Digital Checklists in Manufacturing:

A game changer for any change management program

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In September of 2015, Check-6 began working with a large client with over 50 manufacturing plants worldwide. In 2014 this company began implementing a Lean transformation program across all of their plants which was designed to reduce waste and improve quality across the company. Recognizing the reality that approximately 70% of all change management systems fail or at a minimum are not sustained post-implementation, company leaders engaged Check-6 to help implement a closed-loop management system that focused on defining clear leadership actions that would drive procedural discipline, team behaviors, and ultimately create a culture that would sustain the gains made from their Lean transformation. Working closely with Check-6 coaches, the team generated improved processes which were codified into digital checklists, ensuring verifiable compliance and sustained gains.

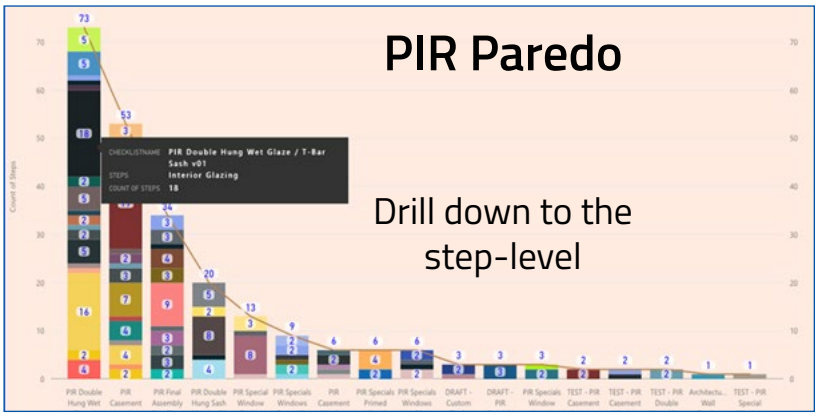
To determine how best to accomplish these objectives, Check-6 began implementing Checklist Ops™ with RIGOR™ in a six-plant pilot program. Checklist Ops with RIGOR is a closed-loop management system designed specifically to provide verifiable compliance of established procedures, increased reliability in processes, provide actionable operational feedback, and capture best practices from subject matter experts to standardize processes across the entire organization. After only a couple of months, the plants operating with checklists recognized substantial value in each of the following four areas.

Verifiable Compliance:

Improving **Accountability**, Identifying **Deviation**, and Improved **Quality**

Compliance with the company's Periodic Inspection Report (PIR) program at the completion of 2015 was as low as 10% in some departments. After two months implementing the Checklist Ops with RIGOR program, quality inspection compliance (PIR) increased to well over 90%. Additionally, leadership at the plants now have the ability to see which individual shops are complying at the highest rates and which ones are complying the least. Accordingly, they are also able to recognize top performers while providing mentoring to the individuals and shops that need it most.

The number of defects being discovered by the team members as a result of the improved compliance has also increased substantially. During the month of December 2015, only 10 defects were found during the PIRs conducted. In January 2016 they found 91 defects and in February they found in excess of 110. In addition to the increase in total defects discovered, the RIGOR application also provided the specific steps that are having the most defects (see graph below.) This ability to drill down to the step level provides tremendous granularity into the process and enables leadership to target very specific steps of a given process for improvement.



Compliance went from
10% to 90%
within 2 months

Process Reliability:

The ability to complete tasks correctly the first time, every time, substantially reduces the amount of rework necessary and improves customer satisfaction by reducing back orders and delivering products in the expected condition at the proper time. One site manager stated, "In the 25 years I've had been at this facility, I've never had a week that did not have at least one item Left On Dock (LOD)." When an item is left on the dock it requires someone to search the plant to find the missing item(s) and then to schedule a separate truck to hot-shot the missing item(s) to their waiting customer. Through use of the RIGOR Shipping Checklist the plant achieved its first week ever without a single item left on the dock and they have been able to repeat this success consistently.

At another plant the client was experiencing approximately 30 errors per month in shipments to their most important customer. Two months after implementing the Shipping Checklist, they reduced those errors by 75%. Their customer even contacted them to express their satisfaction with this improvement.

Operational Insight:

Every Lean initiative is aimed at ***eliminating waste***, often times getting at the root cause of given problem can prove very difficult. In fact, many companies spend a great deal of time and effort trying to fix the wrong problems, yet do not achieve the results they are looking for. At one plant, the time to load trucks and ship product was becoming a problem. Despite their best efforts they could not reduce their average time to load the trucks and back orders were driving up costs. Because the RIGOR application has the ability to capture discreet time and causal factor data, the plant was able to discover and correct the causes for non-productive time and deliver complete orders on time and with large cost savings.

By reviewing the data, they found that 57% of the time trucks were idle and waiting for product to arrive at the shipping dock. Additionally, 83% of the time waste was due to a specific product. They initiated problem solving and root cause analysis activities **(PDCA)** which led to the implementation of a One-Piece flow model (Order by Order) so that product was manufactured in sequence of truck. As a result they reduced truck loading time by 25% (From 4.25 hr to 3.25 hr), reduced wait times by 43%, and ultimately reduced backorders by 44%. An estimated annual savings of over $125,000!

Reduced Loading Time by	Reduced Wait Times by	Reduced Backorders by
25%	43%	44%

Best Practice Capture:

Another plant was having serious problems with the start-up times on some of its lines. Following each weekend, start-up times required 1 hour of unplanned downtime every Monday morning. To determine root cause, they executed the start-up checklist and analyzed the resulting data with their line leads and operators. During a brief brainstorming session, they quickly recognized that the condition in which the machine was left the previous Friday was causing multiple delays getting the line running on Monday. Accordingly, they developed a 2nd shift shutdown checklist to be run on Friday afternoons that included proper cleaning of equipment and the draining of air lines. The result was they were able to reduce the start-up time from 1 hour to 6 minutes. They calculated the value of this one checklist as follows: 3 product lines, totaling 27 workers at $661.50 labor per week resulted in $33,075 annual savings in wasted labor cost and increased capacity by 102 units per week. They have since replicated this best practice to the other production lines in the plant and the company is planning to transfer this best practice to all similar plants.

ONE CHECKLIST = $33,075 in Annual Savings

Conclusion:

Checklist Ops with RIGOR is having a substantial impact in the plants where it's been implemented. Numerous comments from the people in the plants provide testimony to the positive impact it is having. Checklist Ops with RIGOR requires a strong commitment from leadership to be fully effective. It is clear that it provides a strong compliment to any change management system and can have a substantial impact on ensuring lasting results for any company that implements it.

"Meaningful data for Pareto and trends. This is going to allow us to find trends and fix problem areas."
- Plant Manager

"We would not have even known that this problem even existed in first place if not for the checklist data".
- Production Manager

"Checklist Ops with RIGOR allow us to gather data easier and be able to drill down instead of walking around with a binder and ticking off papers that just go in a file or box."
- Assistant Plant Manager

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