The Manager's Guide to

IMPROVING OEE IN YOUR INDUSTRIAL FACILITY

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Improve OEE in Your Facility

Learn the Secrets to Reducing Unscheduled Downtime & Improving Overall Equipment Effectiveness in Your Plant.

There are many contributing factors to improving overall equipment effectiveness in industrial facilities.

In order to get the most bang for your buck, you need to understand exactly what impacts OEE, what is negatively impacting your OEE and then best practices for resolving unscheduled downtime.

Chapter One

WHAT IS YOUR OEE?

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Begin by Calculating Your OEE to have a Base Starting Point by which to Improve Your Factory's OEE.

Without measuring OEE, it's hard to know just how efficient your factory is. Further, you will never know how efficient you could be. Therefore, in order to improve your production OEE, you have to first calculate it.

Overall equipment effectiveness is calculated by multiplying availability percentage by performance percentage by quality percentage (Availability x Performance x Quality). Availability, performance and quality are the three areas where industrial plants experience the most productivity losses.

Performance, Quality & Availability

Performance indicates how productivity is impacted by slow cycles. If the production process is moving slower than usual and is not at the optimum speed, performance is lost. Quality is compromised if subpar products are being produced.

In other words, if the machinery isn't running efficiently enough to deliver high quality products, the quality of what the plant produces will suffer. If production is disrupted for any period of time due to machinery malfunction or employee error, availability suffers.

Your availability can be calculated by dividing the actual production time by the planned production time. Keep in mind, worldwide studies suggest that the average OEE in industrial plants is 60 percent, but a world class OEE is considered 85 percent or higher.

Chapter Two

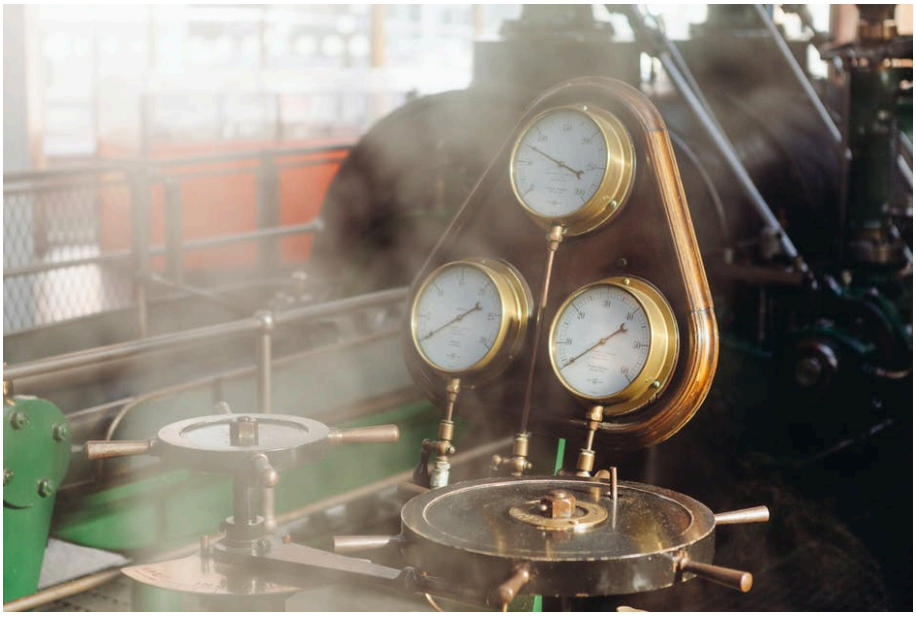
What Impacts Performance, Quality & Availability?

What Impacts Performance, Quality & Availability?

If your machinery performance is not operating at its optimum level, it's because you're not conducting regular tune-ups. If your availability is suffering, it may be due to unscheduled downtime.

If your quality is lacking, it could be because you're producing product faster to compensate for unscheduled downtime, or it could be because your machinery can't produce the high quality product you need because of defective parts.

Luckily, by following steps to eliminate unscheduled downtime and to maintain your machinery so it runs longer, you can improve your plant's OEE!



Step #1

Planned Downtime & Regular Preventative Maintenance

Lack of regular preventive maintenance takes a big toll on machinery and eventually will cause unplanned disruptions, which will negatively impact your OEE. However, by scheduling routine maintenance during planned downtime, you'll be able to ensure any unexpected problems (that could cause unscheduled downtime) are nipped from the start.

It's best to implement a maintenance strategy, and to schedule regular tests and inspections in advance for when there is planned downtime in your industrial facility.

Planned downtime is any time that there was no intent of having the plant open for production, such as scheduled breaks or holidays.

Step #2

Analyze Downtime Data to Discover Trends

Step #2: Analyze Downtime Data to Discover Trends

There's no way to prevent unplanned downtime when you have no idea why or when it's happening. Each time your plant is disrupted by poor performance, low quality product or unscheduled downtime, it needs to be notated, either manually or via a manufacturing execution system (MES software). Remember, what you don't know can inevitably hurt you!

As the data compiles, you'll then be able to search for trends in the production process and the machinery itself. Analyzing OEE and downtime data is all about making the right comparisons.

Do certain machines run better than others? Are you finding that select brands of replacement parts are more effective than others? Are the parts being lubricated properly? Are there machine operators having trouble keeping up with quota compared to other team members? Perhaps the materials on particular production lines cause more downtime than others.

Each comparison you make and each analysis you come to will lead you one step closer to finding any underlying issues and resolving problems that have been affecting your overall equipment effectiveness.

Step #3

Know & Better Your Key Players

Step #3: Know & Better Your Key Players

There are three main positions that effect downtime: line operators, maintenance technicians and production supervisors.

Line operators work directly with the machinery and have a direct impact on how those machines are used and maintained daily. A good line operator can see problems coming before they arise, but a bad operator would be unobservant and wouldn't report problems immediately.

Maintenance technicians are responsible for the scheduling and implementation of the machines on the plant floor. An experienced maintenance tech would be proactive with preventative maintenance, but a less experienced maintenance tech might be reactive by fixing problems as they happen.

Production supervisors are in charge of the entire production process and have to resolve any issues that could cause downtime immediately. A great production supervisor will prioritize all issues and delegate less important responsibilities, but an inexperienced supervisor would jump around from issue to issue.

It's important for your entire staff to be working toward the common goal of improving your OEE, and these three roles are going to be your key players.

Schedule workshops for specific roles to ensure each team member is trained properly. Conduct regular evaluations to acknowledge great performance and to offer additional guidance. Offer tangible incentives to motivate your team to push for your OEE goals.

Step #4

Implement a Thin Film Coating to Enhance Machine Performance & Longevity

Step #4: Implement a Thin Film Coating to Enhance Machine Performance & Longevity

Coating your machinery in diamond-like carbon, or DLC, is another way to enhance performance and lengthen the lifespan of your machinery, improving your OEE.

DLCs are highly wear resistant, and have high hardness and high lubricity qualities. DLC has hardness of 2,800 to 3,800 Vickers, reduces friction by 50 percent with no lubrication as compared to bare metal, and provides extreme corrosion resistance.

Key Film Property	Comments
High Hardness	Excellent for High Wear Applications
Low Coefficient of Friction	Reduction in Load Conditions & Wear
Flexibility	Not Brittle & will not Flake Off Due to High Cycle Fatigue
Conformal to Substrate	Ability to Coat Intricate Shapes without Buildup in Corners
Minimal Thickness	Typically 2 to 4 Microns & does not Change the Substrate Finish

DLC is an amorphous matrix of nano-crystalline diamond and nano-crystalline silicon carbide and it's applied to a substrate via a proprietary plasma-assisted chemical vapor deposition process. The qualities of DLCs can only be surpassed by pure diamond.

By applying DLC to machine parts that constantly need to be lubricated and/or to parts that experience consistent corrosion, you can enhance the performance of your industrial machinery bettering your OEE.

Industrial Hard Carbon: Your DLC Resource

In order to better your plant's OEE, you first need to accurately measure your performance, quality and availability. Next, you need to look internally in your business to begin assessing and evaluating your unscheduled downtime. Then, follow the steps above to combat the issues.

When it comes to coating your machine parts in DLC, Industrial Hard Carbon's diamond-like carbon coating has a long history of succeeding where other thin films on the market fail. Contact IHC to discover how its DLCs can enhance your facility's OEE today.

CONTACT US