Wabtec CORPORATION

Tier 4
Evolution Series Locomotive

Wabtec developed the first freight locomotive to meet the U.S. Environmental Protection Agency's (EPA) stringent Tier 4 emission standards without use of any type of after-treatment. The Evolution Series Tier 4 Locomotive provides the railroads reduced operational costs through urea infrastructure avoidance. It reduces emissions by 70% below Tier 3 requirements enabling customers to operate in any market.

US EPA T4 emissions levels
without any type of after-treatment

AC individual-axle traction control
enables maximum hauling capabilities even in substandard track conditions

Leverages experience of over 8,000 EVO units
operating around the world

Seamless integration of digital solutions
for enhanced asset performance

Integrated with remote monitoring and diagnostics
with over 17,000 locomotive knowledge base

Advanced cooling system
maintains performance and helps to lower emissions

Innovation Timeline

1998 — EPA began implementing periodic updates to freight rail emissions standards.

2010 — Made the strategic bet to develop a Tier 4 compliant engine.

2013 — Despite low customer demand, continued to invest in the development of a Tier 4 locomotive.

2015 — First Tier 4 locomotive is delivered.

2019 and beyond — Wabtec delivers 1000th Evolution Series Tier 4 Locomotive.

VARIABLE SPEED AUXILIARIES
Six panels and auxiliary inverters/ motors eliminate the need for an auxiliary alternator, contactors and cycle skippers, and allow for increased fuel efficiency and reliability.

COOLING SYSTEM
A two-stage charged air system featuring enhanced heat exchangers allow for 50 percent more heat rejection and 25 percent capacity increase.

PLATFORM
Increased the length (+16") and increased the weight (+8,000 pounds).

BASE ENGINE IMPROVEMENTS
Larger bearing size, longer inductionhardened crankshaft, top feed fuel injectors and simplified double-walled high pressure fuel lines.

ENGINE CONTROL UNIT (ECU) & POWER SUPPLY
Fifty percent more sensors and a separate power supply, improve reliability, durability, performance and diagnostics.

TURBOCHARGERS
Two-stage turbocharging allows for a higher compression ratio, fuel efficiency, and reduced thermal stress.

EXHAUST GAS RECIRCULATION (EGR)
New system meets Tier 4 Oxides of Nitrogen (NOx) standards.

ENGINE MAINFRAME
A larger casting (+8”) and increased weight (+7,000 pounds) allow for larger bearings and crank with increased cylinder pressure capability for better reliability and performance.

Specifications

Model	ET44AC
No. of Axles	6
Weight:	Max. 432,000 lbs (196 tonnes)
MT./Axle	Max. 72,000 lbs/axle (33.6 tonnes/axle)
Track Gauge	56.5" (1435 mm)
Clearance	Plate M
Emissions	USA EPA Tier 4
Horsepower (Gross)	4,500 HP (3,356 KW)
Horsepower (Tractive)	4,365 HP (3,255 KW)

STE (lbf /KN)	200,000 lbf (890 KN)
CTE (lbf /KN)	166,000 lbf (739 KN)
Max. Speed	75 MPH (120 KPH)
Max. Dyn. Braking Effort	98,000 lbf (436 KN)
Total Fuel (Gal)	5,300 Gal (20,063 L)
Useable Fuel (Gal)	4,800 Gal (18,170 L)
Engine Model	GEVO12-LDD
Countries Used	Canada and US