



The Skills Gap: How to Overcome the Lack of a Qualified Workforce

For US industries, the startling reality is that baby boomers are retiring at a rate of 10,000 people a day—it's an exodus of not only skilled employees, but also “tribal knowledge,” learned on the job within industries or work plants and rarely captured in any manual or textbook.

Every time retired workers walk out of the factory for the last time, they take with them an understanding of processes and craftwork that can then never be passed down to a new generation of workers.

Retiring baby boomers are leaving faster than they can be usefully replaced. In this article, we look at the growing skills gap in U.S. industries and show how organizations can ensure they have the talented personnel they need to grow in an increasingly competitive marketplace.

What Skills Are We Losing?

The list of skills that are being lost as older workers retire is large, but would include the essential areas of:

- Process engineering
- Equipment engineering
- Production engineering
- Manufacturing engineering
- Quality and safety engineering

Traditionally, workers gained these skills via the long route of putting in the time and working closely with the machinery and systems every day. They experienced the invention and the foundational works that made

these industries so successful—and now too many of them are leaving before their employers have taken the time and opportunity to bring in replacements for mentoring or apprenticeships.

Without this passing on of skills and experience, industries are losing the knowledge and talent that allows workers to look at a problem, assess it, and then immediately address it by knowing exactly what will or will not work.

Where Have the Skills Gone?

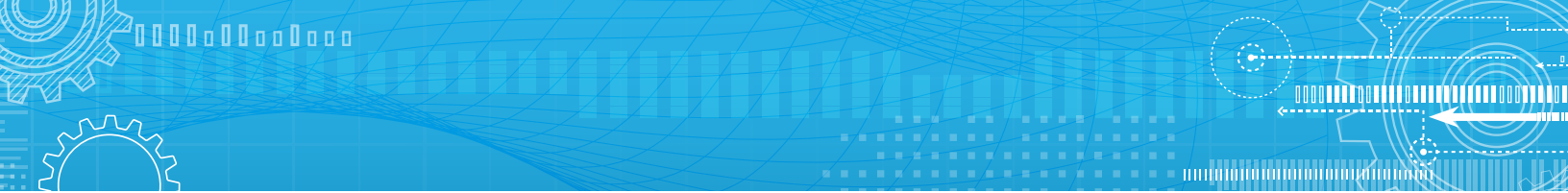
In many industries across the country, new workers are placed in the position of having to take the reins of equipment they've never put together, never seen in action, and have never dealt with other than perhaps a very basic training session.

The generational shift has been significant. Historically, after World War II, GIs came home and immediately found themselves undergoing on-the-job (OTJ) training in major industries. They were in place to learn how systems worked in the manufacturing complexes that were built in the 1950s, through the 1970s, and beyond.

Through it all, the baby boomers and then their children inherited generational understanding, knowledge passed down by their predecessors on how to operate the machinery and equipment that was essential for US industries.

With the retirement of these experienced workers, this skills gap is becoming increasingly pronounced; members of the younger generation are choosing not to go into these industries, opting instead for more high-tech career fields, at least in the U.S.

The current generation, without the benefit of the tribal knowledge essential for industrial success up to now, is ill-equipped to handle legacy machinery. These systems



are completely depreciated in the companies' books and yet remain 100% profitable for many businesses, so keeping legacy equipment running and operating is an obvious priority. Now, the search is on for where the new wave of expertise can come from.

A Training Problem

For American companies, the increasing skills gap means they now have to rethink how they bring new workers up to speed on the processes and skills that are being lost. They have to find a way to teach these young workers faster—because the workers they're replacing are leaving at a rate almost too quick to keep up with.

The problem may appear to be simply a shortage of workers—after all, the idea that, for every 10,000 workers leaving only 7,000 workers are replacing them, is startling enough. However, the gap is in fact bigger and more serious as the number of qualified workers being taken on by employers is even smaller. And non-qualified workers are not being given the training and time to develop the skills they need.

For companies, a significant aspect of this loss of essential expertise is the discovery that they don't have the in-built resources or course curriculum available to develop new employees quickly enough. They are quickly coming to the realization that they have to look for external support to augment and supplement whatever training they're able to supply in-house.

In traditional heavy industries, an apprentice would go through something like the following:

- Entry level study on what is in the refinery or factory by unit (13 weeks).
- Specific on-the-job training with a journeyman alongside (12 weeks).
- Further training with the journeyman, shadowed by foreman, superintendents, other personnel (4–8 weeks).

The assignments trainees are given may be relatively basic, but they still provide an excellent grounding in the industry and workplace practices. The issue that industries now face is simply that the expertise to give the training and to provide the on-the-job support is disappearing out of the factory gates every day.

Impacts of the Skills Shortage

The shortage of workers has very real and immediate effects on industries. Incidents where there are not enough workers to stretch around the whole industry are becoming increasingly commonplace.

For example, two refineries may be in turnaround at the same time. One refinery's turnaround may have to be delayed because there are simply not enough skilled workers and resources to do both at the same time. In order to assure a proper turnaround schedule for Refinery A, they've occupied all the qualified people to do it. Refinery B has to wait.

Safety and productivity levels also suffer because of a lack of qualified personnel. When a whole fleet of fully educated, fully capable, and highly productive individuals are working together to run a facility, and then through attrition and retirement those skills are lost, then companies have to find replacements quickly. Almost inevitably, these posts are filled with rookies who are not fully productive, not fully educated, and don't know what traps to watch out for.

The result is highly likely to be a drop in productivity and a notable spike in workplace accidents; the newcomers simply don't know what they don't know and there are fewer people available to take them under their wing.

If an organization is experiencing more accidents, lower productivity, and high general attrition, then they are guaranteed to be experiencing something else: a drop in profits. Once the effects of the skills gap hit the bottom line, then everyone in the company knows for sure that there is a problem. By that time, however, it may be too late.

Solutions

Obviously, however much companies may want to, they cannot simply stop baby boomers from retiring. Equally, they can't make more students choose engineering as a career simply by wishing it were true. So what can organizations experiencing a skills gap actually do to get themselves back on track?

The essential first step for any organization experiencing a shortfall of experienced personnel is to take the time to identify exactly what kind of head count is required in order to accomplish their primary business goals. Using this information as a baseline, they are now in an excellent position to know exactly the size of the task ahead of them.

Outsourcing

Organizations should consider the benefits of partnering with outside experts. Outsourcing is a huge opportunity to help develop missing skills quickly. External experts can provide broad training—in skills required by a whole plant, for example—or very individual instruction for employees needing to specialize in, say, remediation or air control. Whatever the specific skills gap a company may be experiencing, there will be an external expert who could provide support and specialist training in that area.

Financially, outsourcing is an attractive option for organizations as it's a capital expense and comes without any overhead expenses. Consultants come in all sizes and levels of expertise—choosing the one that best fits a specific bottom line is very straightforward.

Automation

Companies have to look at those fully depreciated legacy devices that have long done the hard work on the plant floor. These devices are no longer part of the solution once we've acknowledged that there is not the workforce in place to run and service them. Instead, companies have to look at alternative options, and one of those may be automation.

Companies must recognize that automation is a straightforward solution to the issue of a workforce shortage; they need to automate because they have less capacity to complete manual tasks. Automation provides opportunities for increased production and efficiency while also relieving the pressure caused by fewer workers.

The advantage of automation is that it can effectively minimize manpower while increasing safety and improving monitoring systems. Having fewer humans around and being able to remotely check on performance levels are effective ways to improve safety and monitoring processes.

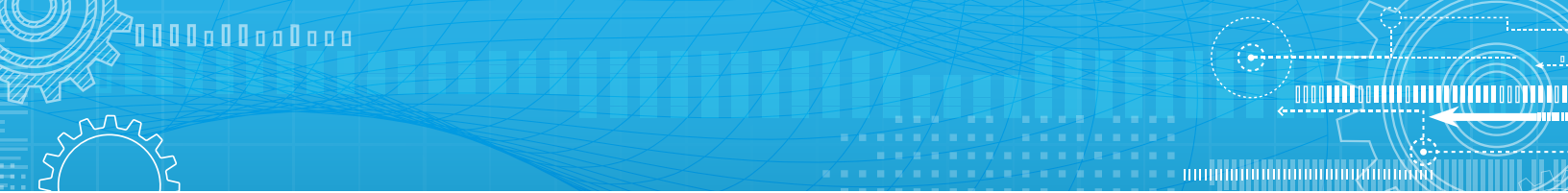
On-the-Job Training

Perhaps the best and most effective way of showing a new employee how to do their job is for them to be directly supported by someone as they perform their daily routine. For the most effective training, a worker isn't given a broad and general idea of the factory or plant—they are given specific and relevant information about what their role is, down to the finest detail. OTJ training should be very specific to the individual receiving the instruction.

If an organization no longer has the expertise (or the time) to train new workers themselves, then choosing an outside vendor is a realistic alternative. Choose a partner with the experience and understanding of your industry and processes—and ensure they have all the information they need to know exactly what skills they need to teach. Then they can walk new employees through the process, covering every essential base to ensure new personnel know what their roles should look like and how they should be performed.

Valin—an Experienced Training Partner

At Valin, we have the experience and industry skill sets to support you in the recruitment and training of new employees. We've invested in industry knowledge and now we are able to transfer that knowledge to industries and organizations suffering from the disappearance of baby boomers from important roles.



With the benefit of experts including a Doctor of Education, we have developed a tremendous curriculum of course study within our organization. We realize that knowledge is being lost to industry and we're committed to ensuring this critical information and understanding is captured and then effectively passed on to a new generation of workers.

Now that the old gurus have retired, companies like Valin can be called upon to step into that training role and help provide active support for your new employees. With our decades of experience helping to design systems, we are in a great position to pass on that experience to a new generation who has to learn how to use the machinery we helped put together.

With specialized training solutions that range from OTJ, one-to-one training, to broader classroom-based "lunch and learn" sessions, we create learning programs that fit your requirements and topics of specific interest.

Valin is the leading technical solutions provider for the energy and technology industries. For 40 years, Valin has offered personalized order management, onsite field support, comprehensive training, and applied expert engineering services utilizing automation, fluid management, precision measurement, process heating, filtration, and fluid power products.

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