



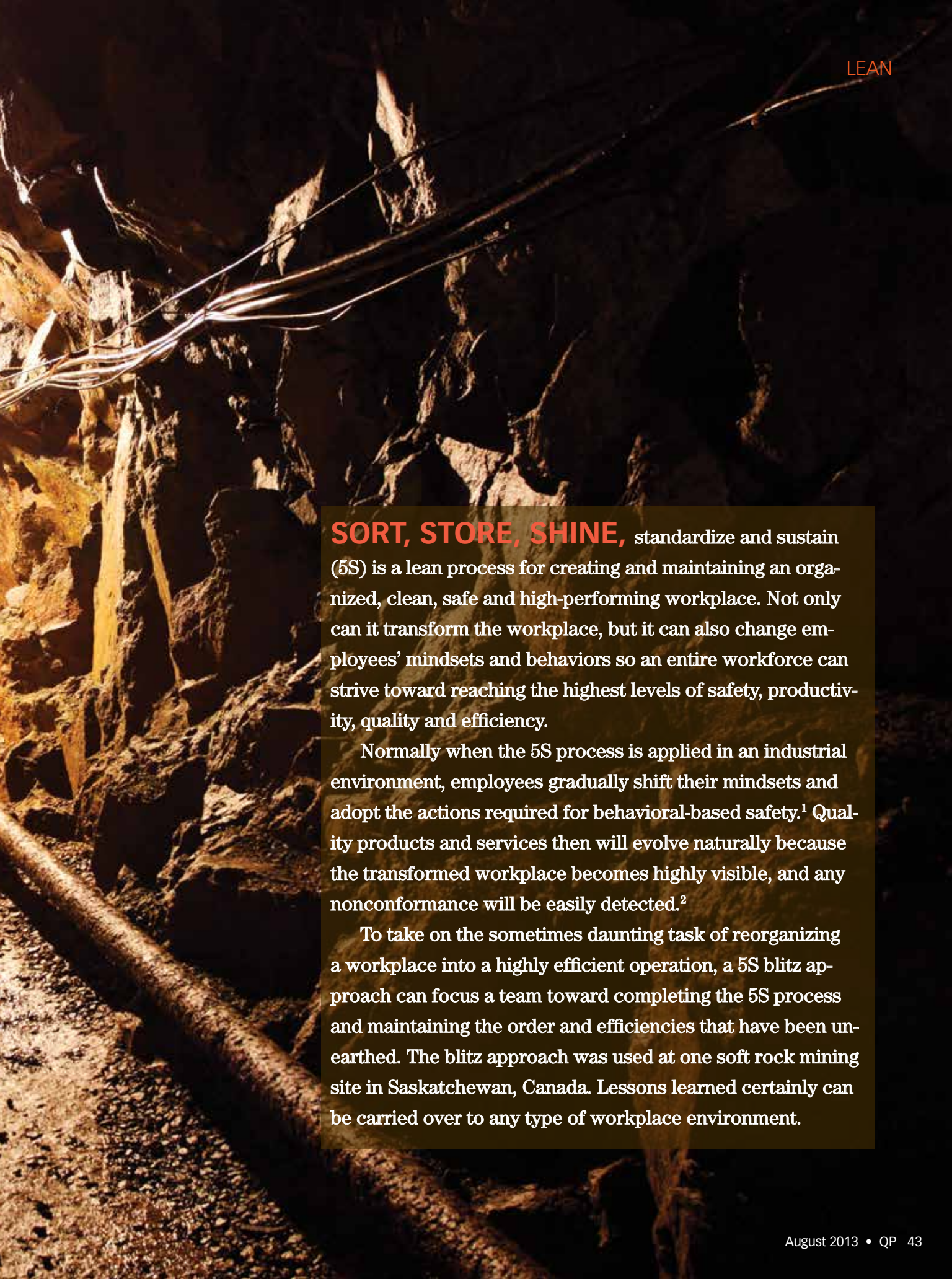
Dig Deeper

Deploy a **5S blitz** to create a **high-performance** work environment

by Rajeev Chadha

In 50 Words Or Less

- Sort, store, shine, standardize and sustain (5S) is a powerful lean method that can streamline processes and transform a workplace.
- To prevent the method from stalling, a 5S blitz can be used to engage a team to complete the steps and maintain the order and efficiencies that have been created.



SORT, STORE, SHINE, standardize and sustain (5S) is a lean process for creating and maintaining an organized, clean, safe and high-performing workplace. Not only can it transform the workplace, but it can also change employees' mindsets and behaviors so an entire workforce can strive toward reaching the highest levels of safety, productivity, quality and efficiency.

Normally when the 5S process is applied in an industrial environment, employees gradually shift their mindsets and adopt the actions required for behavioral-based safety.¹ Quality products and services then will evolve naturally because the transformed workplace becomes highly visible, and any nonconformance will be easily detected.²

To take on the sometimes daunting task of reorganizing a workplace into a highly efficient operation, a 5S blitz approach can focus a team toward completing the 5S process and maintaining the order and efficiencies that have been unearthed. The blitz approach was used at one soft rock mining site in Saskatchewan, Canada. Lessons learned certainly can be carried over to any type of workplace environment.

Mining for answers

Most North American mining companies perform some type of systematic root cause analysis to address safety, quality and productivity issues. For the most part, poor housekeeping and a lack of 5S practices are the root causes of all companies' troubles.

Breakdowns of machines and substandard working conditions contribute to poor productivity. Equipment inefficiencies caused by contaminated hydraulic oil, lubes and air filters also contribute to productivity issues. Naturally, low workforce morale usually follows these challenges, which also can slow productivity.

Soft rock mining operations are inherently dusty, too, and housekeeping often can be a difficult situation to address. Before starting any housekeeping project in a mining environment, it's important to consider the mine's air ventilation: There must be a clear separation of clean air and contaminated air. It's important to select a 5S pilot area with the least amount of ventilation issues and positive air draft.

In addition, it's ideal if the selected area is located near the mine shaft and hoist, where there's constant people movement. This human traffic is desirable because it increases the visibility of housekeeping efforts, enabling everyone to have the opportunity to learn about the 5S process.

Another suggestion before diving into a 5S project at a mining operation: Any 5S training should include a tour of the mine refuge stations. For mining companies, it's a top priority to maintain these underground emergency response stations at the highest level of organization and cleanliness because of legal compliance issues. In turn, these sparkling-clean stations can be used as great examples of housekeeping activities at all mine sites.

The first steps of 5S

For workplace safety and housekeeping, the 5S tool is a means to an end but certainly not an end in itself. The process of behavior-based safety starts with sorting all the unwanted things used daily and searching for real value, not intrinsic value. For example, the intrinsic value of a \$100 bill is not much more than the value of any similar piece of paper unless the bill is spent to buy something that can be used. Similarly, an instrument or tool that goes unused has no practical value.

The next step is to have a place for everything, and everything in its place. This will drive people to own the

workplace and eventually create safe work habits and practices.

Initially, it can be difficult to establish a 5S process throughout a mine site because it's a huge area to cover. Results are isolated unless the entire organization follows the 5S principles routinely. Resistance to a 5S process can be great, too, because people tend to return to old habits. Further, middle management's support often can be weak because it primarily strives to meet production targets.

At that stage, even the simplest 5S process appears to be a large task in which objectives slowly head toward nowhere. Many quality experts recommend handling this situation by using a 5S blitz to rescue the five-part process.

Blitz exercises

The objective of 5S housekeeping blitz exercises is to work with a small team (up to 10 people) to implement the early stages of a 5S housekeeping program. People learn best by experiencing the 5S blitz workshops, which are practical and hands-on.³

During the workshops, participants learn the 5S concepts with 15-minute exercises and apply the tools in their everyday work processes. In this way, the 5S pilot area benefits from the learning experience. In a short period of time, 5S improvements also can be applied in some of the toughest 5S areas.⁴ The most common outputs of these blitz workshops include:

- Facilitated support for applying 5S principles in a pilot area.
- Sort, store (set in order) and shine applied to the pilot area.
- Participants' understanding the importance of 5S.
- Participants' understanding of how to implement 5S.
- Detailed suggestions on how to sustain the 5S initiative.
- A developed action plan to ensure continuous improvement.

Each 5S blitz workshop must be carefully designed and based on the nature of the 5S area, which can differ in terms of products, services, equipment, skills and traffic. Although 5S principles are universal and therefore can be implemented in any area, some creativity and customization might be helpful to address a certain area's specific needs. An area's leader or supervisor can help introduce these nuances. A blitz for a warehouse, for example, should be treated differently from a blitz for

6S (5S + safety) area audit checklist / FIGURE 1

Audit area:		Date:	
Auditor:			
5S housekeeping inspection points			Yes/no
Safety—EH&S observations	1	Do you have all required personal protective equipment, including glasses and gloves?	
	2	Is the 5S area properly lit and all safety signs visible? Are open areas roped off?	
	3	Are there fire extinguishers? Are these marked and inspected?	
	4	Are the emergency evacuation procedures and routes posted and understood?	
	5	Do you have emergency eye wash stations and a first-aid kit present in your area?	
	6	Is relevant EH&S information, including MSDSs, and lockout and tagout procedures, available or posted?	
	7	Are unsafe conditions, such as poor machine guarding and trip hazards, quickly controlled in your area?	
	8	Are you aware of any alarms or safety instruments and devices disabled or bypassed in your work area?	
	9	Are all work permits, such as confined space or hot permit, in your area signed and posted?	
	10	Have you filled the slam card and performed the stop tour? Is the card signed by the supervisor?	
Safe and healthy workplace environment. Subtotal of yes			
Sort	1	Do you use 5S tags to identify all unnecessary tools, equipments and supplies in your work area?	
	2	Is the white board (story board) used to comment or post pictures of your 5S area?	
	3	Are personal belongings properly stored? Are any 5S tagged items more than three weeks old?	
	4	Are all unneeded tools, equipment and supplies removed and dispositioned properly?	
	5	Are storage areas used properly? Are cabinets used when necessary to store material?	
Remove all unnecessary items. Subtotal of yes			
Store	1	Do you have a place to store all groups of tools, equipment and consumables in your work area?	
	2	Are separate locations clearly marked for trash, scrap, defective and quarantined items?	
	3	Is the location for all tools and equipment closed to the point of use and clearly marked?	
	4	Are all the aisles clearly marked, free of clutter and organized?	
	5	Do you have clearly identified locations for all of your tools?	
A place for everything and everything in its place—organize and label. Subtotal of yes			
Shine	1	Is your work environment free of darkness, noise, dust, humidity and odor? Circle any applicable concern.	
	2	Are your floors cleaned and free of spills and litter?	
	3	Are the walls, windows, closets and doors cleaned and freshly painted?	
	4	Are your equipment, utensils and ladders clean and unbroken?	
	5	Are your office and workbenches free of files, clutter, paperwork, and stock inventory and parts?	
Scrub daily and start owning your workplace. Subtotal of yes			
Standardize	1	Are you and other personnel in the area trained to perform 5S housekeeping and EH&S procedures?	
	2	Is the visual management and mistake proofing of human errors apparent in your area?	
	3	Are housekeeping duties in your area clearly defined and new ideas welcomed?	
	4	Are EH&S standards followed in your area?	
	5	Do issues become obvious when they occur? Are you involved in team problem solving?	
5S and EH&S training, SOP. Subtotal of yes			
Sustain	1	Are the housekeeping duties and work procedures (SOP) posted in the area?	
	2	Does the superintendent and general foreman discuss the 5S audit and 5S progress with the team?	
	3	Are the documents part of an appropriate document control system (Livelink)?	
	4	Are process and maintenance equipment calibrated and are safety instructions available in the area?	
	5	Does the area supervisor talk about 5S housekeeping duties and performance?	
	6	Do the crew members perform daily 5S housekeeping checks?	
	7	Are you aware that the progress of the 5S area is displayed on the e-screens?	
	8	Are 5S audit results posted and communicated in the area?	
	9	Have the perfect setup concepts been discussed by the supervisor or 5S coach?	
	10	Is the monthly/quarterly housekeeping team recognition program in place?	
Visual 360-degree management, permanent change and discipline Subtotal of yes			
Grand total of yes			0

Additional comments: _____

EH&S = environmental, health and safety
 5S = sort, store, shine, standardize and sustain
 MSDS = material safety data sheet
 SOP = standard operating procedure



AN EXAMPLE OF an underground mining machine used to cut soft rock, or ore, at the Mosaic Potash Colonsay mine site in Saskatchewan, Canada.

a machine shop or analytical lab, or a lube filling station.

The fundamental structure of 5S blitz is comprised of five events, followed by an employee recognition get-together.

1. Sort event: This exercise will help separate necessary items from unnecessary items, and help dispose of all the latter. In 15 minutes, participants place red tags on the five most unnecessary items in the pilot area that they think should be removed. If 10 participants each tag five different items, potentially that's 50 items that can be removed, which can provide more space for necessary items.

From this added space, the actual workflow process that will be designed later can be visualized more easily. Also, greater attention can be paid to designing a safer work environment.

2. Store event: This exercise will help find a permanent place for all the necessary items. In 15 minutes, participants identify five groups of items, write down how and where each group is used and the best place for each group to be stored. In a kitchen workspace, for example, the groups of items could be utensils, spices, refrigerated items and pantry items.

Group items that are used together, and keep shareable items at a central location to make them more accessible to everyone. From this event, you'll learn to locate items close to their points of need, and you'll see what doesn't belong or what's missing. This exercise will make it easier to find needed items. Necessary items should be stored in easy-to-see locations. After an item is used, it should be returned to its proper place.

3. Shine event: This event will help keep the work area continuously clean. In this exercise, participants will identify a 5-by-5 foot area, which they will clean and maintain regularly. A team leader will formally assign an area to each participant. This shine event will rejuvenate employee attitudes because they will experience a clean workplace. A white board can be used to sign off on the daily housekeeping duties and demonstrate how housekeeping is done on a regular basis. Employee comments, requests to supervisors and communication with employees working other shifts also can be captured and established in a cohesive manner.

A clean workplace also helps identify abnormal conditions. Dust and dirt can cause product contamination,

which will be identified and prevented from accumulating again after the shine event. Remember, a clean workplace is a safe workplace.

4. Standardize event: This event will help participants perform operations in a consistent way and maintain these activities so any deviation from the new normal becomes obvious. Although standardization is a never-ending process, providing proper visual and sensory cues in the area is sometimes enough to achieve minimum requirements. Proper lighting, signage, labeling and ventilation in a work area are basic standards to drive a workforce's productivity. In this 15-minute exercise, participants will identify five items—such as tools or components—in the area that relate to:

- Lighting, noise and ventilation.
- Nonstandard items, such as broken or tempered tools or jigs.
- Items with any safety, health or environmental hazards.⁵
- Items missing signage to identify location, caution or direction.

This exercise will involve everyone in finding visual and sensory errors in the workplace. Participants in each functional area also can learn from participants in other areas and encourage others to maintain high standards of organization and cleanliness. In addition, this exercise will create a system that helps anyone in the workplace see problems when they appear.

Many participants also adopt another important behavior: looking for cues and finding ways to observe inanimate objects in the shop that will help control human behavior. Engineering and expert advice can be taken to “mistake-proof human errors” and to “implement visual/sensory controls” to manage advance stages of workplace standardization.⁶

5. Sustain event: “Practice and repeat the 5S discipline until it becomes a way of life” is the key phrase for the 5S team to learn before the sustain event actually begins. The 5S process needs intensive training and discipline for team members to adhere to the rules. The 5S process establishes a culture of competence by shortening training cycles for new employees so they can help maintain a neat and tidy workplace.

A housekeeping tip sheet (see Table 1 for an example), pre and post-5S photographs of the area and setup, and documentation of housekeeping audits are helpful tools that show the performance of the continuous 5S process.

Daily 5S activity tip sheet / TABLE 1

Please take 10 minutes before your shift ends to perform the following:	
Sort	• Sort items needed from those that aren't needed.
	• Dispose of unnecessary items.
	• Sort remaining items and arrange them by frequency of use using the tag technique.
Store	• A place for everything and everything in its place.
	• Everything needed should be easy to see, retrieve and return.
	• Decide appropriate locations: <ul style="list-style-type: none"> – Minimize motion. – Store items together depending on use.
	• Identify locations using visual control systems: <ul style="list-style-type: none"> – Signboards. – Color coding. – Drawn outlines of parts and tools.
Sweep/shine	• Create a dust-free workplace.
	• Maintain area in best possible condition. <ul style="list-style-type: none"> – Constant checking and care.
Standardize	• Make sure that the following is always done: <ul style="list-style-type: none"> – Clearing. – Organizing. – Cleaning.
Sustain	• Create a perfectionist mentality. Everything should be perfect.
	• Make 5S a habit: <ol style="list-style-type: none"> 1. Encourage total team involvement. 2. Work smarter, not harder (visual controls). 3. Celebrate efforts and successes. 4. Audit, audit, audit.

5S = sort, store, shine, standardize and sustain

Audit and analyze the 5S area

One of the last phases of a 5S blitz involves a 360-degree walk-through audit of the 5S area by at least three independent internal auditors. The auditors, with the help of the area's supervisor, complete a customized 5S area audit checklist, shown in Figure 1 (p. 45).

The value of using three or more 5S auditors is to generate more robust and statistically valid results. The multiple audit scores can be averaged to create a more meaningful picture of the current state of the 5S area. The auditors also must remember that the housekeeping duties are assigned to groups, and the objective of the 5S audit is always to evaluate the process, not the individuals.

A typical 5S audit analysis includes a radar chart built from the level of performance of each S exercise. The

5S area scorecard / TABLE 2

Area name:		Date of evaluation:			
Area lead:		Average score:		08/25 (max)	
	Sort	Store	Shine	Standardize	Sustain
Level 5: focused on prevention measures.	Employees are continually seeking improvement opportunities.	A dependable, documented method has been developed to provide continual evaluation and a process is in place to implement improvements.	Area's employees have devised dependable, documented procedures for preventive cleaning and maintenance.	Every team member is continually seeking the elimination of waste with the changes being documented and information being shared.	A general appearance of a conflict and understanding of the 5S principles of cleanliness and orderliness is expected of all.
Level 4: focused on consistency.	A dependable, documented method has been established to keep the work area free of unnecessary items. Red tag areas are being used.	A dependable, documented method has been established to recognize in a visual sweep if items are out of place or exceed quantity limits.	5S individual assignments are agreed on and 5S is consistently practiced by all.	Standard work is consistently followed by all team members. Area consistently follows 5S standards.	All team members are actively engaged in driving continuous improvements in 5S scores. Scorecards are posted.
Level 3: make it visual.	Unnecessary items have been removed from the workplace. Items required are well identified (visual).	Designated locations are labeled to make organizations visible. Visuals (tape, paint) are in good shape.	Work and break areas have been cleaned daily and visual controls have been established for key items. Floors are clean.	Visual control and standard work is in place and proven.	Weekly 5S reviews are being conducted by the supervisor and monthly by the manager. Feedback is being acted on.
Level 2: focus on the basics.	Necessary and unnecessary items have been separated.	Designated locations have been established for items.	Work and break areas are clean and key items to check have been identified.	Methods are being improved and practiced continually, but haven't been documented.	A recognizable effort has been made to improve conditions of the workplace.
Level 1: just the beginning.	Necessary and unnecessary items are mixed throughout the workplace.	Items are randomly placed throughout the workplace.	The workplace is dirty. Disorganized and key items are not identified.	Workplace methods are not consistently followed and are undocumented.	Workplace checks are randomly performed and there is no visual measurement of 5S performance.
Score	2	2	1.5	1.5	1

Cumulative improvement ↑

Positive comments:
Opportunities:
Evaluation and comments by:

5S = sort, store, shine, standardize and sustain

goal is to score a minimum on each S dimension, and an overall score must be higher than the mean score.

The online sidebar, “5S Blitz Audit Results,” found on this article’s webpage at www.qualityprogress.com, provides details from reviews of two areas at a soft rock mine site that underwent a 5S process. The sidebar also includes two radar charts (Online Figures 1 and 2) developed as part of the reviews.

The first audits should be conducted weekly but can change to biweekly or monthly, depending on the traffic and mess in the 5S area. Further, the area leaders are required to spend at least 10 minutes each day talking about 5S with their teams (see the tip sheet in Table 1, p. 47).

The detailed 5S audit process uses a checklist with columns for comments and recommendations. These comments and suggestions are kept confidential and later presented to management for review and the implementation of actionable decisions. These comments are then used to reconcile the audit score. If the audit suggests a low score for the store phase, for example, the comment section must include related comments such as, “not enough storage cabinets,” or “items in the area have no space to be stored.”

The 5S area scorecard is an alternative to radar chart analysis. Table 2 shows a typical scorecard that 5S area team leaders can use to understand the 5S roadmap and assess their areas on a scale of five to 25.

The 5S area scorecard can tell the team where it stands in its continuous improvement journey in the form of a cumulative score. Each level in the table equates to one unit on each of the five elements of 5S, and the highlighted portion of the table shows the level of achievement.

The 5S blitz audit can be performed with a customized audit checklist that not only includes the area’s basic housekeeping requirements but also its safety needs. The generic 6S (5S plus safety) area audit checklist shown in Figure 1 can be modified to cover and quantify all important attributes of an area to create a snapshot of the 5S area’s current state. The audit scores are averaged to get the final score.

A radar chart then can be used to create a snapshot of the quantitative results from a 5S blitz audit. This chart can be compared to the comments generated from the five event exercises to draw conclusions.

Employee recognition

5S blitz workshops can become even more memorable with one last step: employee recognition. No blitz exer-

cise is complete without management showing appreciation for the workshop participants. An employee recognition get-together is a wonderful way for managers, 5S experts and area supervisors to show their support to the front-line and floor employees who were engaged in the 5S process.

Think about it: A free lunch is not an unbearable cost for boosting employees’ morale, especially after they have adopted 5S as a part of their daily routines. In fact, employees might realize that voluntary participation in 5S work is something to be rewarded not because it’s worthless, but because it’s priceless.

A 5S blitz is a coaching session for the 5S area team that realizes the team cannot win unless everybody on the team is ready for victory. The basic development of 5S mindsets and behaviors are vital at the beginning of any industrial 5S initiative. It is a collaborative journey of employees and employer in which mindsets of work smarter, not harder, “do things right the first time” and “no idea is nonsense” are well respected and practiced to create a world-class work environment. **QP**

REFERENCES

1. John E. Becker, “Implementing 5S: To Promote Safety and Housekeeping,” *American Society of Safety Engineers*, August 2001, www.asse.org/professionalsafety/pastissues/046/08/032931jb.pdf.
2. Rajeev Chadha and Jay Kalra, “Window of Opportunity,” *Quality Progress*, March 2010, pp. 32-39.
3. Efficiency Works, www.efficiencyworks.com.au.
4. Ibid.
5. Mosaic Co., “The Roots of Our Success: 2012 Sustainability Report,” 2012, www.mosaicco.com/sustainability/report.
6. Alexander Hankewicz, “Deploying Lean Principles to ERP Implementation Projects,” *Project Management Hut*, July 4, 2009, www.pmhut.com/deploying-lean-principles-to-erp-implementation-projects.

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