

AUTOMATION

IN ACTION

TROD Helps New York Power Plant Mop Up Spill

BY MARTY WEIL

Sepage? Leakage? Flooding? If you think your basement has problems, it's a drop in the bucket compared to what happened in the basement of Unit 1 Radwaste building at Niagara Mohawk Power Corp.'s (Lycoming, NY) Nine Mile Point Nuclear Station. In 1981, due to a water inventory problem, the engineers in the Unit 1 Radwaste building were forced to flood the lower elevation of the waste building with more than 60,000 gallons of contaminated, radio-active water.

"The power plant ran out of tank space," says Dennis Jenks, supervisor for Radwaste Operations at the Nine Mile Point Nuclear Station, Unit 1 Niagara Mohawk Power Corp., "so we just dumped the water 225-ft. down in the Radwaste facility."

Since the Nine Mile Point Unit 1 became operational in 1969, the Radwaste 225-ft. elevation has been used for packaging radioactive waste into 55-gallon

drums. These wastes included evaporator bottoms (dehydrated nuclear waste), filter sludge, and spent resins. Unfortunately, these drums of waste, which were located in the Radwaste 225-ft. elevation above the floor on an overhead monorail system, floated off of their carriers when the water level reached them. "Basically, we just had a big mess," says Jenks.

In the flooded room, the drums sat unmolested from 1981 until 1985. "The intention was to clean up the mess right when it happened," says Jenks, "but the radiation levels in the room ran from 30R to 50R. 1R is 1,000-times the normal background radiation found in a typical city's downtown. This was certainly not a safe environment for humans to be in."

Fortunately, the Radwaste 225-ft. elevation was sealed, and the plant's workers were in no danger. However, Niagara Mohawk was interested in having the situation resolved as soon as possible. Estimates comparing manual- and remote-cleanup methods for this area projected that manual methods would likely cause significant exposure of personnel and would increase the cost of the cleanup. As a result, Niagara Mohawk decided to use remote equipment to clean the area, and since no existing equipment was appropriate for the job, RedZone Robotics Inc. (Pittsburgh, PA), a leading developer, manufacturer, and integrator of specialized robotic work systems, was commissioned to develop a remote system.

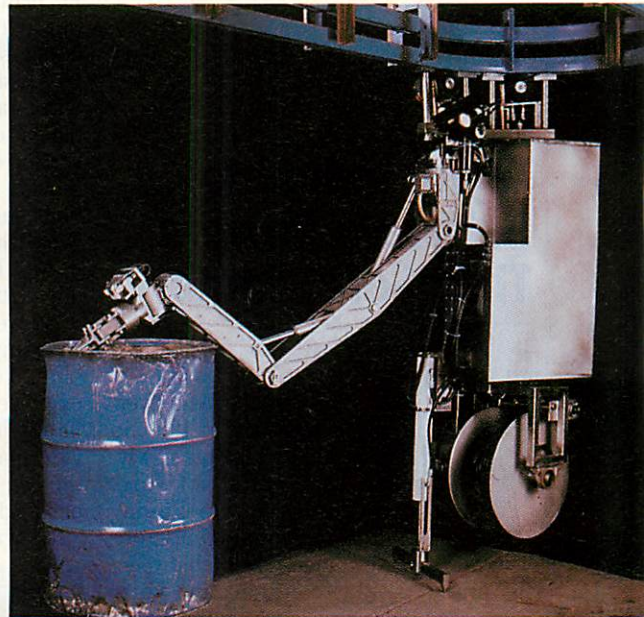
"We did an initial assessment of what it would cost to do the clean up robotically versus manually," says Leona Bares, program manager for RedZone Robotics Inc. "Based on that assessment, Niagara Mohawk decided to go ahead and do it remotely. In terms of reducing risk, the company saw that the remote technology provided the assurance that it wouldn't be putting someone at risk of exposure to radiation. After that initial feasibility study, Niagara Mohawk contracted with us to design and build TROD."

TROD, which stands for Tethered Remote Operating Device, is a tele-operated, electro-hydraulic system consisting of a master/slave manipulator, tooling, video cameras, control and powering electronics, and a remote-control console. "The TROD design was based largely on using the structure of the existing monorail system in the Radwaste 225-ft. elevation to deploy and mobilize the system," says Bares. "By using the monorail instead of a floor-based wheeled or tracked system, navigation was greatly simplified. In this way, retrieval of

carriers and drums could be done in a highly controlled manner and without added transfer operations and potential spillage from dropping of drums."

The almost 3,353 man-hour cleanup didn't begin until January 1990. During the course of the cleanup (which continued through January 1991), TROD saved in excess of 100 man-REM (radiation exposure measurement) of exposure to the cleanup team, which consisted of Niagara Mohawk Power Corp. Radwaste operators, Radiation Protection technicians, and contracted technicians. The U.S. government specifies that no more than five man-REMs per year is tolerable.

In all, 127 barrels and 152 carriers were removed from the area. Also, approximately 900 cubic ft. of sludge was removed along with other debris, and the floors decontaminated. "It was like Christmas," says Jenks, "because every time



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TROD opened one of these drums, we didn't know what we'd find in it. There was no record of what was in a lot of those drums. Some of the drums didn't have sludge in them; instead we found old rags, ropes, and miscellaneous garbage. In those instances, we would just reach in with TROD and pick the stuff up and bring it out. It wasn't a problem at all."

According to Jenks, all of the material TROD removed was processed and buried. "Today the 225-ft. elevation is an empty room. Everything was cleaned, painted and revamped. Now it just looks like a floor in a hospital." MA

See Information Express
RedZone Robotics Inc.

TRODRC# 99

Photo courtesy: RedZone Robotics Inc.

LEADERS IN AUTOMATION

Taylor Industrial Software Powers The "Soft" Factory

BY DIANE LABRENZ

Vision. Or was it luck? Whatever Neil Taylor had back in 1981, it led him to standardize his newly developed industrial software products on that new tool in industry, the personal computer. This provided key differentiation between his product—PLC configuration software—and the competition. "At that time, we were on IBM PCs and the other products were dedicated-type programmable tools that were quite expensive and unwieldy," Taylor remembers.

Taylor Industrial Software Inc. (Edmonton, Alberta, Canada) has evolved from an engineering consulting business focused on the controls industry that Taylor established in 1978. By 1981, what was then N.R. Taylor Engineering Ltd., was developing software for programmable logic controllers, so Taylor changed the name to better reflect reality. Taylor Industrial Software, led by founder, chairman, and chief technology officer Neil Taylor, today provides a suite of integrated products including human-machine interface (HMI) software, programmable device support (PDS) software, PLC configuration software products, and finite capacity scheduling software.

Taylor, with more than 20 years' experience in the industrial automation field, is

joined by president and CEO of Taylor Industrial Software, Dennis Radage, who brings to the table almost 30 years of experience in automation. These two professionals have led this 100-employee company through a product-line evolution while winning awards, setting up a U.K. subsidiary and a new U.S. headquarters, and introducing quality standards based on ISO 9000, all in just the past few years.

Radage, who has been president of Taylor Industrial Software for a little more than three years, notes, "When I joined Taylor, we were very, very strong in PLC configuration and documentation software. The first challenge I had was to diversify the company and introduce new products. Today, we have an HMI product called Process Window and we have a finite capacity scheduling product called TESS. Both of these products run on the PC platform under Windows. We have a product called SecurWORX which is a client/server-based, programmable-device-management system for managing all of [a user's] programmable device databases from a security point of view, a version-control point of view. We are also moving into PC control, which is, essentially, emulating PLCs on a PC platform. What that gives [the user] is the integrated HMI editing and solving all on one platform.

"So we now have diversification of the company, we have a portfolio of compatible and complimentary products, and the exercise we are now going through is to tightly integrate these products. To provide market differentiation by offering the levels of integration that other companies don't provide," Radage notes.

By writing software for Modicon

PLCs—then quickly supporting Allen-Bradley PLCs as well—Taylor Industrial Software started out in a pretty secure niche; those two companies were (and still are) market leaders in the programmable controller market. But—and here's where luck or vision once again comes into play—Taylor saw that users did not want to be locked into one vendor's product. The key was openness, via the PC.

"If you look at a number of surveys conducted by [consulting companies such as] AMR, they maintain that the direction of the future is the PLC on a PC platform," says Radage. "Why? Because it gives you an open platform; you don't have to be tied to one vendor. The idea with the PC is that it is totally open, you can drive any I/O you want to, and you can run any software on it. So that is the general direction [of the marketplace]. It is in its infancy today, but those reports are suggesting that, in three years time, 20% of the PLC market might be moving in that direction. Which is huge for a company like Taylor."

Taylor sees not just the PC, but software (versus hardware) as the driving force in the market today. "We see that the software is starting to drive automation and the hardware side is becoming a little less of a position point compared to the software side."

In the early 1980s, the PLC software market was, as Taylor notes, "support software for people using hardware PLCs. Now we're seeing a trend toward software becoming more of a driving force, more of an equal part in the equation. I think in the early '80s people bought hardware first, then looked at software. But as time went on they looked at the hardware and software and made their deci-



Taylor Industrial Software chairman Neil Taylor (holding award) and president and CEO Dennis Radage display the Alberta Business Award of Distinction.

Photo courtesy: Taylor Industrial Software