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QUALITY MANAGEMENT

5S's that would make any CEO

HAPPY

Contractors may have procedures in the field or shop just because that's the way things developed. If you had to start from scratch, how would you do it?

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SPECIAL TO CONTRACTOR

The 5S's came to America as part of the Lean Thinking movement in the 1990s. They're not a cure-all for all that ails a company. They won't end world hunger and won't claim to save millions of dollars. On the

other hand, the 5S's will help reduce waste present in every operation in both the field and office. They will help improve productivity in your operations. They can engage your employees in continuous improvement. And they actually can improve your home life and maybe save a marriage!

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Contractors can apply the 5S's to service work by organizing and standardizing the parts and tools on the inside of service vehicles, a time-saver when a technician has to drive a truck other than his own.



Contractors organize their welding bays by setting up each bay with the same equipment and purge materials.

First, let's all get on the same page on what the 5S's are. The 5S's were developed by Toyota and are actually "S" words in Japanese. I do not know how to pronounce the Japanese words and even if I did, that probably wouldn't help, so I won't list them here.

When these words were brought to America they were given English terms. Depending on whom you talk to, the words may differ slightly. I like the words used by Boeing. They are:

Contractors who use the 5S's in the shop have re-arranged their material flow and equipment, color coded tools and assigned them to specific areas, cleaned up their work areas and organized their inventory.

- Sorting;
- Simplifying;
- Sweeping;
- Standardizing; and
- Self-discipline.

Some companies have chosen not to use "S" words for the 5S's. For me, however, they need to be "S" words.

Sorting means to go through a designated work area and to sort

out the necessary from the unnecessary. Necessary is defined by frequency of use. If you don't use an item at least annually it is probably not necessary to your work. If you don't use it at least monthly, you probably don't need to keep it anywhere near your operations. Items that are necessary are kept and all the rest are disposed of, recycled or returned. Sorting is fun; it feels good to get rid of stuff!

Simplifying means to put everything (that we determined as neces-

sary in Sorting) in a designated place and to visually mark it. This is the critical step in eliminating time wasted in doing "treasure hunts." Not only is a place established for every necessary item, but also the actual location is based on how often it is used. The items we use most often are located closest to where we use it. Those used less often are farther away.

Sweeping means to physically clean up the work area and to deliberately pick up all parts and material that are out of place and return each to its assigned place as defined in Simplifying.

Standardizing means creating standard ways to keep the work areas organized, clean and orderly and to document agreements made as part of the 5S's. Employees must understand the value of using and maintaining standard methods if this "S" is to be successful. It also means to repeat the first three steps over and over to continuously improve.

Self-discipline means following through with the 5S's agreements. If we don't maintain the changes we made with the 5S's, we will not maintain the gain.

When I was first introduced to the 5S's in 1998, I was unable to find any contractors who knew what the 5S's were, much less were using them. To learn about the 5S's I had to ask people in manufacturing. Not finding contractors using the 5S's then may have been due to my limited knowledge of contractors, but I feel safe in saying that many contractors today know about and are trying the 5S's.

Here's what's happening with the 5S's in construction today.

5S's in the shop

Since the 5S's came out of a manufacturing environment, they are a natural for fabrication shops. One shop was able to return more than \$5,000 in material that it no longer needed. A shop that had been thinking it needed more space to expand, found that after doing the 5S's it had gained enough additional space to not need a costly expansion.

Shops have found that using the 5S's led them to rearrange their material flow and move equipment

closer together. Tools have been color coded and assigned to pieces of equipment. Work areas are cleaner and inventory is better organized.

One shop rearranged its deliveries from a supplier so that all three semi-trucks did not arrive the first thing Monday morning. This had required them to unload the trucks and find places to put the inventory until they could move it with the current inventory. The three trucks represented a week of work. Now they keep less inventory on hand (two days' worth) and have the supplier deliver more often in smaller lots. This saves space and time.

Other ideas that construction companies report having done are:

- Consolidated the available tooling into one location (in the past, tools were located all over the shop);
- Sorted out all excess fittings by specification and spare valves into one segregated area;
- Sorted the bucket of hangers into the various sizes to avoid having to look through one bucket to get the right size;
- Set up each of the orbital welder bays with the same equipment and purge materials (all excess material was removed from the weld bays that had become congested as a result of the various sizes of material being fabricated);
- Reduced the number of as-built drawings being filed in binders and being warehoused in document control archives (all these drawings were scanned onto the firm's server and the paper was scrapped);
- Striped the walkways and labeled and color-coded tools and parts; and
- Devised standardized tool kits for each workstation.

Jim Beaudet, shop manager for Miller Bonded Inc. in Albuquerque, N.M., says the biggest value he has seen from the 5S's is that it helped organize the firm's shop tools so employees don't have to waste time looking for them.

"We pay our employees to be productive," Beaudet says. "The 5S's are an investment to help them do that."

5S's in the yard

Ted Angelo of the Grunau Co. in Milwaukee tells how the mechani-

cal contractor used the 5S's in its main yard last November. He said the yard, like those of most construction companies, was littered with stacks of material returned from jobs and saved for "just-in-case" situations. It also was crowded with equipment and material being made ready to go out.

After applying the 5S's, he reports, "It was like night and day to see the difference."

5S's in the office

The 5S's work well to help organize the office. One company's purchasing department had problems finding partially issued purchase orders when one of the buyers was out for the day. The firm applied the 5S's and re-designed the buyers' work area so that all buyers had a designated tray for all unprocessed orders and another for those partially filled. This seems like it's no big deal, but it saved other buyers and accounts payable people time in looking through stacks of orders.

Another office color-coded its reference binders using 1-in. colored dots placed on the binders' spines. The dots were marked "1 of 5," "2 of 5," etc. Anyone could pass by the shelf and see if any binders were missing or out of order. Reference binders are no big deal until you need one.

In one office, the accounting department was keeping duplicate copies of all the fab shop invoices. That was about 18,000 invoices over the last two years. The department decided this was no longer necessary, and threw them away, thus freeing up file space and the time it takes to administer. It also requires less copying and preparation time.

Grunau's Angelo has used the 5S's on his own office. He says everything has a designated place including the knickknack items in the window.

He claims, "Anyone can find anything in my office in a short time — that reduces waste!"

You can even do a 5S's on your computer too. That can save a lot of time in looking for electronic files.

5S's in the tool room

Grunau Co.'s first 5S's project was in its tool room. Grunau did what the Japanese call a Kaizen Event where the contractor took a week to train its people and apply the Lean concepts. Grunau discovered that it could reduce the number of steps for scheduling tools by 50%.

Another company looked at its tool repair process and was able to save eight to nine hours a week in the repair technician's time by rearranging where parts and tools were kept and the priority for repairing tools.

5S's in the field

Because of the changing nature of field work, applying the 5S's is more of a challenge, but there are still many opportunities.

One site put names on a rack set up for the crews to hang their harnesses. Less time was spent untangling and resizing the harnesses each morning. With 20 employees working at the job performing air balancing, this approach saved 15 to 20 minutes each morning for each employee, or five man-hours per day or more.

Organized gang boxes can save time looking for tools.

Yard lay-down areas are ripe for the 5S's. If the site has been around for any length of time, stashes of material are the norm. One contractor went through one site and found the same excess material stored in several different trailers, in boxes, behind the trailers and on top of shelves. Each foreman had his own stash. The contractor consolidated all the same material and reduced much of what was being stored as just in case. Excess material was returned or junked. Some material was out of spec because it sat out on a pallet for several years.

5S's in service

In doing service work, time is critical. The 5S's work for a service function too. Beside the obvious application to the parts storage area and the office, the 5S's can be easily applied to the vans or trucks the service technicians drive.

Even when the fleet may consist of different types of vehicles, having a common area designated for various parts makes it easier for the

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technicians to find what they need. This is even more critical when the technician has to use a vehicle different than the one he usually drives.

When Miller Bonded started the 5S's in service, it found that Sorting through the vehicles really worked. The company was able to get rid of much material that was either not used or not needed. The technicians welcomed this step.

At the Grunau Co. a technician took a Rubbermaid cart and fixed it up so he could keep his tools at jobs that took two to three days. He could roll it in and leave it overnight.

Getting started

The 5S's will never claim to save millions of dollars, but when applied consistently, they will save time and material. They will cut out waste.

"The hard part is to get construction people to buy into this innovation," Ted Angelo says. "Many workers in construction, when first

introduced to the 5S's, will say this is not manufacturing so it won't work. But it does. They just need to learn the principles and try it."

In fact, he says that Grunau has seen some employees now starting to try 5S concepts even before the 5S's have been introduced to their area. They see how they work and want to try them.

5S's at home

I said upfront that the 5S's could improve your home life and maybe save a marriage. While saving a marriage may be a stretch, using the 5S's can improve life at home. I, like many of you, have children and tools. The two don't mix well in terms of getting children to return tools to the right place.

In studying the 5S's, I realized that the "right place" was not marked. In my mind I knew just where it should go. But how could I expect my children to know it was the right place when it wasn't clearly marked? Many arguments

can be avoided by having a clearly designated place for all tools.

Also, we all have storage sheds, closets or attics where we keep many things just in case. I went through my shed doing Sorting and got rid of lots of junk. It freed up needed space for other items.

If you use the 5S's in your home, you can improve communications with your children and spouse and that can improve your marriage. They will even allow some people to park the car in the garage again!

One word to the wise for married men: Do not — I repeat, do not — use the 5S's yourself on the kitchen. Leave that to your better half and keep your marriage intact.

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