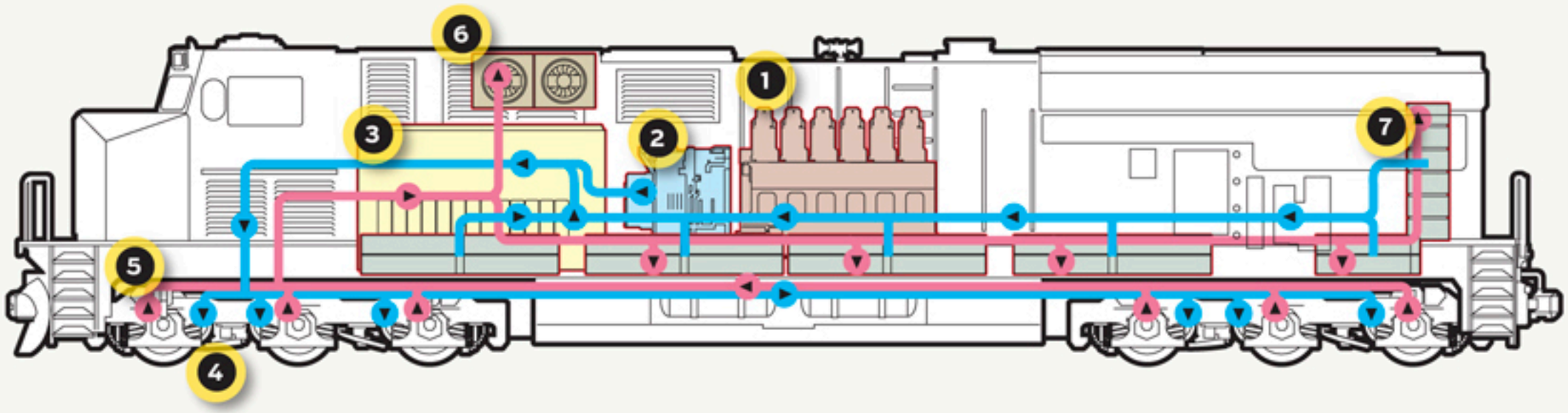
Hybrid on Rails



GE's hybrid concept is modeled on the Evolution locomotive, but—like a hybrid car—it stores energy generated when the brakes are applied.

The engine, a 12-cylinder, 4400-hp diesel **(1),** turns an alternator **(2)** to produce raw AC power, which is rectified into DC current and fed into a power bus **(3)**. The bus distributes the power, which is inverted back to AC to drive the six axle-mounted motors **(4)**. During braking, some of the energy of the wheels is converted into electric current **(5)**. In the hybrid, some energy is dissipated as heat using a resistor grid on the roof **(6),** as in conventional locomotives. But most of the electricity is stored in a massive array of batteries **(7),** then used to help power the motors. The batteries would weigh approximately 40,000 pounds with today's technology, pushing the 210-ton locomotive past practical weight limits. GE is planning to compensate by refining the batteries and building the hybrid from lightweight composite materials.

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