

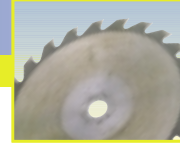
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Serving the information needs of the international aluminum extrusion community • Volume 7/Issue 3

## Total Productive Maintenance — TPM

### Part 5: Train Operators and Maintenance Personnel

by Roger A.P. Fielding, BENCHMARKS

Worldwide

As we discussed in the last article, “Schedule 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.

A company implementing TPM must invest in training to ensure that the operators and maintenance personnel can manage their equipment properly. Operators must be trained in maintenance procedures, and their traditional operating skills must be improved. The maintenance personnel must be trained to attain a higher level of predictive and preventative maintenance.

In the context of the extrusion plant, operators should understand the relationship between the condition of the extrusion press and ancillary equipment—billet furnace,

### 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.

die ovens, and handling systems—and their performance measured in terms of productivity and recovery. Maintenance personnel must understand the factors affecting the control of the extrusion process and the sources of extrusion defects—twisting, waving, bowing, scratches, dents, etc. They must maintain the press and ancillary equipment so as to prevent the onset of these problems.

Through TPM, all associated with the extrusion operations attain a higher level of understanding of the extrusion process and the factors affecting it. All gain an improved insight into the



Lawrence R. Difatta  
President of Granco Clark



Give the people what they want.

Extruders want and expect their equipment investment to deliver greater throughput, increased uptime, scrap savings, more profits—to provide measurable value through technological advances. Otherwise, why bother?

Extruders expect their supplier to possess all the ingredients required to produce these deliverables—engineering and manufacturing expertise, reliable delivery, well-executed installation, support that is always there when needed. Depending on the supplier you've chosen, sometimes you get what you want, sometimes you don't. Nonetheless, these are the basics.

But why not give the people exactly what they want?

Wouldn't that be great...to get exactly what you want? Suppliers often present their equipment in a "Here's what we make. Hope it suits you!" context. Within this paradigm, systems are merely an assembly of standard parts. Your system may be an acceptable fit, but not tailored to your specific needs, and all extruders, beyond demanding the basics, have requirements that cannot be met with generic solutions.

Flexibility...characterized by a ready capability to adapt to new, different or changing requirements.

This is an attribute that all businesses need to possess in order to survive in today's quickly changing marketplace. It is also the attribute that puts the custom into customer service. For many years, Granco Clark has been producing new and improved extrusion equipment technologies. We've created standards. But standards of excellence do not necessitate inflexibility.

In this issue, you will read about our new precision saw initiative. Precision saws aren't unique, but Granco Clark's quality and, in particular, its willingness to meet a customer's specific and very individual needs are key attributes that makes this product, and Granco Clark, unique.

Granco Clark offers standardized, proven products, but not in an inflexible, take it or leave it scenario. Our proposition is, "These are the technologies that we offer. After we fully understand your needs, we will design your system and its components around those needs."

Often, when clients tell us what they were most satisfied or impressed with when working with Granco Clark, we are told that it's our "Do What It Takes" approach.

Get exactly what you want.

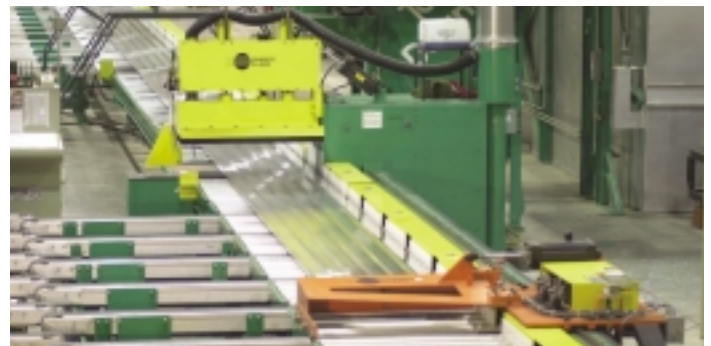
## New Equipment Installations

— North America —

### Kaiser Aluminum Corporation

A leading producer and marketer of alumina, primary aluminum, and flat-rolled and engineered products, Kaiser has mined, refined, produced and fabricated its way into all principal aspects of the aluminum business. The corporation is comprised of manufacturing and administrative facilities in more than twenty locations worldwide, manufacturing products for a variety of markets including transportation, communications, electronics, construction, consumer and industrial.

Kaiser has relied on Granco Clark for a number of recent system and equipment acquisitions, most recently an installation at its Sherman, Texas, facility and a new order from its Tulsa, Oklahoma, operation.



Cut-off saw with gauge

#### Tulsa, OK

This plant is an ISO certified leading supplier of sacrificial anodes to the water heater market, with an annual production capacity of approximately 20 million pounds of aluminum anodes.

Granco Clark earned the equipment order for this plant's conversion to rod and bar. The equipment includes a special high performance extrusion quench, double puller, and runout conveyor. The quench is specifically configured to the rod and bar process. It is designed to both gently cool the extrusion, thereby minimizing distortion, and adequately cool the product to allow high-speed production.

The system design resulted in the need for a minimal amount of floor space. Kaiser derived additional benefits from the Granco Clark double puller and the runout's special fabric impregnated rollers. The double puller allows the extrusion process to continue with minimal cycle time. Being able to cut on the die mark is a big scrap reducer. The runout rollers are specifically designed to treat the product very gently, and the table has a raise/lower feature, so that extrusions are transferred on a level plane, avoiding transfer damage.

see Installations, page 4

# Soon only one saw will make the cut...

By early 2001 the precision saw will take its place among Granco Clark's extrusion equipment offerings. This saw will provide thousandth of an inch accuracy and a clean cut that eliminates the need for finishing. The precision saw can be used on a variety of extrusion shapes, including thin wall, thick wall, solids, round and flat stock, and it is not limited to use with aluminum. Other materials, such as copper, brass and plastics can also be cut.

"This variety of saw is, of course, not new to the marketplace, but our design improvements incorporate the best features of existing technology and offer our clients added flexibility," comments John Bugai, Granco Clark Vice President.

As with all Granco Clark saws, the issue of safety in the work environment is a chief concern. Design provisions have been made to block key pinch points and call attention to potential hazards. The acoustically insulated barriers will significantly dampen noise levels, beneath the 85/90 industry standard.

A Panel View touchscreen is the designated user interface for controlling the saw's multiple functions. Granco Clark will offer a stock cutting window 8" high and 24" wide, with a standard system capability of cutting stock pieces up to 14'. But the design is not restricted to these specifications. Variations will be made available to meet the specific needs of our customers.

"We assessed what was lacking among current precision saw offerings, and have designed a saw that will fill that niche," explains Andy Bucko, Granco Clark's new Saw Systems

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*"We assessed what was lacking among current precision saw offerings, and have designed a saw that will fill that niche."*

*—Andy Bucko, Saw Systems Manager*

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Manager. "The result is a superior quality standardized product with flexible capabilities. There will be variations of this initial design to satisfy industry needs that have not been addressed."

"The primary objective of this initiative is to provide a saw that is easy to operate, delivers exceptional production performance and has a solid support system," Bucko

continues. "Phone modem support will be available to minimize any interruptions to production. I think the best feature of this product offering is something that we provide with all of our equipment—flexibility. Rather than offering the customer only the limited choices of standard product offerings—taking what we have—our goal is to always meet customers' needs." ●

## Granco Clark Welcomes New Saw Systems Manager

Andy Bucko has recently joined the Granco Clark team in the position of Saw Systems Manager. He brings with him sixteen years of experience with extrusion saws and will play an integral role in the development of Granco Clark's new precision saw initiative. Andy will also work closely with clients to assess their needs and provide equipment solutions and technical support.

Andy began his career on a Navy submarine, where he gained machinery experience as an engineman, second-class. After completing his time in the service, he attended the University of Pittsburgh, graduating with a

Bachelor of Science in business and computers. Before joining Granco Clark, Andy acquired experience in a wide variety of manufacturing-related duties,

including estimating, sales, quality control, metallurgy, engineering, technical support, and operator training, particularly with respect to the manufacture of shear knives, shot blast equipment and, most recently, extrusion saws. ●



Andrew (Andy) Bucko

## North America

### Sherman, Texas

The Sherman facility casts its own billets from recycled high-grade aluminum scrap. Most billets are then used as feedstock for the plant's three extrusion presses. This ISO-9002 certified operation produces up to 60 million pounds of extrusions per year, most of which is used in the transportation industry.

Kaiser has selected Granco Clark as a supplier for a major upgrade of their 1650-

ton press line. Granco Clark is providing a billet heating furnace, high-performance extrusion quenching system, cut-on-the-fly double puller, raise/lower roller runout and belt cooling table.

According to the firm, Granco Clark was again chosen because of Kaiser's satisfaction with a previous installation at the Sherman facility and Granco Clark's ability to meet Kaiser's process requirements.

## Broad

### Shin Yang Metal Industries Company Limited

#### Korea

As part of a new expansion program at Shin Yang, Granco Clark's Republic of South Korea representative, Intercontinent Export Corporation, has been awarded an order for a new shear system. The system includes a Granco Clark Model 812-45-4 SST Hot-Jet billet/log furnace with taper heating capability with a Model 9/12 integrated log shear and cut billet transveyor. Because of space limitations, the furnace will be equipped with a "space saver" on the pusher table—a device that will reduce the standard length by 5 feet. This is the second Granco Clark furnace shear system for Shin Yang.

### Aluminio De Centro America

#### El Salvador

This successful Central American extruder is expanding its operations with a new 2200-ton press and a complete Granco Clark extrusion line. The new system features an SST Hot-Jet Furnace and Quick Cycle Log Shear, rollover water wall quench, double puller, roller runout, cooling and storage belt system, CVCS one man stretcher, and auto sawing system. The line will be fully integrated using the SCS Extrude, Granco Clark's complete extrusion management and control system. Granco Clark is also supplying Aluminio with an age oven and die ovens.

operation of the extrusion press and its ancillary equipment. The press operators become the nurses, attending to daily inspections and making simple repairs. The maintenance personnel are like doctors, conducting exhaustive examinations, planning, scheduling and executing improvements and major repairs.

As was discussed in the previous article, scheduled maintenance will 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, is introduced first. The results of planned maintenance activities are then audited, compared with the objectives, and corrected accordingly.



The introduction of TPM will result in extending the Mean Time Between Failures of equipment. Reducing the number of stoppages results in smoother operations and higher output. But, initially, the length of each breakdown might be expected to increase. This will change with time, and over time, and ultimately the time between failures will be extended without major increases in the time to repair. In the example cited in my 1998 *Light Metal Age* article on Japan, the Mean Time Between Failures was increased from 5 days to 20 days, while the Mean Time To Repair was virtually unchanged at about one hour per repair. (1)

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. ●

(1) Fielding, Roger A. P., "The Japanese Aluminum Extrusion Industry," *Light Metal Age* 56, nos. 5, 6 (June 1998): 6-19.



# Worldwide

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Lawrence R. Difatta . . . . . President  
John C. Bugai . . . . . Vice President  
Roger Postema . . . . . Systems Manager  
Gerald (Jerry) McPherson . . . . . Systems Manager  
David Jenista . . . . . Systems Engineer  
Andrew (Andy) Bucko . . . . . Saw Systems Manager

7298 N. Storey Road, Belding, MI 48809

e-mail: [gcinfo@grancoclark.com](mailto:gcinfo@grancoclark.com)

Phone: (616) 794-2600

[www.grancoclark.com](http://www.grancoclark.com)

Fax: (616) 794-2878