

New brake system for short lines

New York Air Brake's CCB-26 brings older locomotives into computer age



When Union Pacific asked RailPower to build its six-axle genset (see March 28 News Wire), it specified New York Air Brake's CCB-26 computer-controlled system (left). The system's modules (right) are easily changed out for quick repairs. Two photos. TRAINING: KAZU KUBO

The New York Air Brake Co. has introduced an electronic locomotive air brake that the company sees as a low-maintenance replacement for conventional air brake systems on older locomotives used on short lines, regionals, and in yard and industrial service.

The company's CCB-26 is a computer-controlled brake, which is a drop-in replacement for the control valves making up a conventional 26-L locomotive brake system. The 26-L was developed in the late 1950s and was standard equipment on nearly every locomotive delivered after that date until the advent of units with integrated electronics.

CCB-26's designers arranged the system's computer electronics into separate modules that each handle a specific duty. For example, one module, the brake pipe control portion, controls the brake pipe's supply, exhaust, pressure maintenance, and cut-off. Other modules control the pressure fed to and released from the equalizing reservoir; they also control the independent application and release pipe used to operate the engine brakes separately from the train brakes. The modules are interconnected in a self-contained network.

In a conventional brake system such as the 26-L, a dizzying array of cams, pipes, valves, and orifices control the flow of pressurized air depending on the position of the brake handles and the relative air pressure in the chambers of the brake valves. The CCB-26 eliminates most of this apparatus

by electronically controlling the flow of compressed air between the various pipes and brake valves on the locomotive.

A new engineer's brake valve controller mimics the conventional 26-L brake valve assembly in the locomotive cab and occupies the same space. Like the original, the controller has automatic and independent brake handles, and switches that replace the regulating (feed) valve and the lead/trail and cut-out controls. Similar to CCB-II, New York Air Brake's computer-controlled brake system for locomotives with integrated electronics and computer screens, CCB-26 regulates itself, performs self-tests, and diagnoses errors. A liquid crystal display on the controller provides the engineer with fault information, as well as brake status.

As the engineer moves the brake handles, the positions are conveyed to the system electronically rather than mechanically and pneumatically, as with a conventional control stand. The system mechanically vents brake pipe pressure to the atmosphere when the engineer initiates an emergency application.

The CCB-26 requires only a small number of pipe connections to its one-piece manifold. The functional modules are mounted to this manifold and all use the same size bolts for attachment — and, therefore, one wrench to remove and replace them. When a module fails, it can be replaced in about 15-20 minutes. Part of the reason for that is the system's accessi-

bility, being installed just below the engineer's cab, keeping everything in relatively easy reach compared with conventional systems. Train crews will appreciate that the dead-engine switch is almost literally front and center on the module block.

As a matter of simple economics, a locomotive in the shop is an asset sitting idle. New York Air Brake calculates that the mean time between failures and the rapid repair time of its computer-controlled brake can reduce repair costs 75 percent compared with conventional locomotive brake systems. The company further estimates lifetime cost savings of around 38 percent.

One part of this cost savings results from a decreased frequency in safety inspections required by the Federal Railroad Administration. The periodic inspection wherein brake system parts are cleaned, oiled, tested, and then stenciled (referred to as "COT&S") must take place every two years for conventional locomotive brake equipment, but has been extended by FRA waiver to five years for electronic systems like the CCB-26.

As short lines and regionals rebuild older engines, or replace brake systems that have reached the end of their useful lives, these very cost savings could help the CCB-26 pay for itself in relatively short order. That, in turn, could make it an appealing alternative for roads with smaller budgets. At least, that's what New York Air Brake is banking on.