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The 'Tribal Knowledge' Conundrum

Too often, manufacturers rely entirely on worker knowledge for their manufacturing process, putting their operation at tremendous risk.



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Anyone who has ever worked in and around manufacturing for very long may have heard the term “tribal knowledge.” This term generally refers to critical process knowledge that workers possess, which is partially or entirely undocumented, existing only in their heads. Most of the time this simply means that the workers have the knowledge, but management doesn’t. Herein lies the rub.

Wikipedia defines it this way: “Tribal knowledge is any unwritten information that is not commonly known by others within a company.”

We will be exploring what this means, why it exists, and some ideas you may be able to use to reduce your risks if you have this situation in your company. This condition, although unintentional, could have happened in a number of different ways. Here are a few common scenarios:

- A company was started from scratch many years ago and grew without anyone paying much attention to process documentation as long as the work was being done and shipments were being met. This is common among family-owned businesses.
- Employees intentionally don’t share all of their process knowledge out of job security concerns. This frequently happens in union environments.
- Department supervisors always use existing employees to train the new employees on how to do the work. This is common if the supervisors don’t know how to do the work themselves due to the long learning curves, or they themselves are stretched too thin.
- The value of process documentation or standard work is not recognized by management. Sometimes the value for it is recognized, but profit-driven, short-term financial goals keep managers from doing the right things.

I have seen this problem firsthand in many different companies, but it seems to be especially common in the RV industry and in family-owned businesses.

I have seen it go both ways for the workers, too. Sometimes the information is held and

protected by workers who turn themselves into valued commodities because of company-dependence/job security, as well as the overtime they get from it.

On the other side of the coin, I have seen employees forced to work long shifts and even weekends for extended periods of time so that shipments can be made, given that they are the only ones who know how to do the job or run the complicated machinery. These employees want others to be trained to give them some relief, but – either due to long training times or lack of budget for additional employees – the problem remains.

Here are some examples from situations I have personally encountered:

- I met a shop worker at an RV manufacturer who was the only person on earth who knew how to properly run the wiring in the basement area of the RVs they were making.
- I worked with a group of employees in a fabrication department at another RV manufacturer who were also the only folks in the world who knew how to fabricate the required components needed to make their units.
- On a recent engagement, I worked with a manufacturer that uses very complicated and fickle machinery to make its unusual products. All at once the company lost two of its four key operators, who walked out the door – taking their tribal knowledge with them. The training time for an operator takes two years to complete.

I have also seen worker-scribbled notes and rough sketches written on scraps of copy paper and torn-off pieces of cardboard cartons in their attempt to record some of the invaluable manufacturing information they had learned so they would not lose it.

Of course, all of this creates a very bad set of conditions for the company’s owners and managers due to the exposure created by having very important “eggs” housed in a few fragile “baskets.” What would you do if you lost one of your key employees to sickness, injury, death, or to another employer that offered an additional 10 cents per hour?

This type of loss causes great hardship and



costs for the company. These costs can be in the form of: unplanned overtime, excess scrap, late or missed shipments, poor quality and all kinds of related material and labor wastes.

So, what do you do?

I would strongly suggest meeting with your team – including the supervisors – and assess your operations to see if you have this type of exposure and list them in priority order for careful review. This review should include the names of the employees involved and the jobs with the exposures. Many times the corrective action steps involve new costs, such as for overtime or new hires, which will need to be planned for and budgeted.

Cross-Training

Start cross-training immediately. Cross-training does not solve the unwritten/ undocumented nature of the problem, but it does spread the knowledge to more people, thereby reducing the risk exposure to the company, or at least it will when they are fully trained. If the employees selected for the cross-training are good-natured and team players, you may find that extracting and documenting the information later may be a much easier task.

All cross-training should be monitored by management and graphed on a cross-training matrix or chart. These visual management charts document the training progress, usually in a percent completed, pie chart or check-off type formats, and can alert management to stalled training, trainer problems, or can help identify unqualified trainees.

Cross-training also is a technique used to create a flexible workforce, which is an important component of process efficiency and Lean methodologies.

Methods Documentation

This step can be much more difficult

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depending upon worker personalities, a union presence, job security concerns, and the management style/history with the workforce.

The task is to document the job steps in such a way that the information can be used to train others or continue the work in the absence of any of the key employees who

have the tribal knowledge. This can be a combination of written steps, method descriptions, pictures, drawings, work instructions or videos, all of which are assembled in such a way as to be readily available and useful for someone else to use to accurately complete a task, make an assembly or operate a machine to produce a quality product.

Sometimes this can be done by simple observation, and the recording of the steps. However, if it were that easy you would probably not have the problem.

Usually it pertains to a complicated process that has to be explained and shown to the documenter, requiring frequent pauses for photos, sketching or note writing. The documentation process can slow or even temporarily stop production, so everyone must understand that this is a normal part of the documentation process and plan for it. It may require building inventory ahead or scheduling after hours or weekends to pull it off.

Management must always set the stage for the documenter by explaining the situation to the employees and asking for their cooperation. I then usually meet with the worker privately in a quiet office setting to explain what we will be doing together and what will be expected. Many times the documentation process will require frequent "offline" meetings with the worker where intricate details of the operation can be explained, discussed and documented without shop interferences.

After the initial review of the operation to be documented and workers' personalities have been assessed, a plan of attack will need to be developed for the collection and documentation of the needed information. This can be a trial-and-error process until the best method for doing this is found.

As the information is collected, it should be cleaned up and typed for clarity, with the appropriate drawings and photos added in. Once documented, the information should be reviewed and checked for accuracy and completeness by the workers. After the workers approve the documentation, I usually send it to supervisors or engineers who have knowledge of the operations and ask them to check the work as well.

Final Thoughts

This information, once compiled, can and should be incorporated into the orientation and training program for any new operators. It can help them come up to speed more quickly and can be used as reference and as reminder materials in the

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training process and beyond. It also can be used to help new supervisors, engineers or others become more familiar much quicker.

Sometimes the cross-training and the documentation process can be done simultaneously depending on many factors, but care must be taken so that one does not interfere with the other.

I find that in today's lean-staffing environment, many companies do not have the resources on hand that can take the necessary time out of their schedules to take on a project like this, which may take days or even weeks of dedicated time to complete. I would suggest exploring a few options, such as:

- **College interns or co-op students.**

Depending on the complexity of the work, you may find this to be a low-cost option. However, if the work requires special judgment, certain technical skills, or experience working with difficult shop workers or seasoned discernment, this may not be a good option. This can be a great option if you have simple projects, data collection or specific tasks that fall within a young person's ability. You may not want to blindly trust a co-op student to complete a difficult task without a great deal of oversight by someone.

- **Management trainee.** Sometimes companies will assign special projects such as this to newly hired, up-and-coming management employees as part of their management training and immersion process. This can be a good idea, as the trainee will have more at stake than a co-op student and may do a better job. However, the same cautions apply, unless your management trainee is already somewhat seasoned by having already worked in the industry.

- **Contract workers.** Most client companies that I deal with use professionals on a temporary or contract basis. This way they get immediate expertise that hits the ground running, there is minimal project supervision required by the company personnel, the costs may be

more predictable, and the quality of the work will be evident due to the years of experience they have under their belt. Then, once the project has been completed, they go away, along with their associated costs. This approach makes a lot of sense in many applications.

My recommendation to every company would be to assess their tribal knowledge exposures caused by having undocumented processes and then strive to eliminate those risks, in priority order, by extracting the knowledge from their workers' heads and organizing it into a readily available resource for access and use by others. **PRO**

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