COVID-19 - the Catalyst to Enhanced Performance
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The global pandemic has turned our worlds upside-down. Everything from dining out to educating our children to running our businesses has changed. In the investment casting industry, some businesses have been thriving, while others have struggled to stay afloat. Regardless of the impact, we have all been forced to change the way we do things.

In an effort to minimize the spread of this virus, social distancing in the workplace has become the norm. While this is easily accomplished in some organizations, from a manufacturing perspective, it has presented some challenges, including training employees, safeguarding processes, guaranteeing consistent quality, and ensuring consistent communication between operators and departments.

But, as we know, challenges lead to opportunities. This paper will cover how to leverage the effects of this virus to ensure your company is poised for exponential growth.   This includes a number of best practices in addition to new tools to help engineers, supervisors, and managers create an effective process for managing product quality and output remotely or with minimal interaction among the operators and the management team as a whole.

Caring for the Individual
In the first quarter of 2020, COVID-19 was an increasingly popular topic of conversation. In early March, the Investment Casting Institute (ICI) wrestled with whether to hold its annual Process Control Class. One thing was certain, if the class had been scheduled for one week later, it would have been cancelled. By mid-March, schools were closing and parents were scrambling to figure out how to balance work and remote learning for their children. Businesses were putting plans in place to protect their employees, the supply chain, and their customers. By the end of March, companies across the country were shuttered as some states issued Shelter in Place orders. Fortunately, most investment casting foundries were considered essential businesses and remained open. However, this required yet more planning to ensure employee safety as COVID-19 response plans had to be developed and implemented.

Implementing these changes was critical, but the impact they've had on individual employees may have been overlooked. While the phrase "social distance" is widely used, the more accurate phase is "physical distance." Humans are social people, and forcing people to physically separate from each other added a lot of stress.

According to a Gallop poll, one of the keys that keeps employees engaged is having friends at work. So, when employees were forced to maintain distance, even during breaks, the outcome was increased stress in the workplace. For example, one foundry had a near-miss with a COVID outbreak because two employees were sharing lunch and one family member ended up with COVID symptoms.

Remote learning was another challenge for employees with children. Neither schools nor parents were prepared for the difficulties this caused. In a typical example, one manager was forced to

stay home with his children and try to work from home. This meant juggling the demands of his manager position with the responsibility of keeping his children engaged in their school work.

One former educator-turned-business owner had some great advice: Draw a box for your children (figurative not literal). Depending on their age, the box will be bigger or smaller. But let them stay in that box. They don't need constant supervision, though it's best to keep at least one eye on the younger kids. This business owner put his kids on a schedule, so every morning they knew what they would be doing all day. The kids had a stopwatch so they knew how much time they had for each activity.

While this may work for some people working from home, there were plenty of employees who had to go to work and then come home and oversee their children's schoolwork. The result of this was exhausted and overworked parents/employees who were being torn in different directions.

As a manager, taking time for yourself is critical. One CEO reported working 100 hours per week as he developed and implemented his COVID response plan. Nearly every CEO/president/owner I spoke with said this was the most stressful time of their careers. They were balancing the safety of their employees, the safety of their customers, and the safety of their families, while being concerned about the viability of their businesses. Another CEO shared, "I've realized I won't be taking any time off for the balance of the year."

"Put your mask on before assisting others with their mask." Although this phrase typically applies to the loss of cabin pressure, it is also true during periods of stress. Ensure that everyone, including managers, is caring for themselves, because burned-out, overworked employees may not be able to sustain the stress over the long haul. When stress is on the rise, double down on the importance of diet, exercise, and sleep.

Understanding that this is a stressful time, it is important that every manager, president, or CEO schedule some clarity breaks on a daily, weekly, or monthly basis. These clarity breaks allow the manager to stop working in the business and start working on the business. This allows a view of the business from above the trees. These breaks can help establish priorities, look for ways to be more proactive and less reactive, and think about where the business is going. Schedule this time in your calendar and honor that time[1].

The next section explores how effective communication can be a powerful tool for strengthening an organization.

Strengthening Communication
"Communication works for those who work at it." John Powell

Effective management requires the ability to pull oneself out of the weeds and look at the needs of the organization. It requires calm in the midst of the storm. And this calm requires an immense amount of discipline and self-control.

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[1] See this link for more information on Clarity Breaks: https://www.eosworldwide.com/eos-tools

This became especially important when COVID first began to impact daily lives – both at home and at work. During this initial period, owners, CEOs, and managers were struggling to stay ahead of what needed to be done to protect employees, customers, and businesses. And in the midst of this was a lot of stress for the organization.

As organizations developed new ways of operating, communication was required to make sure everyone had the same information. This means ensuring there is a clear communication path from the CEO through the leadership team to the teams and ultimately to the individual.

The most successful businesses provided a common focus. Even in the midst of a crisis, a team will rally behind a common focus, if they can see it. If the vision is clear, and the employees know where and how they fit into the vision, they will be able to support it and embrace it. One manager shared, "I'm not looking for buy-in, I'm looking for ownership." If they can't see it, they won't own it.

Change can be difficult for many people, and helping them work through the discomfort is important. Many employees feared they would lose their job when the pandemic started. And unfortunately, many did. But operating from a place of fear leads to declining performance, reduced decision-making ability, and in some cases, irrational behavior. Leaders need to provide a vision for their employees to get behind, so they can see how the company will weather the storm. This communication needs to be open, honest, and consistent.

During a period of crisis, the temptation is to throw the existing processes aside and move to reactionary mode. But it isn't realistic to reduce chaos by adding more chaos. Instead, leadership should double down on the processes that are currently in place and focus on what has been successful in the past. A time of crisis is not the right time to develop new processes.

As stress increases, tension amongst members of the leadership team may also increase. In order to remain focused on the success of an organization, it's important to address conflict. During periods of tranquility, it may be possible to avoid this; but keeping the team on the same page during stressful periods requires open, honest dialogue to resolve any conflict that arises. After all, avoiding these conversations won't make the conflict go away, and it will likely manifest itself in other ways.

With the leadership team on the same page, the focus can move toward communication with the rest of the organization. Spend time discussing what should be shared, how it should be shared, and who will handle it. Misinformation or late information can impact the employees and their performance. Even if there is still a lot of unknown, employees want to know what the leadership team is working on.

There are a number of different ways to communicate, including the following:
- All-Hands. This meeting format can be very effective in that everyone hears the same message at the same time. But they can also be expensive, and logistics can be difficult for multi-shift operations.

- Communication chain. Another approach is for the leadership team to share the information with their teams directly or with their direct reports and have them share it down the chain.
- One on One. This type of communication can place a time burden on the manager but it does provide the opportunity to hear directly how each employee is faring and learn what kind of support is needed.
- Bottom Up. Another method is for the front-line supervisors to gather questions directly from the employees and share those with the leadership team. Answers to those questions can be developed and shared with the entire organization, either by the manager, the leadership team, or HR.

A company's communication strategy is as personal as its culture. One company prefers Instagram communication while another prefers typed memos. Use the avenue that would most resonate with your employees.

The appropriate level of communication will vary from company to company, but some things to keep in mind include:
- Is there anything new to communicate?
- What is the impact to the team if not shared immediately?
- Will the employees hear this from someone else if not shared now?
- How critical is it to have all the information prior to sharing?

Once COVID hit, Zoom became the platform of choice. During the initial eight weeks, there were enough webinars scheduled that one could spend 40 hours watching them and still be behind. After the first month, people learned how to use the technology, and video conferencing became the norm.

One CEO remarked that his entire management team was on their call every morning at 9AM. Everyone knew what they needed to discuss, and the meeting ended promptly at 9:30 AM. Prior to COVID, he said, it was never that efficient.

Most people would agree that meeting in person is preferable if you're hoping to connect with individuals, but from a time standpoint, video conferencing is much more effective. As Steve Van Valin states in his video "Zoom Gloom"[2], video conferencing makes it difficult to develop rapport with others. Van Valin goes on to provide some tips on how to develop a greater rapport as a team.[3]

A number of articles have been written on effective video conferencing practices, but Seth Godin's[4] is especially helpful. His tips include always be on mute except when talking, don't eat during a meeting, and sit close to the screen. If the goal is to improve engagement, ensure that everyone has their camera on. Without that, it is much easier for people to disengage from the conversation and the group.

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[2] "Zoom Gloom", https://vimeo.com/437308988.
[3] Send email to steve@culturologyusa.com to get a copy of the Virtual Team Player Playbook
[4] https://seths.blog/zoom/

In times when frequency or duration of direct communication is reduced, it is critical that each employee understand the core values of the organization, their role and the specific goals that they need to complete within a specified duration. Utilizing a tool like the 5-5-5[5] can help provide clarity and direction. Another key to connecting an individual to the organization is ensuring that each employee has a metric to measure performance.

In the following section, the value of a scorecard will be discussed.

Keeping Score
"Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it."
– H. James Harrington

Nearly every business has some goals. Typically, they are around revenue, quality, and safety. Having goals and metrics that permeate all aspects of the organization is key to improving and sustaining performance. Gino Wickman, in the book Traction, outlines eight reasons everyone should have a measurable number, including accountability, teamwork, and a little healthy competition.

A manager at a mid-sized investment casting foundry shared they have 30 pages of metrics that they review on a monthly basis. Imagine the amount of time it takes to compile that data, review it, and decide what action needs to be taken to address the issues. The adage "If everything is a priority, then nothing is a priority" may be applicable.

One of the challenges of the investment casting process is that there are a number of processes within the greater process, and each of those processes are subject to variation. In the ICI Process Control class, 117 variables are identified within the overall process. While it may be possible to control all the variables, that may be cost-prohibitive. A more effective approach would be to identify and control the key input variables.

When selecting which variables to control, it is important to understand the difference between leading and lagging indicators. Lagging indicators are typically output-related measurements, which are easy to measure but hard to improve or influence. That would include revenue, recordable accidents, or even first pass yield. On the other hand, leading indicators are typically input-related, hard to measure and easy to influence. Another way to think about leading indicators is they often involve activities undertaken by an employee. This may include PMs completed, number of molds patched, or temperature adjustments made to a wax press.

Another powerful tool for improving performance is assigning a metric to each employee. This can help the employee understand her contribution to the achievement of the overall company goals.

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[5] See this link for more information on the 5-5-5 tool: https://www.eosworldwide.com/eos-tools

During a recent visit to a foundry, each department had metrics posted and tracked. For the foundry, the goal was to pour 54 molds per day. The challenge was that the employees didn't understand what they specifically needed to do impact this goal; they claimed the number was largely impacted by mold size and number of heats. Through a departmental meeting, the employees agreed that completion of their daily audit checklists would help uncover specific issues within the department and allow them to take action before impacting throughput.

The other advantage of everyone having a metric is that it is much easier to identify a performance or skill issue. The following section discusses how to address identified skill gaps.

Skills Matrix

The lack of skilled workers is a common issue among investment castings foundries. Many managers lament being unable to find people who want to do the jobs within the foundry and who can show up on-time every day. In some instances, business owners have shared that they have scaled back growth due to the lack of available labor. The other challenge is the amount of time required to train an employee.

The first step in addressing this issue is understanding the organization's training priorities. This can be done by using some type of evaluation system for each employee in each position within the plant.

In the ICI PC class, students are taught about a skills matrix. This matrix breaks skills into 4 levels.

> Level 1: Training has begun but employee can't be left alone on the job
> Level 2: The employee <u>can</u> be left alone on the job but may be too slow to work entirely alone
> Level 3: The employee can be left alone on the job with only normal and customary supervision
> Level 4: The employee knows the process or task and can train the skill or task

Utilizing this type of evaluation, the following sample matrix can be populated.

Name	Heat weighup	Loader	Puller	Pourer	Melter
Bill	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3
Fred	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3
Jack	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3
Joe	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3	1 2 / 4 3

Once this is complete, the manager(s) can establish a goal for the number of 3s and 4s desired for each position. From that goal, priority for training can be established.

During World War II, there was a shortage of skilled and trained workers at a time when the demand on manufacturing was very high. As a result, the process called Training Within Industry was developed to quickly and efficiently train operators.

There are four programs that make up Training Within Industry:
1. Program Development – how to solve production problems that are unique to a particular organization
2. Job Relations – an analytical method for addressing personnel issues
3. Job Methods – a methodology that employees use to make their job easier
4. Job Instruction – this component teaches trainers how to train

Program Development
The last program created in Training Within Industry is Program Development, which is defined as "how to address a production problem through training." The program includes defining the production problem, developing a specific plan, putting the plan into action and then checking to ensure the action has the desired results.

When defining the problem, it is helpful to gather evidence and underlying causes for the specific issue. This data can help determine if you have a training issue or perhaps a different production issue. All too often the problem isn't fully defined before implementing a quick fix, resulting in a nagging organization issue.

Using a troubleshooting tool such as the Issues Solving Track[6] can assist in identifying the true root cause of the problem and taking steps to solve it forever.

Job Relations
Dealing with conflict is an important part of a healthy work environment. And making sure people have the skills to resolve those issues is so important that Job Relations Training is included as one of the four programs. Donald Dinero in his book Training Within Industry said Job Relations Training "gives supervisors an easy method to use on a daily basis to inform their decisions and make their jobs easier."

For most employees everything at work has changed, including the layout of their work areas, break and lunch schedules, and in some cases, there's been a reduction in the interaction with supervisors and managers. This can result in additional team tension that may be hard to detect until it reaches the breaking point.

It is critical to have a process for resolving tension between employees. If you find that two individuals are struggling to get along, getting involved early is key. Get the individuals in a room and start an open, honest dialogue.
- One technique that is helpful is having each person list three strengths of the other person, then three weaknesses. In order to do this effectively, the person receiving the feedback needs to listen and, if necessary, ask clarifying questions, but can't argue with the feedback.
- When it comes time to solve the issue, focus on the problem, not the individual. If you stay focused on the issue and the root cause, 95% of the time, the issue will be solved.

It can be difficult to take an unemotional approach to a situation when emotions are involved. However, being effective in a supervisory role requires the ability to look beyond emotions and focus on what is best for the organization. The importance of a supervisor is often overlooked, but he or she probably has one of the most difficult positions within a manufacturing plant.

It is the supervisor's responsibility to produce consistent results in order to meet business objectives. But they are also responsible for addressing the day-to-day concerns of hourly employees. The supervisor may be pulled in both directions when, at times, these two groups are perceived to be diametrically opposed. The supervisor is expected to be calm under pressure, patient, demanding, understanding, unyielding, etc.

Take a look at the organization through the supervisor's glasses. Do they have the skills they need in order to keep your organization moving in the direction you want it to move? What support do they need to handle additional stressors in the workplace, including fear of getting sick, managing the team from a distance, and achieving production goals?

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[6] See this link for more information on the Issues Solving Track: https://www.eosworldwide.com/eos-tools

Job Methods

The Job Methods program was developed to teach employees to understand and improve their work and to sell their improvement ideas to their supervisors, peers, and upper management. The goal is to give plant personnel the tools they need in order to produce more products in less time with the same level of quality while utilizing the available resources.

In the age of COVID, employees are working farther from their peers and supervisors. This distance may create the temptation to create a personalized "best way," which may deviate from established best practices. In order to prevent this from happening, it is critical to provide a clearly defined process for making improvements to an established process.

The Job Method process includes:
1. State the organizational goals and how improving the process of how things are done will help achieve those goals. Make sure these goals are congruent with the workforce goals, i.e., increased profitability.
2. Give employees the freedom to question how things are done. Don't allow the phrase "but we have always done it that way" to be used. Perhaps set up a friendly fine for the person who expresses that sentiment.
3. When looking at ways to improve a process, utilize a Job Methods Breakdown sheet in order to capture all the steps in the process and then question every step. Ask Why? What? Where? When? Who? How? as you work through each of the steps.
4. Provide employees a method for making suggestions for process improvements. I have often heard employees say that they have made suggestions but no one ever accepts them. However, in order for a process improvement idea to be made, it needs to be well thought out and presented in a setting where constructive feedback can be made and received.
5. Make sure employees receive recognition for their ideas. The more recognition they receive, the more ideas they will generate.
6. Regularly schedule process-review discussions to help employees realize that changes can be made to a process, but they must be discussed and approved by the team.

Employee involvement in continuous improvement activities is an important key to the success of manufacturing companies. But without the proper training and support, employees may end up feeling disconnected from these activities. Effective communication, robust training, and an open and supportive workplace will go a long way toward achieving your productivity goals.

Job Instruction

Job Instruction breaks training into the following steps:
1. Prepare the Operator. People tend to be nervous before learning something new and this can impact the learning process. So, try to relax the operator while learning more about him, including any relevant experience. You also want to explain why what they are learning is important and how this task relates to the overall manufacturing process.
2. Present the Operation. Explain each of the steps in the operation, identifying key points along with the reasons for each step. Describing each step while the operator watches will help the operator learn much faster as using more senses during learning will increase the retention rate and speed.

3. Perform the Operation. Once the operator has seen the steps performed and had the key points and reasons explained, it's time to try it himself. As the operator works through the steps, have him explain the key points and reasons for each step. Be patient as the operator walks through each of the steps, taking the time to check for understanding by asking questions.
4. Follow-Up. Once you feel the operator has a good understanding of the process, you can leave him alone. But make sure you check back with him periodically (more frequently initially) to ensure the steps are being followed and he doesn't have any questions.

This is a fairly straightforward process, but it is also very time-consuming and more complex given the need to maintain a six-foot social distance. Fortunately, there are some new technologies that can aid in this step.

Virtual reality provides a computer-generated version of reality. Augmented reality, however, supplements only a portion of the environment and coexists with the real world. It augments the visual field of the user with information needed to complete the current task.

The options for using augmented reality include the following:
- Onboarding/new employee training
- Equipment/machinery training
- Job aides
- Interactive learning tools

Augmented reality training can include images, videos, animations, and sound. This video[7] shows how it can be applied in a manufacturing-type setting.

Even if a foundry isn't ready for this level of technology, there are other possibilities to improve the way an operator learns how to do a task. For example, Zetronix[8] sells eyeglasses with a built-in camera and microphone that can capture how to complete a task from the perspective of the worker, not an observer.

Another option is interactive PDFs. These can impact the experience the operator has as he works through the training documents. It is possible to add key points, videos, links, and animation in order to assist in learning the material and highlight the pertinent information.

Conclusion
As our daily in-person interactions are reduced, the need for leadership increases. Caring for employees and their mental health is fundamental to creating a productive environment. Being intentional about communication will assist employees in feeling connected to the company. By using a scorecard, the entire organization can be clear about its goals and how individual contributions will assist in reaching those goals. Utilizing the newest technology can improve the way operators are trained.

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[7] https://www.youtube.com/watch?time_continue=289&v=2eSlMSJ65Kc&feature=emb_logo
[8] https://www.zetronix.com/kestrel-hidden-camera-hd-video-recording-glasses-with-finger-touch-technology.html?gclid=EAIaIQobChMI7tqlhtm-6wIV4R6tBh2VkApDEAQYAiABEgIso_D_BwE

Focusing on these areas will position an organization for success, now and in the future.