

## In Defense of Improvement

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Before embarking on a tour of Ceradyne Inc.'s Irvine, CA facility, lean champion Tony Barrett dispenses with a little foreshadowing: "You're going to see a floor that can react on a dime," says Barrett.

He's right about one thing: this technical leader in advanced ceramics is on its game. With 50 percent of its business tied to the defense industry, Ceradyne is forced to run a tight ship -- integrating 5S and Lean programs with software platforms to help eliminate paper and improve timeliness and accuracy of labor data, compliance, and auditability.

### Tech Solutions

Though Ceradyne seems to have its ducks in a row, it's still not one to take all the credit. On a crusade to eliminate paper, the company has embarked on a diligent mission towards implementing several software platforms to help improve its operations.

One of Ceradyne's most notable technological initiatives has been the development of its labor data management software implementation. Workforce management software vendor, Kronos, is now the technology provider for ten of Ceradyne's U.S.-based divisions. The system itself is designed to help easily track employee data by recording time and attendance transactions, scheduling diverse workforces, and managing employee absence. Essentially this is designed to help improve employee productivity, as well as increase plant-wise visibility and standardize and track data.

The Kronos solution, according to Mark Nguyen, IT Project Manager for Ceradyne, was an integral step towards the high tech data management that Ceradyne was after. Initially, says Nguyen, "We were lacking data and were very disorganized. Data collection was a huge effort and we had tons of people having to manually enter the data."

Operational visibility is a key element to managing government projects -- Ceradyne has produced body and vehicle armor for the Iraq war -- and so the company found itself trying to address the issue of data management, without tying up so many

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people with manual entry and analysis. In addition, transparency and accuracy of labor data became a huge benefit of the Kronos system, says Nguyen: "Since we are a government contractor, we are required to provide labor costs because we can't just charge the government whatever we choose to. We need to justify it. Let's say it takes 10 dollars of labor hours to produce this particular part. If we're only able to capture 6 dollars, we automatically lose 4 dollars. That's where Kronos comes in because we're able to capture close to 100 percent."

### Weighing the Costs

Technical solutions have also been valuable in helping Ceradyne evaluate its costs and further segue into other industries. When it comes to the defense product lines, says company CFO Jerry Pellizzon, "it's hard to believe that we start at one end of the plant with a powder, and it's that powder that will eventually stop the bullet. It's the oxymoron of how you'd think of ceramics." But, he explains, "It's also very expensive to work with, so the challenge we face is trying to get to industries and products where the economics work... We've got to be very attuned to our costs because most are process costs."

In an industry where process costs weigh heavily on the bottom line, Ceradyne has had to become increasingly aware of even the slightest changes in efficiency on the factory floor. "We want to set certain daily goals, and if, after half the day, we're not queuing up to meet that goal, somebody will get an email notifying them," says Nguyen.

Incrementally, Ceradyne is working towards moving from a reactive use of the data to more of a prescriptive approach. "Once you've got the system stabilized and understand what you have, you can start drilling into the root causes of some of the challenges," explains Dave Gemmill, Workforce Solutions Expert for Kronos. At that point, users can see when trends are getting out of skew and, says Gemmill, "you can make the decision to correct it while you can still affect it."

An attention to detail and process costs have driven Ceradyne from a traditionally defense-heavy product offering to goals of reducing this segment to less than 50 percent of its business. Much of this transition is toward Ceradyne's energy business. "Four years ago, our energy business was about three percent of our total business," says Pellizzon. "This year, it will be 21 percent and next year it will approach 30 percent. We're really driving towards businesses that are longer-term revenue cycles."

### Lean Attention

These software solutions have been critical in Ceradyne's success, but they've most notably dovetailed into plant-wide initiatives toward 5S and Lean. These efforts, according to lean champion Barrett, have been fostered by a top-down commitment, starting with upper management and permeating throughout the company. "If you don't have that, it's the flavor of the month," he says. "I've seen them come and go."

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In addition to the role of management, "The ownership and the accountability is what makes our program successful," Barrett explains. "We hold people accountable by doing our audits and by actually giving ownership to the people on the floor. It's like that old adage about renting a car: We've all rented a car, but we don't kick the tires and change the oil and wax it and polish it. We beat it up and then we turn it back in. There's no ownership. But when we own our own cars, we take better care of them. Our employees own the Lean program, which has translated into more activities: coming up with value stream maps, determining where bottlenecks are. It all comes from them, with management holding them accountable."

Accountability was one element, mixed with some good old fashioned Kaizen: "We still have waste, but we now have a lot less," says director of operations Mike Eckhaus. One recent lean initiative freed up a significant amount of floor space for a new product line by performing inventory reduction exercises that allowed them to remove some racks from the warehouse. "We learned that we have a lot of just-in-case inventory," he adds. "We're really doing a lot to help address how we plan and how we purchase things -- putting some rules and guidelines in our system that ask: If you're going to order this, is it pegged to something, or do you just think you might need it? Then there is a trail to explain what it is, why we bought it, and whether it was a good decision."

It seems as though there's been no shortage of good decisions at Ceradyne. Though they'll never be as bullet-proof as some of their enhanced combat helmets, the company's strategy of intelligent diversification based on accurate data will most likely help shake off any difficult market swings. And if American manufacturing is a battlefield, there's no shortage of armor here.

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