BY KEITH ACLAND

SKILLED TRADESWORKERS LEARN NEW SKILLS

Crosstraining a synthetic rubber company's skilled tradesworkers helped cut costs and streamline operations.

The rubber company plant in Ontario, Canada, was built during World War II to produce synthetic rubber for the automobile industry. In the intervening 50 years, much changed when the site was modernized and expanded. Today, 1,500 employees continually process streams of petrochemical feedstocks into butadiene and butyl rubbers, as well as additives for polyethylene plastics, at six separate but integrated installations.

But as technology evolved, maintenance workers clung to the old ways. Overhauling a piece of equipment might require several trades: instrument mechanics to work on valves and gauges; pipe fitters to dismantle piping; insulators to remove, save, and replace insulation; and carpenters to build scaffolding. Since tradesworkers typically work in pairs, such a job often needed eight workers as well as four trades—with some of the pairs rotating in and out of the job at various times.

This practice was inefficient, costly, and a scheduling nightmare. With 18 trades, delays were endemic as one pair of tradesworkers waited for a pair from another trade to show up, do their part of the job, and move the project forward. This inefficient system reduced output and contributed to costly overtime.

Everyone who looked at the situation could see clear advantages in expanding the skills of the individual tradesworkers. If an instrument mechanic learned to do relevant piping tasks and the pipe fitter learned some of the instrument mechanic's trade, they'd make a valuable and flexible team. Working together, they could do jobs that required both pipe fitters and mechanics. The team members would be even more formidable if they mastered some of the skills of insulators, riggers, and carpenters too.

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FLEXSKILLS

But no matter how appropriate the vision of a flexibly skilled tradesworker might be, its realization always seemed unlikely. Unions tend to defend their turf; trades resent other trades doing their work.

But eventually the need for change became overpowering. Rigid boundaries between trades created inefficiencies that made it difficult to complete necessary work. And the situation was only going to worsen because many skilled workers were leaving the plant under an early retirement plan.

By the beginning of 1991, everyone could see that the plant needed to become more competitive. So after much discussion, union and management agreed to institute a flexibility skills program aimed at increasing the skills of maintenance workers so they could perform work that was traditionally the domain of other trades.

The workers themselves accepted the program because those who acquired these new secondary or "flexskills" had much to gain, such as higher pay, personal satisfaction from increased mastery of the workplace, and increased value in the job market.

Getting everyone on board was a tremendous accomplishment, but it was only the beginning. The company had no experience implementing a flexskills program and didn't have a road map. The challenge was particularly great because the program had to be complete in just six months, before 60 experienced workers took early retirement. Once those 60 workers were gone, it would be difficult—if not impossible—to conduct plantwide training.

To implement the program, the company had to answer many questions:

∇ Whom to train, and in what secondary or flexskills?

∇ What tasks to include in the new system?

∇ Where to draw new boundaries between trades? Who would draw them?

∇ Who would create the training? How to create it? Whom to use as trainers?

∇ How to schedule the training, and under what time restraints?

∇ How to ensure that the training had worked, and that workers had mastered the new flexskills?

∇ How to ensure that the training produced results, and that supervisors used the flexskills to make assignments after the training was completed?

Getting Started

The process began by creating a flex team consisting of four union and four management representatives. The team created a general outline for the flexibility training program.

The central idea behind the program was that tradesworkers would learn secondary skills to assist workers in closely associated trades. For example, maintaining plant equipment often required boilermakers and pipe fitters to work closely together. In the program, boilermakers would learn relevant piping skills and pipe fitters would learn some of the tasks traditionally done by boilermakers. Everyone would learn secondary rigging and scaffolding because everyone could use these skills. And safety would be a key consideration in all training.

The 12 workers chosen for the job had only three months to become trainer.

Using this general framework, the next step involved determining exactly in which tasks to crosstrain each tradesworker. The team needed a full-scale task or needs analysis to document how processes and equipment worked, so that they'd know exactly what each trade did. This information would provide the basis for deciding the most effective areas for crosstraining.

To create this needs analysis and help develop the training, the team hired Manufacturing Technology Strategies (MTS), a St. Louis-based industrial training and consulting company.

The Trainers

At the same time, the team started developing trainers, who were chosen from senior people in specific trades. Fortunately, over the years many of the best workers had said they would like to be trainers "to make sure certain things were done right for a change." Those who accepted this challenge had to be willing to work long hours and give up their holidays when necessary. The 12 workers chosen for the job had only three months to become trainers, create the training, and transfer their experience into flexskills for the trainees.

The process began with a week long train-the-trainer program in which participants learned how to implement the MTS training system. Trainers learned the following:

∇ How and why workers learn. How to get participants ready and motivated to learn, and then how to present material so that each part is structured into one relevant format.

∇ How to organize and structure learning so that workers grasp theory and practice simultaneously. Through this inductive approach, learners discover how to do work and why it matters, by direct experience as well as classroom instruction.

∇ How to set objectives and measure results. The emphasis is on the learners performing to meet specific goals—an approach that provides constant feedback to reinforce learning and learners.

∇ How to accommodate training to the different learning styles of the participants, so that training is hands-on, reflective, and analytical or experimental as appropriate.

As they learned to be trainers, they also developed sample training modules, which they presented to the group. They subsequently built on this experience to create the training packages they would present to the workers.

But as they created the training, they also took ownership of the needs analysis that documented the processes and drove the training. They played a key role in negotiating the final version of this documentation. The question remained: What tasks to incorporate into the flexskills program?

Once the needs analysis was finalized, trainers began to develop the training itself. They customized manuals from MTS and developed their own materials based on the needs analysis.

In an ideal world, the training would take place on the plant floor, using the facilities trainees would work on. But the plant was running at full speed, making plant-floor training impossible. So, trainers created their own training spaces and built their own training aids for trainees. Preparing for and developing the training and facilities took three months.

TRAINING

Altogether, the trainers developed skill packages in pipe fitting, insulation, rigging and hoisting, cutting and welding, scaffolding, and fabricating. Each package took from one-half to one and one-half days to complete, with different trades needing different skill packages. For instance, a boilermaker might complete all five packages since each included secondary skills that a boilermaker could use. An electrician, by contrast, needed only rigging, scaffolding, and welding.

Each trainer, however, could tailor training to his or her individual needs. Before a session began, each worker received a pretraining task analysis sheet. This sheet specified the objectives and results for each task covered in a given flexskill package. Potential trainees reviewed the tasks in a given package and then used a "2," "1," or "O" to indicate if they needed the training for a particular task, weren't sure if they needed it, or definitely didn't need it. (Many workers had already learned certain tasks through informal on-the-job training.)

Participants then demonstrated their abilities for each task marked 1 or O. If they successfully met the training's objectives, a trainer and supervisor certified them for that task.

Scheduling was tight, so the more training workers could "test out" of, the better. But in the beginning people marked virtually every task with a 2, because they wanted to be on the safe side and they hadn't had any formal training. As the training unrolled, workers increasingly became confident of what they knew and were willing to test out of as much relevant training as possible, rather than spend time in a session they didn't need.

Fully certified workers received increased compensation

Each training session had four to six participants. To complete the session, trainees had to demonstrate the ability to master each task covered by the training analysis sheet in the controlled training environment. But the training wasn't over until the trainee demonstrated the ability to meet the program's objectives in a specially scheduled assignment on the job, with both a trainer and a supervisor observing.

As the trainee demonstrated mastery of the required skills, he or she was certified on the appropriate training analysis sheet. The sheets were then filed and updated as necessary. Fully certified workers received increased compensation—which reflected the increased value of their contribution to the company.

While the training progressed, MTS conducted train-the-trainer programs for specific supervisors. Since these supervisors needed to tailor assignments to use the flexskills, they had to know what their workers knew. And they needed coaching and counseling skills to help them support their workers on the job. After all, new skills must be reinforced through on-the-job practice, or else the skills will atrophy and training will be wasted.

Thus, supervisors played a key role in the flexskill program's success. But they weren't always supportive; some resisted change. In these cases, managers often had to intervene, encouraging supervisors to structure assignments to use flexskills effectively. Such follow-up is absolutely critical.

The trainers themselves also drove use of flexskills—becoming, in effect, gurus and proponents of the system. Thus, trainer development was an unexpected benefit of the training. Many of these workers-turned-trainers had never before sought or accepted responsibility, or been willing to "leave the tools." But several trainers eventually became supervisors. And others still might. Overall, the flexskills training improved the plant's organization. Not only did it reduce costs and streamline operations, it also helped bring the workers closer together. Flexskills training helped break down the barriers between trades and increased the respect among them.n

Note: Polysar Rubber Corporation which is described in this story is a wholly owned subsidiary of the Bayer Corporation

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