

Introducing the Revolutionary CoGeneration™ Locomotive



Multi-Engine Features:

Locomotive Platform - GP Style Road Switcher - 130 to 150 Ton

Engines*

Brand: three Cummins diesel (QSK-19L)

EPA Emission Level: Tier 2 Locomotive or
Tier 3 Off-Highway

Displacement: 3 x 19 Liter

Power: Up to 2100 Gross Hp

Arrangement: I-6

Aspiration: Turbocharged and Aftercooled

Max. Untreated Emissions: 3.0 NOx nominal

Advanced Propulsion System

Brand: TMV's TECU controls each traction
motor individually

Liquid-cooled IGBT controls

Touch-screen on-board diagnostics

Tractive Effort (Starting) ** 33% to 35%

Tractive Effort (Continuous) ** 23% to 25%

* Cummins engines standard, other engines available

** limited by motor capacity



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CoGeneration™ Locomotives

Providing the best possible return on
your locomotive investment.

- Single or Multiple Engine Availability
- Power on Demand
- Reduced Fuel Consumption
- Alternator Started - No Starter Maintenance
- Regenerative Dynamic Braking
- High Traction Drive

• LOW EMISSION
• FUEL EFFICIENT
• COST EFFECTIVE

Electric Brake system

Type: Regenerative type brakes

Effective braking force and speed:

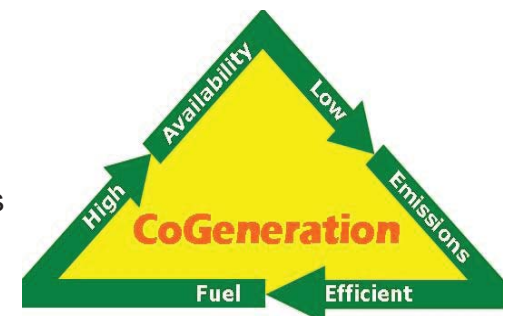
- up to full force from 0.6 mph to 12.5 mph

- up to 2200 Hp from 12.5mph to 55 mph

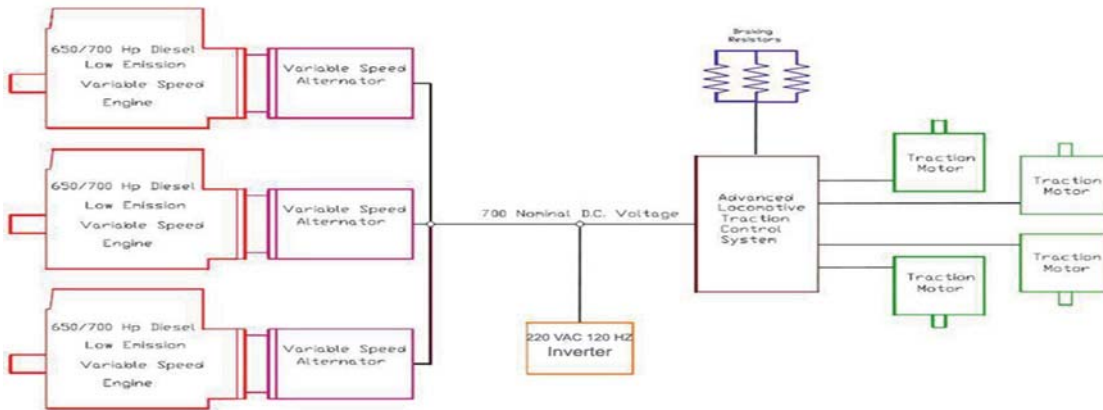
Energy dissipation: All energy available for
100% recycling prior to resistors

Brake resistor capacity: 2200 Hp continuous

CoGeneration™ - A process where
power is generated by two or more
sources simultaneously or individually
to achieve maximum efficiency
and minimum emissions.



Low Emission Multi-engine Road/Switcher Locomotive



Power on Demand - Feature utilizes engine shutdown to reduce fuel consumption and excess noise when power demand is low. As Power Demand increases, additional engine(s) comes on-line to provide up to 2100hp (total). Optional power source options may also include battery third rail or catenary input sources.

Cleanest Emissions - Through a combination of clean-burning Tier 2 engines and optional self-cleaning ceramic particulate filters, Hydrocarbon emissions are reduced 97%, NOx reduced by 65%, CO reduced 75%, and Particulate Matter reduced by 93% (See Side Chart).

Regenerative Dynamic Braking - Allows the use of the brakes (down to 0.6mph) to generate energy that is recycled for use in auxiliary functions like cab heating, fans, air conditioning, lights, radios, refrigerator, and air compressor.

Fuel Efficient - Using the most fuel efficient diesel engines in a multi-engine application is part of the estimated 25% reduction in fuel costs. Each engine only operates when it is needed.

Highest Rail Adhesion - Using the Traction & Engine Control Unit provides a cab-mounted touch screen display that accesses engine controls and diagnostics. Also controls wheel slip/slide in Power and DB modes based on axle speed sensors. Each traction motor is individually controlled for maximum adhesion.

Smokeless Start - Each engine is started by the generator to a high speed before fuel is introduced. This configuration also eliminates the maintenance associated with normal wear on engine starters and ring & pinion gears.

Frame-up Construction - BEC integrates new components onto an "FRA Compliant" new welded frame.

Maintenance Minded - CoGeneration™ locomotives are designed to facilitate maintenance. Engines on multiple engine designs are 'skid' mounted to ease removal and cut removal time.



Emissions (G/BHP-H)	Tier 2 Rail		Brookville Switcher With Filter			
	Switcher	Line Haul	Switcher	% Lower	Line Haul	% Lower
NOx	8.10	5.50	2.85	65%	2.67	51%
HC	0.60	0.30	0.02	97%	0.01	97%
CO	2.40	1.50	0.61	75%	0.33	78%
PM	0.24	0.20	0.02	93%	0.01	95%

