**Worldwide Chemical Company**

Jack Smith wiped the perspiration from his face. It was another scorching-hot summer day, and one of the four process refrigeration units was down. The units were critical to the operation of Worldwide Chemical Company’s Fibers Plant, which produces synthetic fibers and polymer flake for a global market. Before long, Al Henson, the day-shift production superintendent, was on the intercom, shouting his familiar proclamation that “heads would roll” if the unit was not back on-line within the hour. However, Jack Smith, the maintenance superintendent, had heard it all before—nothing ever happened as a result of Henson’s temper tantrums. “Serves him right,” he thought. “Henson is uncooperative when we want to perform scheduled maintenance, so it doesn’t get done and equipment goes down.” At that moment, however, Henson was genuinely furious over the impact that the breakdown would have on his process yield figures.

Meeting with plant manager Beth Conner, he was charging that all the maintenance department did was “sit around” and play cards like firemen waiting for an alarm to send them to a three-alarm blaze across town. The “fix-it” approach to maintenance was costing the plant throughput that was vital to meeting standard costs and avoiding serious variances. Foreign competitors were delivering high-quality fibers in less time and at lower prices. Conner had already been called on the carpet at corporate headquarters over output levels that were significantly below the budgeted numbers.

The business cycle contained predictable seasonal variations. That meant building inventories that would be carried for months, tying up scarce capital, a characteristic of most continuous processes. Monthly shipments would look bad. Year-to-date shipments would look even worse because of machine breakdowns and lost output to date. Conner knew that something had to be done to develop machine reliability. Capacity on demand was needed to respond to growing foreign competition. Unreliable production equipment was jeopardizing the company’s TQM effort by causing process variations that affected both first-quality product yields and on-time deliveries, but no one seemed to have the answer to the problem of machine breakdowns.

The maintenance department operated much like a fire department, rushing to a breakdown with a swarm of mechanics, some who disassembled the machine while others pored over wiring schematics and still others hunted for spare parts in the maintenance warehouse. Eventually, they would have the machine back up, though sometimes only after working through the night to get the production line going again. Maintenance had always been done this way. However, with new competitors, machine reliability had suddenly become a major barrier to competing successfully. Rumors of a plant closing were beginning to circulate and morale was suffering, making good performance that much more difficult. Beth Conner knew she needed solutions if the plant had any chance of survival.