Standards are DAM Important!

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"Letting your customers set your standards is a dangerous game, because the race to the bottom is pretty easy to win. Setting your own standards—and living up to them—is a better way to profit. Not to mention a better way to make your day worth all the effort you put into it."

—*Seth Godin*

I remember long ago my first job in the PCB industry, which was at a small, humble captive board shop owned by a larger, but still small, upstart company in Salt Lake City. One day, the VP of quality came to visit. He was fresh from a multi-day affair with a large consulting company. He asked, "What is quality?" We stumbled around trying to extract a definition. We talked about products we loved and cherished; travel experiences that changed our lives; a book that caused us to think differently about ourselves; an experience we shared with a close friend, which shaped an unexpected future and gave our lives new meaning. Everything we were saying was personal, important, and intimate. Collectively, we are very proud and floating on a cloud. Then it happened: the sudden rush of air coming out of our balloon. The VP said, "You are all wrong. Quality is just meeting customer requirements. That is all it is and ever will be for this company." The silence was deafening. In less than a year this company filed for bankruptcy. Their major customer no longer wished to do business with us.

Throughout the decades I have spent in this industry, I have often asked, what is quality? Too often, I hear, "Quality is meeting the customer's standard requirements. Nothing more." I have no idea where this definition originated, but somehow it stuck in our industry. It is the reason why we have such a difficult time competing and staying profitable. It is the reason why we have such a difficult time retaining customers where, despite all of our technology, and complex processes, we get

no respect. We are seen as "nothing more than a pair of socks at Walmart" (August 2011). Yet, WigWam socks, which will only make their socks in America (December 2012), has a globally competitive, growing, profitable business. Why? Because they have an organization that lives, breathes, and performs to very high exacting standards with absolutely no excuses, no compromises, and no exceptions. Standards are DAM important!

Consider these words by retired U.S. Army General Norman Schwarzkopf:

"You show me a high performing organization and I will show you an organization where the leadership has established high standards and demands them. You show me a low performing organization and I will show you an organization where the leadership accepts low standards."

And it is also about people. Schwarzkopf also says:

"How do you get more out of your people? You set high standards."

Let me give you an example on why high standards are so important. Some plant managers I have spoken to don't understand the importance of keeping their plant spotless and reject the need for a 5S program (sort, set, shine, standardize, sustain).

After all, what does a clean plant have anything to do with getting product made and out the door? Yet when I see a messy shop I know instantly they have a sales and profitability problem that threatens their very existence. And I know their quality is low, because of their own low standards that surround me. No need for fancy charts and presentations. Just show me the exit and point me toward the airport.

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If you don't believe the environment of your factory is fundamental to your business, consider this. Back in the 1980s, New York City had an extremely high crime rate. Within ten years it became (and still is) one of the safest big cities to walk around at night in the world. What happened? In 1985 New York City adopted the broken window theory.

In essence, it is a 5S program for an entire city. The first way in which it was enforced was a policy of not having any graffiti on subway cars. If it got sprayed with paint, it was immediately taken off the line and cleaned. Just after doing this, crime took a nosedive. As illogical on how this would have any impact on crimes such as robbery and murder, it worked.

Before we move on, let me ask you: What is your definition of quality? When I was a young man I read Zen and the Art of Motorcycle Maintenance, by Robert M. Pirsig. Just remembering this book has compelled me to pull my worn copy off the bookshelf and hold it in my hands. Quality is a strong, attractive force! Pirsig defined quality in this way: "Quality is a characteristic of thought and statement that is recognized by a non-thinking process." What does that mean? He goes on to explain that, "Because definitions are a product of rigid, formal thinking, quality cannot be defined. But even though quality cannot be defined, you know what quality is!"

This is how I define and understand quality: Quality is about how people emotionally feel about you and your products. For example, do you create such a positive experience with your product that customers will pay more for it than your competitor's product? Put another way, if your product was a book, would your customers feel compelled, in a non-thinking way, to go get it, hold it, and start reading it?

Take this example: Steve Jobs was fanatical that the inside of the product, even though the customer would never see it, even though it had nothing to do with how the product functioned, had to be as good as the outside. Why did this seemingly unrealistically high standard work? Because it infected the

way everything was conducted in the company including the precision and clarity of how the computer code was commented! The result was a quality product that attracted us like bees to honey.

Many executives and managers don't like this definition of quality because it seems too soft and psychological and it can't be measured. But it can! For example, when we are happy, our brains release endorphins. Companies that make products that aren't good for us understand this. This is why nicotine is in cigarettes. Endorphin release can be measured using sophisticated scanning techniques, such as a PET scan, which needs many circuit boards to operate, by the way.

A less invasive approach is to use something called the net promoter score (NPS).

With NPS, you simply ask a customer whether they would promote your product. If many of your customers are promoters, your business should be growing. They see your product or service as having exceptional quality. If you ask, they will likely tell you how they were extraordinarily pleased. If you doubt this, think about freely promoting a product that you enjoyed so much that you mentioned it to a stranger. Why do we do that? It's a psychological need to promote and a pathological indicator that our brain has been affected (or possibly infected).

Quality is psychological. Compliance is technical. This is a vital distinction.

For example, our quality departments are really customer compliance departments. Compliance is all about meeting customer standards and requirements. It's unemotional. It's detached. It's uninspiring. In fact, too many of us in our industry have encouraged our suppliers (without knowing the consequences) to make a mediocre commodity product. We don't want to be pleased by our supplier, because we could be locked into a high price. We don't want to work with our supplier on a new technology, because it might hurt our existing business. We don't want our supplier to be better, because we want to be able to play one supplier off of the other in a never-ending game of price reductions, so we can report cost reductions to our bosses. The net result of this low standards commodity mindset has been nothing short of a revolt.

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Let me explain. Many laminate suppliers moved away from a compliance commodity mindset imposed on them by their PCB fabricator customers, to a quality mindset aimed at the OEMs. This strategy goes by the name of OEM marketing. Your laminate suppliers have learned what to say to the OEM to get them excited and involved emotionally. They back it up with a variety of performance testing demonstrating high-signal speed with strong signal integrity. Before long, the OEM has so bought in that they want this material, and no other, in their new product. We, as the PCB fabricator, have become completely cut out of the laminate vendor decision! This has changed the game. The laminate vendors have leapfrogged the supply chain to take away our control. As angry as this might make you, realize this was born out of a PCB industry-wide, commodity mindset that quality is nothing more than meeting customer standard requirements. It was born out of our own low standards.

We created this. Now, how do we get out of it?

Consider this. Our behaviors and how we conduct ourselves have either a strong attractive force or a strong repulsive force. Since quality is about attraction, then the behaviors of people and the culture of the enterprise matter. In my books, "Change Your DAM Thinking," and, "You Have a DAM Problem," I refer to the ego DAM. Are we attracted to people who have to demonstrate they are stronger, smarter, and better than we are or are we attracted to

people who want to show us our true potential and help us to be better? The pathology of the ego DAM is a complete inability to ask for help when we need it. This might be because we want full credit or we want to demonstrate that we can do something ourselves. Whatever the reason, the ego DAM blocks productivity.

Here is one way to break the ego DAM. Make your objective clear, including when the objective must be met. If your people need more time, but don't want to ask for help, insist they do so, in order for the job to be done on time. Remember, you are setting the schedule. It will become painfully obvious that you aren't kidding about what you expect and demand.

Once you are focused on standards for behaviors you can focus on standards for performance. For example, sorting bad product from good product never works 100% of the time. You will have escapes, which will threaten to ruin your quality reputation with your customers. The other problem created with processes incapable of producing to the customer requirement is the temptation to ship bad product because it just crosses the compliance line. I have seen this happen far too often and when this is allowed as standard practice then the survival of the company is at risk. The internal requirements for product compliance have to be higher than the customer requirements. In a way this was the true intent of a Cpk being equal to two, which is what is described within a Six Sigma context. The challenge is this is a very difficult standard to achieve and it has to be done in such a way that it attracts customers. When Six Sigma is about being arrogant, it doesn't work.

These two areas, the behavior of your people and your company's performance, are good starting points. Standards are DAM important. If you think that your PCB shop is just a commodity where there is nothing you can do that is special, different, or unique that will command a higher price and create customer loyalty, then consider another quote from Seth Godin:

"We all have so many degrees of freedom than what we give ourselves credit for. Even a waiter at Denny's can figure out how to become the waiter who will be missed when gone." **PCB**

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Powerful Superconducting Quadrupole Magnet Successfully Tested

The U.S. LHC Accelerator Program (LARP) has successfully tested a powerful superconducting quadrupole magnet that will play a key role in developing a new beam focusing system for CERN's Large Hadron Collider (LHC). This advanced system, together with other major upgrades to be implemented over the next decade, will allow the LHC to produce 10 times more high-energy collisions than it was originally designed for.

Dubbed HQ02a, the latest in LARP's series of high-field quadrupole magnets is wound with cables of the brittle, but high-performance superconductor niobium tin (Nb_3Sn). Compared to the final-focus quadrupoles presently in place at the LHC, made with niobium titanium, HQ02a has a larger aperture and superconducting coils designed to operate at a higher magnetic field. In a recent test at the Fermi National Accelerator Laboratory, HQ02a achieved all of its challenging objectives.