

Featuring



President's
Message
p. 2



Granco
Clark at
ET2000
p. 2



Low
Tolerance for
Inefficiency
p. 3



New
Equipment
Installations
p. 4

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Total Productive Maintenance — TPM

Part 4: Schedule Maintenance

by Roger A.P. Fielding, BENCHMARKS

In the last issue, we discussed the second step in implementing TPM—autonomous maintenance for operators—which involves training people to operate and maintain their machines. We emphasized the “Five S” Japanese management principles: organization, tidiness, purity, cleanliness and discipline. We stressed the importance of cleaning the equipment to make problems visible and to encourage operators to work on the equipment.

With the adoption of TPM, the initial machine cleaning activities enable operators to recognize where dirt and dust accumulate. And, because cleaning brings them into intimate contact with the machinery, they soon learn that cleaning and inspection can proceed at the same time.

Whereas new machines should obviously be designed for ease of maintenance from the outset, existing machines must often be re-designed and re-engineered

for ease of maintenance. Through their cleaning activities, the operators of aluminum extrusion systems quickly identify where dirt, dust and saw chips can be reduced or eliminated, and where permanent covers, or simple modification are required, to make equipment easier to maintain.

“Bolting”—the tightening of nuts and bolts—goes hand-in-hand with cleaning and lubrication. If you see, or feel, something loose, tighten it! Or, conversely, if something should be loose—a roller or slide mechanism for instance—and it won't rotate or slide, loosen it! If you don't, you're missing another possible source of scratches and dents. By making each group of operators responsible for their own work area, people who are familiar operating their machines soon take on the added responsibility for their maintenance.

Since the time available for cleaning, lubricating and

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.

bolting is limited, realistic methods and standards must be developed. But, when time standards cannot be met, practices and equipment must be improved to reduce the time required to do the work properly. During the early years of introducing TPM it's not unusual for operators to identify problem areas where they can't keep up with their added responsibilities for cleaning, inspection, bolting and lubrication. In these cases, emphasis must be placed on supporting the workforce, developing more efficient methods, and, in the short-term, using engineering and maintenance resources to provide additional help.



Worldwide

Lawrence R. Difatta
President of Granco Clark



ET-2000 is now behind us and it was quite a success. Industry suppliers were present en masse and were well prepared for “showtime.” Many, including Granco Clark, had very impressive displays.

While viewing the various exhibits, particularly those of competitors, I considered the image that each was attempting to create or reinforce in the minds of extrusion industry associates touring the exposition hall. Of course, dressed to the nines, every organization looks good. But the real question goes beyond appearance and surpasses the “schmooze.”

Which companies can back up their claims? And which claims really matter to extrusion industry customers?

At a recent sales conference, information was presented that supported a fundamental belief about the needs of extrusion industry customers. Delivery ranked highest, as the most important item in a sales transaction, followed by technical sales competence, service, quality, and finally, price.

Although the company that can provide the fastest delivery often wins the business, price still dominates pre-order discussion. Yet the client only receives true value when timely delivery and fair price are backed by solid service, support, and a consistently high quality product.

Since Granco Clark strongly believes in the need to reduce the interval between order and shipment, we have committed resources to plant expansion and solid modeling engineering software. These are only two of our most recent improvements that ultimately will benefit the client by reducing lead times and increasing precision and quality.

The bottom line is that most suppliers looked great at the show...not so difficult to do once every four years. The real challenge—and measure of a supplier’s worth—is whether you can consistently rely on him to “come through” when needed, always perform at a high level and execute in a manner that demonstrates substance day in and day out. In the final analysis, appearance means nothing if the “show ready” supplier cannot back up his claims. Every extruder should expect no less.

The Impact of Scheduled Maintenance

The initial impact of TPM will be to increase the workload placed on maintenance personnel. The equipment inspections undertaken by the operators will identify maintenance and repair work that would otherwise have



been overlooked or “put off” for another day. And, there will be demands for additional engineering and maintenance support from operators who are gaining new insights into the operation of their equipment. The frequency of equipment breakdowns will not immediately decline, and there will be a new urgency to get things fixed. The activities of the maintenance department will have to be coordinated with the autonomous maintenance activities of the operators.

Scheduled maintenance is used to minimize breakdowns while meeting a company’s objectives for increased equipment availability and reduced maintenance costs. In order to minimize disruption during the introduction of TPM, scheduled maintenance, with features to allow for coordination of maintenance activities with the autonomous maintenance by operators, should be introduced first. The results of planned maintenance activities are then audited, compared with the objectives, and corrected accordingly.

The TPM improvement process is continuous, and the actions of the workforce continuously change to meet the challenges of improving operations. Improvement activities are planned, the plan is executed, the results evaluated, and a new list of actions identified. ●

Aluminum Extruders Amass at ET2000



Granco Clark again participated in the event of the aluminum extrusion industry, both exhibiting and presenting at ET2000. The technology seminar and exposition took place in May at the Chicago Hyatt Regency. Granco Clark’s 500-square-foot display featured multimedia and interactive presentations of their systems, equipment and capabilities. Both Granco Clark President Larry Difatta (left), and Vice President John Bugai (right) moderated seminar sessions. David Jenista, Systems Engineer, presented a case study on taper quenching. Granco Clark Systems Managers and global representatives manned the booth, providing technical information and answering questions throughout the show. Also pictured above is Richard Porosky (center) of YKK AP America.

Mideast Aluminum: Low Tolerance for Inefficiency

Mideast Aluminum, a division of Indalex Aluminum Solutions, is well known for setting the standard in large, close-tolerance extrusions. An exceptional level of precision is necessary to produce the ready-for-assembly, defect-free components that Mideast provides to the machinery, equipment and electrical markets.

Production of large, heavy extrusions has historically been a slow process, particularly when a high degree of precision is required. The challenge is to increase speed and efficiency, without compromising quality.

When Mideast decided to acquire their first fully automated extrusion line, they needed a supplier that would address their very specific needs. Granco Clark met this challenge when



Top: Twin Puller; Middle: Double Length System; Bottom: CVCS

Mideast Aluminum

Challenge

Increasing production speed and efficiency for large close-tolerance extrusions.

Technology Applied

Granco Clark fully automated double length system, featuring a twin puller, adjustable hot saw and controlled vertical crush stretcher (CVCS).

Features and Benefits

- Extrusion is under tension longer, for more air quenching and better quality.
- Puller head is always available, increasing production speed.
- Hot saw efficiently cuts off the extrusion during the dead cycle.
- The pivoting upper jaw of the CVCS can be set to any closing dimension for any extrusion height, saving time, maintaining extrusion quality and reducing scrap.

designing Mideast's new double length system. The line features twin pullers to increase extrusion speed capabilities and an adjustable hot saw, cutting extrusions at the time of the dead cycle.

"Longer extrusions mean less scrap, so the double length system provides higher yield," explains Joe Klepacki, Extrusion Press Manager. "And with more exposure to air quenching, we can cool heavier extrusions while they are under tension and without spray. The twin puller increases precision, and with a puller head always available, our production speed has increased."

The Granco Clark system also includes an SST Hot Jet Furnace with integrated shear to supply the 2750-ton press with a uniformly heated billet, cut to size to minimize scrap. Quenching is accomplished with an air quench system and high-pressure spray quench.

The innovative design of Granco Clark's controlled vertical crush stretcher (CVCS) is well suited for the large extrusions produced by Mideast. The hydraulically controlled pivoting upper jaw can be set to any opening

or closing dimension, minimizing distortion and saving cycle time.

The line's cutting capacity is optimized with the ECS saw and gauge, designed to cut wide batches of extrusions with machine tool precision. Automatic blade height adjustment, electronically adjustable blade stroke length and mechanical lubrication reduce demands on operators, and an acoustically insulated clamp hood provides considerable sound dampening to effect quiet performance.

This double length system is the first of Mideast's three lines to be automated. However, the Indalex group of extruders and Granco Clark have a long-standing relationship. "At Mideast, we've used Granco Clark equipment in the past and we've been pleased with its performance," comments Klepacki. ●

New Equipment Installations

North America

Thermalex

Montgomery, Alabama

Thermalex, manufacturer of both automotive and commercial refrigeration tubing, is completing the installation of still another Granco Clark furnace shear and quenching system. This is the fifth such line that Granco Clark has installed for this extruder. Thermalex depends on Granco Clark to deliver a quality sheared billet with optimal temperature uniformity, a must in the production of high quality tubing.



SST Hot Jet Furnace and Shear

Florida Extruders International

Sanford, Florida

Florida Extruders is upgrading its 6" press line with a new Granco Clark SST Hot Jet Billet Heating Furnace. This furnace will join two other Granco Clark billet furnaces installed in the last few years, offering high efficiency heating with greatly improved temperature uniformity and reliability.

Astro Shapes

Struthers, Ohio

Based on the excellent performance of two previous Granco Clark billet furnaces, Astro Shapes has elected to replace fairly new competitors' furnaces with a Granco Clark SST Hot Jet. Not only is Astro pleased with the running performance of the furnaces and their low maintenance, they also are also impressed with the quality of heated billet that Granco Clark furnaces produce.

Indalex Aluminum Solutions

Burlington, North Carolina

Indalex Aluminium Solutions, as well as the former EASCO, has been a long-time user of Granco Clark billet and log furnaces. For their unique needs at their Burlington operation Indalex asked Granco Clark to design a special system. To meet their quality requirements it was determined that a dedicated billet sawing operation would be coupled to a billet furnace. The billet saw will have features to enhance efficiency, beyond those of a standard billet saw. Compensation cutting capacity will allow for the production of two-piece billets, resulting in substantial scrap savings for Indalex.

Custom Extrusions

Connersville, Indiana

Custom Extrusions, a division of Ohio Valley Aluminum, is in the process of expanding its operations in Connersville with a new 3600-ton press line and has selected Granco Clark as its supplier for the heating and handling equipment.



Double End Flow Age Oven

The line includes a Granco Clark SST Hot Jet Billet Heating Furnace with an integrated billet sawing system. Downstream of the press, the line will feature a highly integrated cooling and high pressure spray quench system, double puller, belt system, one man stretcher, wide capacity saw and gauging system. The system also includes a multi-compartment, drawer-style die oven and double end-flow aging oven.

Abroad

LB Aluminium Berhad

Malaysia

This extruder recently completed the installation of a 125-pound double puller that will enhance product quality while achieving scrap savings of up to five percent. The double puller also allows LB Aluminium to continuously extrude multiple extrusion lengths, thereby reducing press dead cycle time.

Granco Clark's licensee, Furnace Engineering of Melbourne, Australia, has built and installed three Granco Clark billet furnaces and two log shears. LB elected to replace their older furnaces to achieve additional scrap savings of three percent, and reduce metals inventory.

Memorial

It is with much sadness that we inform you of the passing of Steve Sakall, Granco Clark Systems Manager. Although Steve was with us for only a brief period of time, he quickly forged many strong friendships. Steve will be deeply missed by all. We offer our heartfelt condolences to his family.



Worldwide

Serving the information needs of the international aluminum extrusion community.

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