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## Why Employees Need the Right Equipment

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Adapted from *12: The Elements of Great Managing*.

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A manager at Owens Corning's Rio Claro, Brazil, facility knows that equipping his employees with what they need leads to many benefits, including team spirit

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Night and day, every day of the year, more than 100,000 kilograms of molten glass glow so hot and bright in a furnace in Rio Claro, Brazil, that it cannot be viewed with the naked eye or approached too closely without the observer being burned. Through the dark lenses of a special face shield, one can briefly glimpse through a small porthole what looks like lava in a man-made volcano.

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At the rate of several tons an hour, raw materials -- including dolomite, aluminum,

kaolin, and sodium carbonate -- are fed into the top of the furnace, while an equal amount of 1,600-degree-Celsius liquid glass flows out of its tank into an orange-hot river that runs above the "forming stations" nearby. In a fraction of a second, the glass runs through thousands of small holes and is transformed from hot to cool -- from turbulent to delicate -- and wound onto large spools of the final product: fiberglass.

"I have been here for fifteen years, and I am still amazed at the process we have," says worker Jose Duil Dos Santos, speaking in Portuguese. "You just don't see it every day."

Given the extremes inside Owens Corning's fiberglass facility, located 172 kilometers from São Paulo, it's not surprising that there is a tremendous emphasis on the materials and equipment needed to make the job safe, comfortable, and productive. But the spirit of employee participation and the practice of refining tools inside "Fiberglass," as the local residents call the plant, is a model for teams working under less demanding conditions.

When Gallup researchers went in search of the aspects of work life that are most important to performance, one that emerged earliest was measured by the statement "I have the materials and equipment I need to do my work right." The facility at Rio Claro epitomizes the Second Element of great managing in action. (See sidebar "The 12 Elements of Great Managing" at the end of this article and "The Second Element of Great Managing" in the "See Also" area on this page.)

## **It all started with fiberglass**

Despite the many other products it sells, which now make up the majority of its revenue, Owens Corning is a company that was created by the invention and production of fiberglass. In 1932, Owens-Illinois researcher Dale Kleist accidentally pointed a jet of compressed air at a stream of molten glass. It sprayed and stretched the material into thin fibers -- a fortuitous breakthrough.

Corning Incorporated was pursuing a similar line of research. In 1938, the companies combined their efforts to form Owens-Corning Fiberglas Corporation, famous in the United States for its trademarked pink building insulation. The Brazil subsidiary, Owens Corning Fiberglas A.S. Limitada, still carries the fiberglass designation that the parent company removed in 1996.

The Rio Claro facility has been making fiberglass since 1971. The basic process has not changed much, because the chemistry and physics of creating the filaments remain the same. Gravity, a stream of air, and the already hardened portion of the filament pull a thin strand from each of 2,400 small holes under the channel of hot, liquid glass. A spray of water cools the filaments, and a roller wet with chemicals changes them from fragile glass to flexible fiberglass.

While the essence of the process hasn't changed, many of the details have improved, often through the suggestions of employees. "The one who knows what he needs is the one doing the job," says Enio Wetten, a 27-year veteran of the plant and the unassuming manager at the heart of the operation.

Wetten supervises a group of 10 managers and 70 employees who maintain the facility around the clock. "Everything here depends on the furnace," he says. Other parts of the plant, such as the machinery that weaves filaments into fiberglass cloth, can stop for events as important as a machinery problem or as innocuous as the lunch break. But the furnace is too difficult to restart if it stops, so it runs continuously.

As with any business unit, the suggestions for improvements in Rio Claro cover a wide spectrum, from those that can be accommodated easily, such as larger safety glasses, to major capital improvements that can be years in the making, if they happen at all.

Properly supplying employees works in the company's favor in two ways. From a purely functional perspective, having the right tools makes a job safer, easier, and more productive. "The first thing we think is safety," says Wetten. "We always ask ourselves, 'What are the risks?' We work with high temperatures. We work with flammables, such as gasoline. We work with oxygen. The equipment we have should be the best we can get."

Equally important, the employee's perception that the company backs him up with the equipment he wants and needs serves as a powerful psychological motivator. "This is a company focused on its people, which makes me feel confident about my job," says Dos Santos.

Consider the gloves worn by the "slivers," the employees at Rio Claro who fix interruptions in the flow of filaments from the forming stations onto spools one floor below. Without gloves, the employees risk getting their hands punctured by small shards that break off the speeding fibers. With gloves, they have more difficulty feeling the filaments, which are only 10 to 15 microns wide -- about the width of a human hair.

"The first gloves we had weren't comfortable, so the safety department provided gloves that we like," says Rogerio Nodari, a sliver at the plant. "I need to feel the strings and to feel safe. Little things like this make a huge difference for us." Dos Santos, who is experimenting with a new type of glove, agreed. "The gloves allow you to do your work better, [while] not being worried about injuring your hands."

Slivers carry a small red metal tool that resembles a comb. They use this tool to separate the fibers while rethreading the machinery. Having just the right size with the right spacing between the teeth makes the job easier. "We are always experimenting with different combs," says Wetten.

They needed to find a similar balance for the wand they use to blow air over the holes when rethreading, says forming specialist operator Valdemir Pistarino. A small wand they tried didn't have enough force to clear extra molten glass from the holes. A large one had too much force. One in between worked just right. It was further improved by fitting it with a circular shield above the handle to block heat from the glass above. "It has evolved into a tight process of collaboration between the employees and the managers," says the operator.

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## Fighting for power

Asked about other pieces of equipment that make his job easier, Dos Santos stands up and grabs the leg of his pants, showing the reinforcement at the knee. "We do a lot of kneeling in this job," he says. "The extra padding here makes it more comfortable."

Workers are required to carefully monitor the temperature inside the furnace. This was once accomplished with an optical thermometer that had to be aimed, like a telescope, through a small doorway in the furnace at various locations inside. It was not dangerous, but the heat is intense and quickly becomes uncomfortable. Managers at the plant found an infrared thermometer that allows the readings to be taken faster. "We take good care of the people so they take good care of the furnace," says Wetten.

Just as small refinements to the team's everyday materials and equipment can dramatically improve their safety and comfort, modest changes to the process multiply over time. One of the ways the Rio Claro employees demonstrate their engagement is by looking for ways to increase the plant's production.

"The greatest percentage of ideas is related to production improvement," says Wetten. "Normally, it's a small modification that makes a big difference in the production. We run 24 hours a day, 30 days a month, 12 months a year, so a small improvement can make a big difference at the end of the year." Dos Santos adds, "We all know that if the company prospers, it's better for us."

It's not unusual for a workgroup to have one or more Second Element issues that can be fixed only with the authority or money from corporate headquarters. In Rio Claro, the biggest issue that defies a local solution is the electrical supply. The thunderstorms of the Brazilian summer produce lightning. Lightning causes power outages. And besides raw materials, the one thing the furnace needs to keep operating is power.

The fiberglass facility is wired to Rio Claro's municipal power grid. It lacks its own generating station or a separate line from the city's generators. "If someone hits a power pole in town, it can knock out our power," says Wetten.

Djalma Altarugio, a forming engineer at the plant, estimates that 80% of the fluctuations in production are due to power outages. "When we have a power failure -- just one minute or two minutes or 30 seconds -- the temperature of the glass, which we control so carefully,

decreases," he says.

Depending on the length of the power outage, it can take hours or days to return the furnace to full temperature, taking with it the plant's efficiency and production ratios. When properly running, the plant can convert more than 90% of its raw materials into finished fiberglass. But when the power dies, efficiency drops with it. "It's a serious problem," says Altarugio.

As bad as a power outage is for production, nothing better demonstrates the teamwork of the group. Everyone remembers when the power went out and stayed out on Christmas Eve in 1998. Workers who were not at the plant knew there was a problem when the power went out at their homes. "The guys left their houses and their families, and they came to the plant to restart the operation," says Altarugio.

"Everyone who was in town immediately went to the plant because they knew how critical it was to keep that furnace working; they also knew how hard a job it was for their peers to get it back up and running," says Wetten.

The Christmas Eve power outage was a particularly bad one. Electricity was not restored for three hours. The furnace had recently been rebuilt and improved, and therefore, the workers were not completely familiar with its vulnerabilities. One of the pipes that carries molten glass cooled to the point that the glass within it hardened. It took three days to resume normal operations; soon after, the company added special heaters to the points in the system most susceptible to rapid cooling. "We learned a lot in that experience," says Wetten.

Although outages rarely last as long as the one on Christmas Eve, power interruptions continue to occur, requiring the employees to scramble into action. Wetten points to a graph that displays fluctuations above and below the conversion efficiency goal. There is a distinct seasonal nature to the graph -- high through much of the year, but consistently lower in January and February, the middle of the Brazilian summer.

When the power stops, the first priority is to fire up a diesel generator that supplies just enough electricity and heat to avoid catastrophic problems, but nowhere near the 10 megawatts that the facility consumes at full power. "The furnace is held tight by the expansion of the heat inside," says Wetten. If it were cooled too much, would it contract or collapse? "Both!" he says.

Different procedures kick in as the outage continues, all designed to maintain the heat in the furnace and keep the glass fluid. Unless operators act quickly, a power outage that lasts longer than 10 or 15 minutes can cause serious damage to the furnace. With a fast and

coordinated response, the plant can make it through an extended outage, but there's only so much the workers can do. "After that," says the manager, "there's nothing we can do but cry."

When the power comes back on, a thousand blinking alarms demand attention. "This is where commitment and employee actions are so important," says Wetten. "You have the procedures, but every power failure is different."

### **Showing commitment by being there**

In 2006, Owens Corning's headquarters in Toledo, Ohio, approved the construction of an on-site power substation to eliminate the interruptions. Like many managers who can't immediately fix a problem beyond their control, Wetten had to mix commiseration with determination to maintain the engagement levels of his employees while waiting for the substation.

"The key to overcoming the lack of certain equipment is to show my commitment to my people by being there with them during times of need, like the Christmas Eve power outage," he says. "This is how I gain their respect, not by being their boss."

"The high level of team commitment makes me confident about my work," says Pistarino. "People are committed to quality. It's not about giving orders or taking orders. It's about knowing what to do."

Wetten says that his view of equipping employees is guided by a threefold hierarchy of imperatives. At the top is employee safety, so he is always looking for ways to protect his workers from the inherent dangers of the furnace, hot or sharp glass, or falls and falling objects that could occur in a multistory industrial site.

The second priority is avoiding damage to the facility -- the kinds of complications they fight when the power goes out. "The impact of the failure of the furnace is serious for the company, but safety is unconditional," says the manager.

For all the emphasis on production, it comes third. So, for example, requiring the slivers to wear gloves means that they rethread a forming station more slowly than they would if they could feel the thin fibers with their bare hands. But working without gloves is not as safe.

Wetten also tells employees to trust their gut instincts to avoid an accident. "If you are not comfortable to do a job, you should not do it. And you should talk to your boss," he says. "We encourage people to analyze everything they do to ensure it is safe."

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In the past several years, the facility has added a small tool elevator to avoid the possibility of a worker falling with or dropping a heavy tool as he climbs the stairs between levels. Heat shields have been added between the molten glass and the platforms where the workers stand to reduce their exposure to infrared rays. "There is a huge difference between having the shield and not having it," says Pistarino.

The emphasis on the right tools and safety has special meaning for Pistarino. "I almost lost my foot in a prior job," he says. "If you don't request the equipment that is necessary, you are contributing to a lack of safety. Every time you see a problem, it's a potential accident, and you should immediately communicate it to your manager."

Believing there was too large a gap between the forming stations, where hot glass becomes fibers, and the winding stations one floor below, employees and managers collaborated on the design for bright yellow metal grids that are now bolted into the concrete floors at each station. As a 35-year-old facility, Rio Claro may not have the latest technology, says Wetten, but they work hard to upgrade and improve what they do have.

In other settings, managers frequently say they manage Second Element concerns partly by making individual accommodations for employees. For example, they allow employees to pick the cell phone that works best for them from a variety of choices or modify the standard software on a laptop computer to meet the working style, talents, or work demands of each employee.

Wetten does not have that luxury. "We work in shifts, so we have a lot of employees doing the same thing with the same tools," he says. "We try to have all the procedures well defined. We try to find a consensus. There is no way to try to adjust for each person."

Instead, a group of operators meets once a month to discuss concerns and ideas about how to make the plant work better. "They are responsible for receiving information from other operators, checking conditions in the plant, and finding improvements or making suggestions to avoid incidents in our area," says Altarugio. "Based on a report from this team, we decided to install the grills between the forming and winding levels."

"We give ideas, and the company responds," says Nodari.

"This is a company focused on its people," says Dos Santos, "which makes me feel confident about my job. Most important is knowing I am going to return to my family at the end of the shift without a scratch."

Through the power outages and the collaboration on better ways to work, the team at Rio Claro has built a strong level of employee engagement. They have learned that although they may not be able to rely on the power supply, they can rely on each other, particularly in an emergency. "The employees are very committed to the plant," says Altarugio. "In my opinion, it is the best feature of our plant."

Because an outage can compromise the team's ability to reach its production goals for the entire month -- and because they have a high degree of ownership of those goals -- says Wetten, they display a strong professional ethic during the outages. "I love what I do every day because I always have a challenge. You don't come to Owens Corning thinking about a lack of equipment, because it's all here," says Pistarino. That feeling helps fuel their commitment to each other.

"*O time veste a camisa!*" he says, employing a Brazilian soccer metaphor for a unified and proud team. Translated literally, it means, "The team wears the jersey!"

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# THE 12 ELEMENTS OF GREAT MANAGING

To identify the elements of worker engagement, Gallup conducted many thousands of interviews in all kinds of organizations, at all levels, in most industries, and in many countries. These 12 statements – the Gallup Q<sup>12</sup> – emerged from Gallup's pioneering research as those that predict employee and workgroup performance.

1. I know what is expected of me at work.
2. I have the materials and equipment I need to do my work right.
3. At work, I have the opportunity to do what I do best every day.
4. In the last seven days, I have received recognition or praise for doing good work.
5. My supervisor, or someone at work, seems to care about me as a person.
6. There is someone at work who encourages my development.
7. At work, my opinions seem to count.
8. The mission or purpose of my company makes me feel my job is important.
9. My associates or fellow employees are committed to doing quality work.
10. I have a best friend at work.
11. In the last six months, someone at work has talked to me about my progress.
12. This last year, I have had opportunities at work to learn and grow.

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*Elements*. His research is featured in *First, Break All the Rules*, and he contributed the foreword to Gallup's new edition of this groundbreaking bestseller. Fabricio Drumond is a former consultant with Gallup. Rodd Wagner is coauthor of the *New York Times* bestseller *12: The Elements of Great Managing*. He is coauthor of *Power of 2: How to Make the Most of Your Partnerships at Work and in Life*.

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