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Total Productive Maintenance — TPM

Part 3: Develop Autonomous Maintenance

by Operators.

by Roger A.P. Fielding, BENCHMARKS

The five S's: seiri, seiton, seiso, seiketsu, shitsuke—which translate into: organization, tidiness, purity, cleanliness and discipline—are the basic principles of Japanese operations management. And, although most modern plants apply some of these principles, all too often their application is cosmetic—for appearances only. Autonomous maintenance by operators is a unique feature of TPM. And, because most operators and maintenance personnel have been brought up in an environment of: "I operate. You fix it," this central pillar of TPM can take years to implement.

Cleaning is the first step of any effective maintenance program. Like everyone else, operators and maintenance people don't like to get dirty and don't fix what they can't see. Initial cleaning by operators, management and maintenance staff, working

as a team, teaches that routine cleaning can be very rewarding. Routine cleaning results in identifying and eliminating the causes of dust, dirt and chips. And limits their scatter and their sticking to machine parts.

Each work crew cleans and improves their own work area. Maintenance personnel co-operate and support their efforts. But, the following conversation between an American manager and his Japanese counterpart during a visit to Japan is most revealing:

A: "How do you keep the presses as clean as this?"

J: "The press crew cleans them."

A: "What happens when you get busy?"

J: "I clean them."

Starting by eliminating as much dust and dirt as possible, thereby making cleaning more efficient, the operators are shown how to

lubricate and make minor adjustments to the machinery. Lubrication, inspection and adjustments go hand in hand. Lubricating bearings and sliding ways,



Implementing TPM

- Eliminate the six big losses to improve equipment effectiveness.
- Develop autonomous maintenance by operators.
- Schedule maintenance.
- Train operators and maintenance personnel.
- Manage equipment purchases.

tightening nuts and bolts, and adjusting couplings and rollers prevents further deterioration of the machines. Inspection reveals where more complete maintenance or repair is necessary to restore machinery to its original condition. Familiarity breeds understanding! Having machine operators responsible for lubrication, inspection and minor maintenance and repair of their equipment is also the first step to establishing a multi-skilled workforce.

The initial cleaning, to eliminate dust and dirt on the surfaces of equipment is accompanied by lubricating and tightening. By

Lawrence R. Difatta
President of Granco Clark



For eight consecutive columns, I have attempted to make the case as to why Granco Clark should be strongly considered for all your extrusion related equipment needs. While doing so, I have identified and promoted our strengths, illustrated how we are differentiated from the competition and made the point that our commitment to service and support is second to none. Perhaps more of the same would appear to be self-serving, and I suppose it is. However, there are initiatives at Granco Clark that our customers should know about.

As mentioned in a previous column, Granco Clark sought, and has now received, ISO-9001 certification. We are proud of that accomplishment for many reasons, but especially because it was achieved as a result of our desire to improve our operation. It was not the result of customer demands or market pressure. While we are pleased about this achievement, we recognize that it is only as meaningful as we make it, as measured by customer satisfaction with our performance. We also believe that this credential distinguishes us as the first and only extrusion equipment manufacturer to have earned this certification.

In another development designed to serve our customers, Granco Clark is transitioning from traditional AutoCAD to next generation engineering software known as solid modeling software. The expected benefits will include greater accuracy and increased throughput. Engineering time requirements on a project often can approximate shop build time. This is a disadvantage in serving our customers and an area we fully expect to improve, with the result being shorter lead time and the ability to consistently out-deliver our competition.

The final element that enables Granco Clark to better serve customers is our plant expansion, planned for completion by September, 2000. The addition of 20,000 sq. ft. to our existing facility will provide a 40 percent increase in manufacturing space. When combined with more powerful software, the additional manufacturing capability will position the company to achieve its goal of providing equipment for customers at lead times previously unknown in this industry.

In the final analysis, it's only about who can get the job done in a cost effective and expeditious manner. Our customers will decide that individually, but I believe these developments make the choice much clearer.

New Equipment Installations

— North America —

Alumnitec

Hot Springs, Arkansas

Alumnitec recently honored Granco Clark with orders for two partial handling systems for the Hot Springs, Arkansas Plant. These new systems will give Alumnitec the ability to automatically batch extrusions for the saw gauging system. The batch widths are much larger than before and will vastly improve the productive throughput in a traditionally troublesome area of the extruding operation. When asked why Granco Clark was selected to supply their new partial system, Alumnitec President David Harrington responded, "Granco Clark has a reputation for service, and they displayed a willingness to provide for our specific needs."

The new partial systems will also give Alumnitec the latest in saw gauging technology. The drop down arbor saw system, with its automatic blade height adjustment, will assure Alumnitec the highest quality of cuts. The "go to position" length stop can be depended on to provide an accurate preset cut position each and every time.

Can Art Aluminum Extrusions, Inc.

Lakeshore, Ontario

Can Art recently initiated yet another Granco Clark automated extrusion line. The new equipment features the "double puller" (performs hand off and cuts on the fly), belt technology, one-man/no-man stretcher, wide saw feed conveyor and auto saw gauging



system. Can Art is again depending on Granco Clark, as they have in the past, to provide them the quality equipment that will get them up and producing extrusions quickly.

Hydro Automotive Structures

Holland, Michigan

Granco Clark is supplying a new billet heating furnace to Hydro Automotive Structures. It is replacing a Granco Clark billet heater supplied more than twenty years ago.

The new billet heater will increase capacity to more than 7,000 pounds of 8-inch billet per hour. The new billet heater will also provide Hydro Automotive Structures with significant improvements in maintaining temperature accuracy and reliability.

Setting the Standard

Granco Clark Achieves ISO-9001 Certification

The Earl of Chesterfield was speaking to the issue of standards when he wrote, "Whatever is worth doing at all, is worth doing well." Today's International Organization for Standardization (ISO) embodies these sentiments, and would likely expand on Chesterfield's words by adding "all the time...every time."

Standardization is required in this global economy to avoid technical barriers to trade and ensure a consistent level of quality for a broad range of technological fields. In order to achieve this, ISO has developed a multitude of standardization models.

ISO-9001 is an international quality assurance model that applies to organizations designing, developing, producing, installing, and servicing products. Of the models encompassed in the 9000 series, 9001 has the most stringent requirements for certification—20 sets of criteria, all designed to standardize operating practices and ultimately increase the reliability and effectiveness of goods and services produced. Although many other industrial manufacturing companies have been designated ISO-9001 compliant, Granco Clark is currently the only company in its field that has successfully completed this rigorous process.

ISO-9001 certification can occur only after all systems within a company are evaluated to ensure that products, materials, services, procedures and people measure up to the specifications. Jim Reed, Quality Manager at Granco Clark explains, "There is now a system, and many, many subsystems, for absolutely every step in our operation, from gathering detailed information on customer requirements to final installation, training and service. ISO eliminates oral tradition, which can produce inconsistent results and cause disruptions when there are changes in personnel."

Achieving this level of standardization is meticulous and time consuming. Granco Clark was involved in the auditing

"At Granco Clark, getting and keeping ISO-9001 is a shared responsibility for continuous improvement."

— Jim Reed,
Granco Clark Quality Manager

process for one year, during which time all of the company's operating procedures were subject to detailed review and mandates for improvement. The end result is a consistent framework for quality assurance, ensuring that business will be conducted in a uniform manner at all times.

Granco Clark President Larry Difatta comments, "Although the process of achieving ISO-9001 certification has been long and complicated, I believe that it places Granco Clark on a new level. Our operations have now been thoroughly reviewed to ensure that we



are operating on a consistent, high-quality level throughout our organization. I believe this places us a step ahead of the rest." ●

Shape Your Future

What enables a business to act, rather than react?

Information Motivation Enthusiasm Vision

For the aluminum extrusion industry, all of these elements are in the mix at ET, the world-class conference showcasing cutting-edge extrusion technology.

ET2000, the Seventh International Aluminum Extrusion Technology Seminar and Exposition, will take place May 16 through 19 at the Hyatt Regency Chicago. ET only occurs every four years, so you won't want to miss it! If you haven't already made plans to attend, there is still time.

The theme of this year's conference is "Shaping the Future," and it's your chance to gather information on latest innovations and applications in extrusion technology. You will find discussions of the industry's current state, projections of its future direction,

and, not least of all, opportunity to network with your colleagues.

The industry's leading suppliers will be accessible at the ET EXPO, a collection of approximately 100 exhibitors displaying their latest and greatest. You won't be able to miss Granco Clark's booth #328. This large island display will take your breath away as soon as you enter the show floor. The booth will feature a state-of-the-art video presentation including footage and photos of Granco Clark extrusion systems currently in use around the world. Granco Clark professionals will be on hand, eager to answer your questions.

Be there, and let ET2000 arm you with information that will help you succeed as you venture into the future of aluminum extrusion.

What: ET2000

Where: Hyatt Regency Chicago

When: May 16-19

ET
2000

www.aec.org

New Equipment Installations

North America

New Alpha Manufacturing

Parsons, Kansas

New Alpha is moving an 1800-ton extrusion line to their facility in Fort Scott. They have chosen to add new heating equipment and a new puller to the line as they re-install, and Granco Clark is the selected supplier.

A Granco Clark Furnace/Shear will be feeding the press, and the runout will feature a Granco Clark Puller. Provision has also been made to add a Mini-Slat Hot Saw at a future date.

Charles Beckett, President of New Alpha, has decades of experience in the extrusion industry. Mr. Beckett indicated that he selected Granco Clark because of its solid reputation over the years.

Werner Company

Anniston, Alabama

The Werner Company has recently purchased an additional Granco Clark billet heating furnace and integrated billet saw. This will give Werner the ability to provide more than 80 billets per hour to their extrusion press.

The new furnace provides a capacity of 7,000 pounds per hour of 6" diameter billet. It can provide this capacity at a feed rate of more than 80

billets per hour. The Model BCS-08 billet saw will provide high throughput with low maintenance.

Vistawall

Midway, Tennessee

Vistawall has once again selected Granco Clark as their supplier of a modern automated extrusion handling and heating system for their new facility in Midway, Tennessee. The equipment will be installed on a new 2200 Sutton press. This system is similar in design to one installed in Terrell, Texas, in 1996, and features a highly integrated cooling system, double puller, roller runout, belt system, one-man stretcher, wide-capacity saw and gauge system. A Granco Clark Hot Jet Billet/Log Furnace and Hot Log Shear is also included. The system is designed for the future addition of an extrusion stacker.

Extrudex Aluminum

Woodbridge, Ontario

As part of a major expansion, Extrudex is adding a 4,000-ton press in the new Woodbridge facility. Granco Clark has been selected to supply the heating equipment, as well as a puller and quench system for the press line.

The equipment supplied includes a Granco Clark Furnace/Shear feeding the press. The runout will feature a Granco Clark High Pressure Spray Quench and the Granco Clark Double Puller with cut-on-the-fly technology.

Andrew Gucciardi, Vice President of Extrudex, says that the particular reason for selecting Granco Clark in this case was Granco Clark's ability to deliver in a timely manner.

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preventing dust and dirt from entering the work area, and containing that which does, the time taken to clean is reduced. Parts that are hard to lubricate are improved. A schedule of daily and weekly tasks further reduces the time spent on lubrication and tightening. With experience, inspection is formalized. In addition to locating loose nuts and bolts and rollers which are stuck, the operators identify and correct minor equipment defects. The daily and weekly checklists are extended to cover more items.

The introduction of autonomous maintenance reduces equipment failures by up to 80%. The Mean Time Between Failures is increased. As the time between breakdowns is increased, the standards for cleaning and lubrication are raised. The role of operators is re-evaluated and made clear to them. The need for additional skill training is identified.

Throughout the introduction of autonomous maintenance, the plant inspection tours conducted by senior management are supplemented by audits and progress reviews, which are reported formally and the results displayed for all to see. TPM—Total Productive Maintenance, maximizes equipment effectiveness, eliminates breakdowns, and promotes operator maintenance through day-to-day activities involving the total workforce. ●

Abroad

Indalum

Santiago, Chile

Indalum, a successful South American extruder, is in the process of modernizing their handling and heating system on their 2400-ton press line. The system is to include a double puller, extrusion quench, roller runout with an all belt system, complete with a Granco Clark Hot Jet Billet/Log Furnace and Log Shear system. The system is scheduled to be in operation by November, 2000.



Worldwide

Serving the information needs of the international aluminum extrusion community.

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