

N305. Automating Fuel Handling Systems

When fuel handling operations are delayed, outage costs increase very rapidly. Many hours (and some-time days) are lost to fuel handling equipment failures and repairs where outdated systems are being used. Operators are sometimes not at all proficient in the use of existing manually operated equipment. This often results in misplaced fuel assemblies or damaged equipment. Automated systems, on the other hand, generally perform fuel handling operations in about half the time - and with better safety and reliability.

The PAR Systems Group of Cimcorp Precision System has designed a control system that provides automatic positioning of the three axes of refueling or spent fuel handling machines. The manual phases of operation are relatively limited, each movement will take place within a significantly shorter time than had been the case in the past, reducing overall time and costs. Operator exposure will be reduced complying with the principals of ALARA. The time elements will also be consistent and not dependent on the proficiency of the individual operators. This will allow outage planners to estimate the duration of the fuel movement more accurately.

The other major advantage of the design is improved reliability and serviceability. Existing units can introduce severe service and replacement delays. In the Cimcorp system, the replacement power centers use DC motor drivers, which are proven to be reliable and easily serviced. All motor drive systems provide complete and redundant protection of their respective motors and drive trains.

For more, "Automating Fuel Handling Systems," by M. P. Stromberg. Nuclear Engineering International, pp. 45-46, December 1991.