



President's
Message
p. 2



Waste
Part 3
p. 1



Investing for
the Future
p. 2

New Equipment
Installations

p. 4

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Waste

Part 3

by Roger A.P. Fielding, BENCHMARKS

The waste which is to be found in most extrusion plants affects the facility's ability to produce the right quantity and quality of extrusions—on time. The plant can't meet delivery dates. So instead of delivering product to a customer at a specific hour of the day, it's not unusual to hear of extruders who deliver on a particular day, or even within a particular week!

In addition to the causes of waste identified in the previous articles, the reasons for missing a delivery may also include the following: shortage of correct alloy, waiting for die delivery, waiting for die correction, dies in caustic, die "lost," press broken down, no overtime, over-booked, or orders incomplete.

The late reports will also have notes listing the reasons for incomplete orders. And, it will be no surprise that the list will include references to the waste in the extrusion (finishing and fabricating) plant:

Metal: wrong billet size.

Dies: die broke, die plugging, or die lines.

Shortage due to scrapping metal at the press: poor surface, off shape, or off dimensions.

Shortage due to scrapping metal at the finish cut saw: runout table damage, cooling table damage, stretcher damage, batching or saw table damage, blisters, poor surface, off shape, off dimensions, wrong length, or poor transverse weld.

Material scrapped after ageing: failing properties (and any that were not caught earlier!)

All too often, the extruder ships material that is off-shape, has the wrong dimensions (including twist and bow), or surface damage, such as scratches, dents, and over-stretching, that was not picked up at the plant. (And by the time it reaches the customer the material may also have transportation damage.) "When a customer orders aluminum profiles from an extruder, he expects to pay for what he gets—and to get what he ordered. All too often, he gets a surprise package. There are limitless opportunities for improvement in extrusion management and technology that can result in far higher yield at better quality."⁽¹⁾

Waste has a direct impact on the bottom line, adding to the cost of extrusions, semi-fabricated and fabricated aluminum products. Waste

increases the lead time between the receipt of an order and the delivery of a finished product. The extrusion plant that minimizes the lead time between order entry and delivery meets all its delivery schedules and is capable of turning its inventory twice each week.

Reducing Lead Time

From the above lists, it's evident that the problems of controlling and reducing production lead time can be divided into five areas: billets, dies, machines, the extrusion process, and people. Rank the causes of production delays, then develop programs to correct the major problems.

Consider dies, for example: In a meeting between the die correctors, production control, press operators, and production supervisors, document the reasons for pulling dies before completion of the production lot. When all agree to the list, consult the engineering and maintenance persons. Problems which can be attributed to engineering and maintenance, such as die temperature variations and container and billet temperature variations, must be fixed as soon as possible. Here are typical conclusions

Lawrence R. Difatta
President of Granco Clark



Ever tried to put off replacing key components of your car until it was “absolutely necessary?” You knew, say, that the tires were pretty patchy, but hey, by putting off the purchase of a new set of tires, you could “save” several hundred dollars that month.

The truth is, “saving money” doesn’t mean much when you’re changing a flat tire by the side of the road as other cars speed by.

Right now, plenty of companies are trying to keep their businesses moving forward on a set of old tires. They’ve shelved investments in areas such as new equipment, waiting for an economic rebound. Meanwhile, their operating efficiency continues to drop.

The real danger is what happens when the economy does pick up. Companies that have been “hanging onto old tires” will have to try to get their systems back up to speed overnight—and will likely be sidelined as other companies race forward.

The Inexact Science of Predicting the Future

Each day we get often-conflicting pieces of information on the state of the economy...the economy is in a slump, it’s rebounding, the number of layoffs increased this month, consumer confidence is picking up again. Just look at a few of the headlines published in recent months:

On January 21, Fortune magazine gave the economy a lukewarm endorsement with an article entitled “The Long, Soggy Recovery: The recession may be ending, but bright blue skies are still a way off.”

On February 11, Business Week magazine gave a more bullish assessment with the headline “What Recession? The fast-changing economy is more robust than many expected.” Contrast that with what The Financial Times reported a day later: “No early end seen to recession.”

The truth is, you can’t make long-term decisions on the basis of second-by-second information. While it’s important to have a short-term survival plan, any business that hopes to be around for years to come has to think long-term to survive.

Decades from now, we plan to still be here, serving our customers. We hope to see you there as well.

Investing for the Future

“Just don’t do it” is probably the most prevalent “business strategy” in an economic downturn: wait it out; delay investments in new technology and equipment; make do with what you have until the economy turns around.



Granco Clark Hot Jet Furnace and Log Shear

It seems to be a pretty sound, common-sense plan. Avoid a major capital outlay when things are slow; save big purchases for times when the money is rolling in.

But in fact, slow times may actually be the best time to replace equipment. In flush economic times, you’re typically running at or near full capacity. Replacing equipment while maintaining high production can be a major inconvenience, and can compromise your profitability. Slow times offer much greater flexibility for installing new equipment—as well as giving employees more time to become familiar with the new equipment.

Customer Satisfaction

In an economic downturn, customer loyalty is more crucial than ever to maintaining your profitability. But it’s hard to inspire loyalty when you miss customers’ deadlines, or deliver extrusions of poor or inconsistent quality to them. If your equipment is on its last leg, it will impact your ability to satisfy your customers...and ultimately, you may find that your long-time customers are taking their business elsewhere.

Beyond dissatisfied customers, there are other very real liabilities that come with delaying equipment purchases too long. Older systems mean expensive maintenance and repair bills. They’re often much less efficient, which means more

waste and higher energy usage. In addition, they lack the automation of much of today’s equipment, which increases labor costs. If you wait and wait for the “perfect time” to replace your system, you lose out on benefits that could be realized now.

And if your percentage of downtime is high and steadily growing, watch out. Excessive downtime guarantees you’ll be slow—even if the economy has started to pick up. When business does turn around, you’re left trying to meet increased demand with outdated, inefficient equipment...and that doesn’t bode well for a long future in the business.

Replacement Benefits

Replacing the following components of your system can offer payoffs in areas such as efficiency, labor costs, and yield:

Furnace/Log Shear

If you’re currently using an old chain-style billet furnace, purchasing a new furnace could reduce your energy costs by two-thirds. A new furnace may also provide better temperature consistency and greater throughput.

Want to free up a few hundred thousand dollars? Add a furnace that has an integrated log shear:

For example, say you run \$15,000,000 worth of metal a year. At any given time, you might have a million pounds of metal, with a value of around \$650,000, sitting in storage. Meanwhile, you're paying interest to the bank on that \$650,000, or that's \$650,000 you don't have available for other purposes. An integrated log shear can significantly reduce the amount of money you have tied up in inventory, because you no longer need to stock billets in a variety of increments—the shear cuts logs to the precise length billet you need.

A furnace with an integrated log shear also offers savings in scrap. For example, billets are stacked in 2-inch increments. Say the average length of the billets you stock is 26 inches, and on average you're cutting an inch off each billet to get the size you need. With a log shear, you could save four percent, because you'd always have the proper length billet.

Pullers

Looking for scrap savings? By adding a single puller to your system, you can cut by five percent the amount of scrap generated.

When profiles are manually moved through the extrusion process, often the result is twisted, uneven profiles and lots of scrap. A puller, on the other hand, applies just the right amount of tension until a billet is fully extruded. In addition to scrap reduction, a puller reduces manpower and improves the quality of your profiles.

A double puller boosts those benefits even more: it increases production and efficiency, and offers scrap savings of

Product	Key Benefits
Furnace	Energy efficiency, greater throughput, improved temperature consistency
Integrated log shear	Reduced scrap, less money tied up in inventory
Single puller	5% scrap saving over manual systems, higher quality profiles, reduced manpower
Double puller	2-3% scrap savings over single pullers, higher quality profiles, reduced manpower
Belt tables	Higher yield
One-man stretcher	Enhanced profile quality, reduced labor costs
Saw and gauge systems	Higher throughput rates, reduced labor costs, enhanced profile surface quality
Stackers	Reduced labor costs; higher quality profiles

an additional two to three percent over single pullers.

Stretchers and Tables

If you're searching for ways to improve yield, new tables and stretchers can help to accomplish this. Yield can be seriously compromised by damage to profiles as they move through the system. Replacing old graphite cooling tables, which can damage metal, with new belt tables, which are gentler on profiles, is one way to help ensure consistently high yield.

In addition, damage to profiles often occurs as the result of manual handling. New equipment that reduces the amount of manual handling offers two-fold benefits. If your system utilizes a puller, you can switch from a two-man stretcher to a one-man stretcher—which will both reduce labor costs and result in higher yields.

Saw and Gauge Systems

Manual handling and its associated costs can be cut with automated systems capable of receiving extrusions

from the stretcher and batching and feeding them into the saw. In addition, modern saw infeed conveyors, which are more than double the width of older versions, can automatically move batched profiles through the saw and to the gauge table.

Stackers

You can reduce your head count by one or two people by adding a stacker to your system. Since profiles are stacked automatically, manual handling is eliminated, which helps to preserve the surface quality of cut profiles as well as lowering labor costs. In addition, stacking systems can automatically load profiles into age oven racks, supporting greater and more consistent throughput.

A Long-Term Investment

Purchasing extrusion equipment is a significant investment, but it's an investment that provides a platform for long-term company growth. Equipment that runs smoothly ensures that you'll be able to meet your customers' requirements well into the future. ●

Waste from page 1

from such meetings:

- Dies must be managed into and out of die ovens.
- Die maintenance practices must be defined.
- Question and limit cleaning and polishing (an alternative is to leave metal in the dies).
- There must be practices stating the number of times a die goes to the press between cleaning and re-nitriding.
- There must be a standard for re-nitriding.
- The maximum number of billets before the die is removed from the press must be defined.

- The target life of each die must be defined.
- Operating practices.
- The maximum time in the die oven must be defined.
- Die maintenance practices must follow the AEC handbook.

Get everything right the first time, because lead time is the integrated measure of manufacturing performance! ●

(1) Baer, Austin R. "What's in the Box?" Proceedings of the Fourth International Extrusion Technology Seminar, Chicago, IL, April 11-14, 1988, Volume II, 457-460

New Equipment Installations

North America

Bon L Canada

Ste-Thérèse, Québec, Canada

The William L. Bonnell Company—known as “Bon L”—has selected Granco Clark to supply an upgrade to the handling system on their Ste-Thérèse, Québec, extrusion line. Bon L, a subsidiary of Tredegar Corporation, and its affiliates produce aluminum extrusions used in building and construction, transportation, and electrical and consumer durable markets.

The upgrade converts the Ste-Thérèse handling system to a double length configuration. The installation includes a new puller track, new puller heads, a roller leadout table, and a runout cooling system. The handling system currently has a first-generation Granco Clark Double Puller, installed in 1988. The upgrade installs a new puller track featuring a precision hex rail. Two new puller heads with state of the art infrared communications will provide smoother and more reliable operation.

The new leadout design features high-temperature fabric-covered rollers. The leadout area will also

include Granco Clark’s Integral Runout Cooling Duct System, a high-velocity air cooling system that resides within the roller leadout table.

M I Metals

Millen, Georgia, USA

M I Metals, one of the largest window and door manufacturers in the U.S., has ordered their second Granco Clark automated extrusion line for their Millen, Georgia, facility. Their first line was installed at Oldsmar, Florida, in 1998.



Granco Clark Double Puller

The new 1800-ton extrusion line features a Granco Clark “Hot Jet” billet/log heating furnace, log shear, and transveyor. A highly-integrated cooling system, double puller, roller runout, all-belt handling system, one-man stretcher, and automated saw and gauging systems will be included downstream of the press.

The Granco Clark extrusion line functions as an integrated unit, ensuring production efficiency, quality saleable product, and less scrap.

YKK-AP America

Dublin, Georgia, USA

This leading manufacturer of aluminum building products has selected Granco Clark to supply the handling system for a new 2750-ton extrusion press line.

The new line will include a highly integrated cooling system both above and below the runout conveyor, a double puller system, and a roller runout conveyor with Kevlar-needled felt roller covers. The new installation will also feature an all-belt handling system, as well as an automated saw and gauging system for handling wide batches while maintaining accurate cutting capability. The saw gauge discharge, inspection, and packing belts will position the cut batches for loading by the YKK extrusion stacker.

A four-drawer die oven will provide the system with separate controlled compartments, and the Granco Clark Billet Taper

Quench will improve extrusion speed and quality.

Indalex America Inc.

Gainesville, Georgia, USA

The largest independent producer of soft alloy aluminum products in North America has selected Granco Clark to supply a complete handling and heating system for a new 3600-ton Ube press line. The line will feature a double length system, twin puller with adjustable hot saw, one man/no man stretcher, extrusion stacker, and furnace shear system. This is the fifth Granco Clark auto extrusion handling and heating system installed in the Gainesville location alone. The new line will allow Indalex to increase its presence in the larger shape market.

Indalex Aluminum Solutions

Calgary, Alberta, Canada

Indalex Aluminum Solutions has ordered a Granco Clark model 57-35-3 SST Hot-Jet billet furnace for its plant in Calgary. The billet furnace will replace an existing 1970s furnace. Indalex is looking forward to more uniformly heated billets and increased productivity.



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