

Modern Control Devices for Safety

AUTOMATION AND REMOTE CONTROL OF YARD LOCOMOTIVES AND TRACTORS

By JOHN W. HANSEN

Manager-Sales Planning, Union Switch & Signal Division, Westinghouse
Air Brake Company, Pittsburgh, Pa.

Safety, first of people, and second of material and equipment has been a primary design consideration of my company ever since we started in business more than 80 years ago.

Hazardous environments demand reliable safety devices for protection of workers from moving vehicles. When we find such a need we try to design such devices to eliminate, or minimize the condition. Hazardous operations create a need for safer operating tools. . . . we design such tools to fill this need.

I would like to describe some of these operating tools which not only provide more efficient, less costly operation, but also, in most cases, increase safety.

Several years ago, at a meeting similar to this one, one of our control system design engineers made an interesting observation that could be the theme of my talk here today. He said: "If we can communicate with it, we can control it!" And this applies to objects millions of miles in space, as well as to vehicles or equipment moving within view of an operator.

The dramatic impact of a statement such as this has been lessened somewhat with the accomplishments of our space scientists, but I like to cite the fact that Union Switch & Signal has been in the control and automation business for more than 80 years—long before the word "automation" was coined.

During this time, Union Switch & Signal has been engaged in producing custom-built control systems for railroads and rapid transit systems. In 1923, we made the first commercial application of a vacuum tube for the remote indication of wayside signals in a locomotive for the automatic control of a train. This was one of the first uses of communication applied to a moving vehicle

for the purpose of control. So you see, remote and automatic control is not new to us.

Early in World War II, our division provided an ultra-safe communication circuit to remotely control the first test of an atomic bomb. Our standard off-the-shelf digital remote control equipment, designed for the railroads, readily satisfied the requirements. Since 1951, Union Switch & Signal has broadened its field of interest to include at various times the design and manufacture of electronic jet flight simulators, missile ground-handling equipment, air traffic control systems, electronic components for the aerospace industry, and communications and control equipment for steel mills, the mining industry, and gas and oil pipelines. But so much for historical background.

My topic today concerns automation and remote control of yard locomotives and tractors and how they contribute to safer operations. I plan to emphasize our recent activities in this field, and I also plan to touch briefly on related subjects which I believe will be of considerable interest to you who are involved in the improvement of industrial safety performance.

First, perhaps I should clarify my concept of the meaning of the word "automation" as applied to rail operations, and the distinction between systems which may bear the "automatic" label and those which fall into the "remote control" category. A remotely controlled system may contain many automatic features, but decisions are manually made by remote control at some point in the process. A fully automatic system or process is self-regulatory and self-acting.

And now to begin, let's take a look at how two companies are making use of remotely controlled switcher locomotives in actual day-to-day operations.