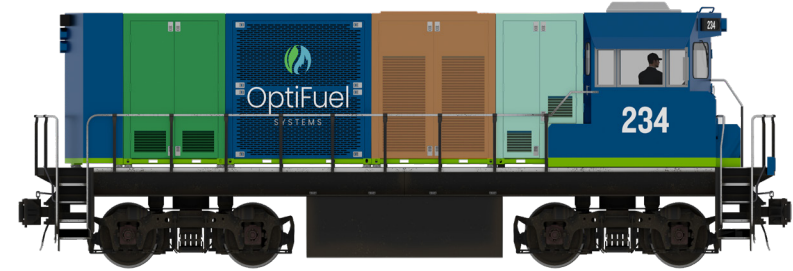


BATTERY-ELECTRIC
42' Switcher – Low/Medium Duty Cycle

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-CNG/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:

- End-to-end infrastructure upgrade – includes natural gas pipeline connection and on-site CNG/RNG pump installation
- Co-located refueling – CNG/RNG dispenser installed next to existing diesel, enabling simultaneous dual-fuel refueling
- Fuel-flexible operations – unlocks savings by using lower-cost natural gas while maintaining full diesel capability & range

MSRP: \$2.3 to \$2.7 Million

Need it fast? No problem!

We deliver within 12 months of contract order!

Putting Freight Efficiency on the *Fast Track*



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

1800 hp

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

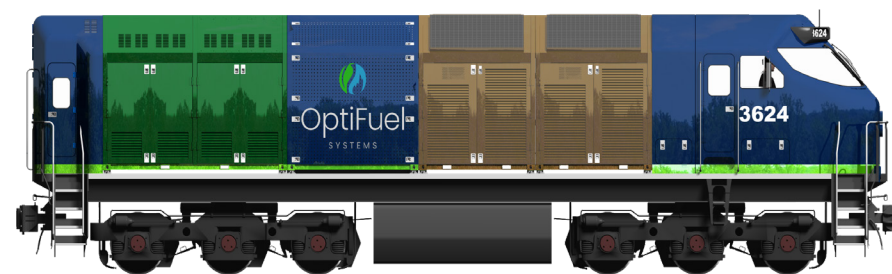
Dual Fuel Series Advantages:

- End-to-end infrastructure upgrade – includes natural gas pipeline connection and on-site CNG/RNG pump installation
- Co-located refueling – CNG/RNG dispenser installed next to existing diesel, enabling simultaneous dual-fuel refueling
- Fuel-flexible operations – unlocks savings by using lower-cost natural gas while maintaining full diesel capability & range

MSRP: \$2.9 to \$3.5 Million

2000 hp

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



DIESEL-HYBRID or DIESEL-CNG/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:

- End-to-end infrastructure upgrade – includes natural gas pipeline connection and on-site CNG/RNG pump installation
- Co-located refueling – CNG/RNG dispenser installed next to existing diesel, enabling simultaneous dual-fuel refueling
- Fuel-flexible operations – unlocks savings by using lower-cost natural gas while maintaining full diesel capability & range

MSRP: \$3.7 to \$4.25 Million

Irrefutable Value

The future of rail is here. Make the smart move to OptiFuel Locomotives.

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

Efficiency & Cost Savings

- Every OptiFuel 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 lower cost fuels
- 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)
- Transcontinental range with a single fuel stop - no tender car, no compromise

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 CNG/RNG refueling infrastructure

Emissions

- 0.025 g/bhp-hr nitrous oxide (NO_x), 0.0035 g/bhp-hr particulate matter (PM) 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 5500 hp Diesel-CNG/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-CNG/RNG Dual Fuel Quick-Power™ QD Modules (5,500 hp total)
Power Module Options: Diesel, Dual-Fuel (Diesel-CNG/RNG), CNG/RNG, Hydrogen, Battery

Crashworthiness Cab & Platform

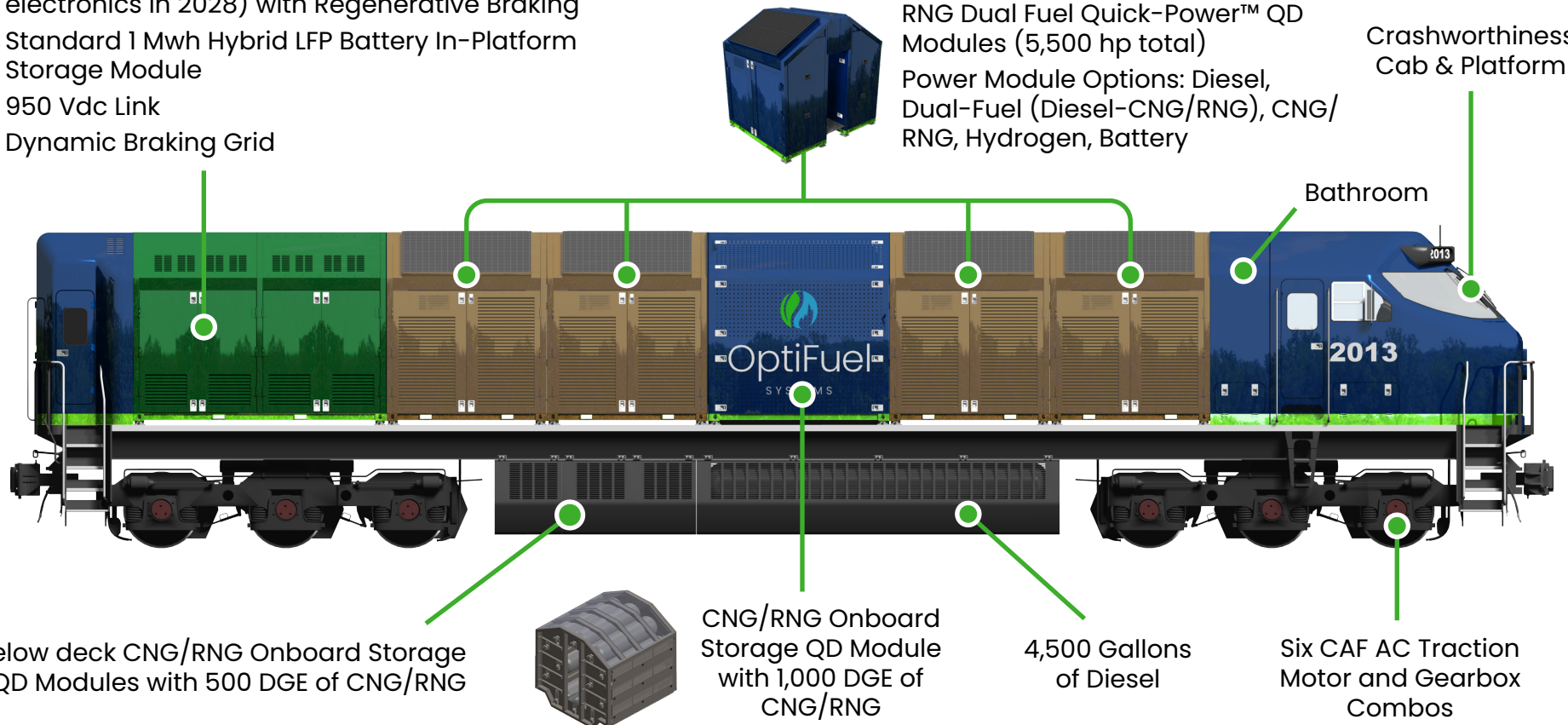
Bathroom

Below deck CNG/RNG Onboard Storage QD Modules with 500 DGE of CNG/RNG

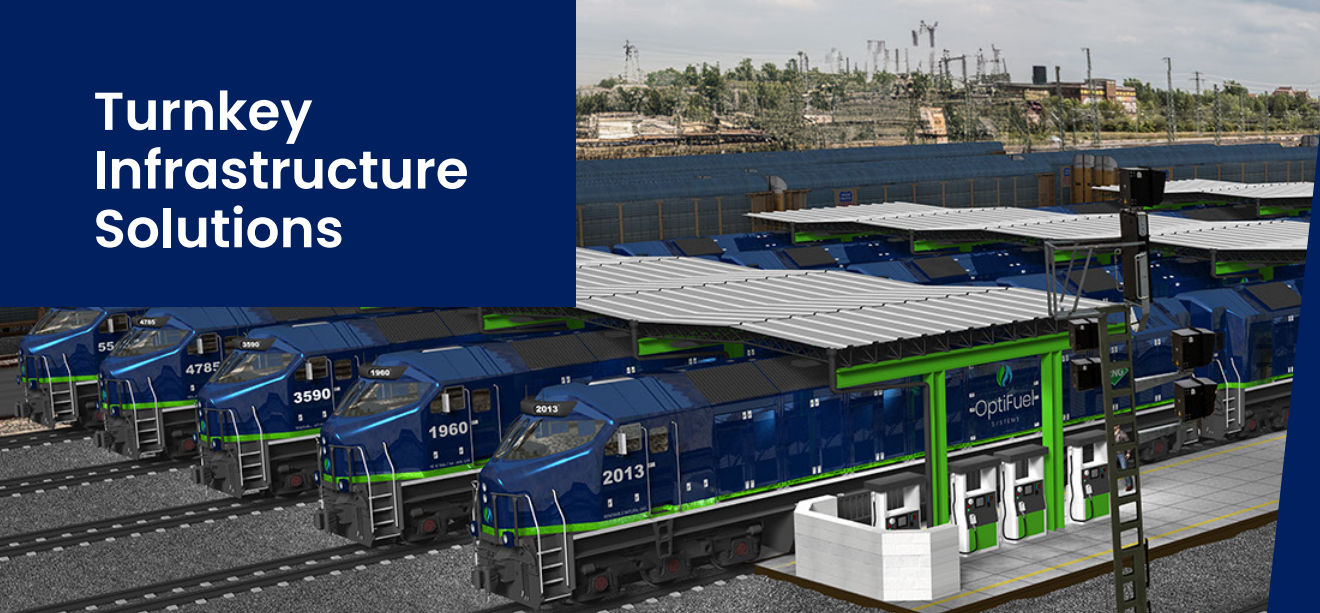
CNG/RNG Onboard Storage QD Module with 1,000 DGE of CNG/RNG

4,500 Gallons of Diesel

Six CAF AC Traction Motor and Gearbox Combos



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.
- **Diesel-CNG/RNG Dual Fuel Hybrid Locomotives:** Maximize fuel savings with dual fuel – delivering sustainability without compromising range or performance. OptiFuel provides end-to-end infrastructure upgrades. CNG/RNG pumps integrate into existing diesel islands, enabling simultaneous diesel and CNG/RNG refueling with no operational changes. The self-recharging hybrid battery supports plug-in rapid charging, with its charging system fully integrated into the refueling infrastructure.
- **Battery-Electric Locomotives:** Our rapid-recharging stations deliver a full re-charge 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.

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
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& Strategy



Proposal
& Cost
Development



Engineering &
Tech Support



Post-Award
Support

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