

The question of material flow

A reflection on the job of management in promoting standardized work. Simple flow makes it easier to implement and manage Standardized Work.

When a manufacturing operation is solely managed from a financial point of view, then complexity of process and flow can develop. In other words, more and more equipment is being shared across different product lines and programs. Of course, the more parts produced on a machine, the easier to pay for it. But the cost in other areas can rise.

- ◆ First, the equipment is at risk of become more complex to support different models and work faster to support a higher volume. This, in itself, can raise the cost of the equipment and increase its acquisition lead-time (a whole other discussion in itself). Additionally, the maintenance cost of the equipment can be raised. Finally, the time lost during changeover from product to product can lower its utilization while raising inventory cost.
- ◆ Second, the flow of materials is likely to become more complex. Changeover time between products will force batch manufacturing. While one part is being made, the other ones must be stored to support demand. Product cycle time differences will imbalance capacity between processes and shifts. Work time differences have to be introduced. As a result materials cannot flow and temporary locations have to be found, priority re-evaluated and resources re-allocated constantly.

If the combination of complex equipment and complex flow makes it very difficult to develop standardized work, any sort of central planning system will also be difficult. This reinforces a culture of “free market” in the plant. In other words, the default management system becomes “let the workplace decide what is best.” There is no standardize work and each worker and department does the best he/she can. We quickly see individual efficiency develop at the expense of total efficiency. For example, people deciding on their own training, work during peak production hours stops, material handlers carrying a full warehouse of their carts and the production lines make their own schedule creating inventory shortages.

In our democratic societies, “free market,” as opposed to central planning, is proven more successful. This is because freedom is foremost important and that with freedom (democracy) comes a more complex society that is better left alone to decide for itself rather than being centrally managed. Creating a “simple” society would inevitably infringe on freedom.

But in a manufacturing plant where making a product to generate a profit, and not freedom, is most import, management should be looking to make process and flow simple so as to reach total efficiency through central planning. If the production line is left to decide on its own what schedule they want to run, the inventory in the pipeline to support demand against lead-time will no longer be correct. This will result in line stoppages and high cost. However, should the manufacturing plan be solely centrally planned? Of course not. We must empower people and constantly tap into the initiatives of the workforce. These initiatives however should be directed and people should be empowered with a well-defined scope. For instance, the extent to which an operational system should be centrally planned depends on its lead-time to the

customer. Ultimately, the customer is the driving force behind the organization of resources in the plant. But if the lead-time of an operation is within the lead-time of a customer then a sequential production system, or make-to-order system, will likely be more efficient. Although the mechanics of the system can be autonomous through the utilization of kanban for instance ... such systems require a high level of central planning and coordination.

In conclusion: The responsibility of management is to support simple flow, then promote standardized work. Only then can the current condition be grasped, and the path to kaizen identified to achieve higher quality, shorter lead-time and lower cost.