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## Quenching—Part 2

by Roger A.P. Fielding, *BENCHMARKS*

**D**ilute aluminum extrusion alloys, capable of being extruded at high speed, can be processed to achieve property levels equivalent to the higher-composition, slower-extruding alloys, provided that the process is rigorously controlled, and—specifically—that the quench rate at the exit to the extrusion press is high enough.

Writing in 1977, Barry and Hains<sup>1</sup> described the development of the Alcan extrusion alloy designated 65050. While acknowledging that the alloy did not meet the composition level of AA6063, they pointed out that—when processed correctly—the alloy consistently achieved AA6063-T5 mechanical property levels.

Recognizing the importance of an “architectural” extrusion alloy capable of being extruded 50 percent faster than AA6063, and the fact that most orders placed on extruders for window and door sections called for AA6063, the authors recommended that the AA6063 composition limits be extended to include the new alloy. This proposal was

rejected by the relevant Aluminum Association committee, thereby delaying the introduction of AA6060 for years, and placing aluminum at another disadvantage with respect to competitive materials.

Although delayed in North America and Japan, the new alloy was quickly adopted in South America. Employing tight control over alloy composition and the extrusion process (billet temperature, container temperature, ram speed, and quenching), thin wall sections of what became AA6060 were extruded at high speed, consistently exceeding the minimum specified AA6063-T6 mechanical property levels. Production rates of 6000 pounds per hour and shipments of 2 million pounds per month were achieved.

Writing in 1984, Barry<sup>2</sup> compared the toughness—as measured by the Kahn tear test propagating energy—of a number of structural extrusion alloys when quenched in water and in high velocity air. And in their paper, delivered at ET 2000, Parson et al<sup>3</sup> compared the



Granco Clark High-Pressure Spray Quench

mechanical properties of AA6061, AA6082, and AA6005A when quenched in water or high velocity air.

Descriptions of the correct processing of the extrusion alloys referred to above are to be found in the guidelines published by the major billet producers. Referring to an Aluminium Pechiney (now part of Alcan) publication entitled *Alliage de Transformation*, the reference to press quenching of AA6005A is typical: “Alloy AA6005A needs to be cooled vigorously and fairly close to the point at which it leaves the press. The rate of cooling down to 250C should be in excess of 3C per second, which is generally achieved by means of (high velocity air and) a fine spray of water.”<sup>4</sup>

The productivity—and profitability—of an extrusion press can be increased by

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Lawrence R. Difatta  
President of Granco Clark



*Customer service—or the lack of it—plays a pivotal role in the future of every business. A recent survey found that a third of consumers have cancelled an account with a company because of poor customer service. And according to another study, businesses that fail to provide excellent customer service will experience, on average, a 100% turnover of their customer base every five years.*

*We've probably all had our share of experiences with poor customer service; experiences that make us reluctant to do business with a company again. Say, for example, you buy a new car and, a few months later, the power windows stop working properly. So you take the car to the dealership for repair—but the company refuses to acknowledge that it's their responsibility to fix the problem.*

*You spend weeks making phone calls to various people at the dealership and the manufacturer, trying to resolve the situation. The company eventually agrees to make the repair—but it's a pretty safe bet that, with all the frustration you experienced, you won't be buying your next vehicle from that dealership.*

*With Granco Clark, you don't have to worry about dealing with that kind of frustration when you need customer support. We'll connect you right away with the person best able to help you, and we'll work to solve any problem you have with a piece of our equipment as quickly as possible.*

*In this issue, you'll read about a cornerstone of our customer service—the Granco Clark modem support program. If you run into a problem, one of our engineers will dial into the equipment operating system, diagnose any problems, and walk you through the repair process. In many cases, the problem can be solved in just minutes. And if it turns out that a replacement part is needed, our 24-hour parts hotline ensures that the part gets to you as soon as possible.*

*And because Granco Clark delivers on customer support, you can rest assured that you'll be able to deliver on your promises to customers as well.*

## McPherson and Postema Retire from Granco Clark

Gerald McPherson and Roger Postema, two long-time Granco Clark employees, will retire this year.

McPherson, Systems Manager, is retiring from Granco Clark after 40 years in the aluminum industry. He joined the Clark Automation Group in 1963 as an installer and serviceman. In 1977, he left for a position with Magnode Corporation of Trenton, Ohio, but returned a year later, rejoining the newly reorganized Granco Clark sales team.

Roger Postema has been with Granco Clark for 17 years. As Systems Manager, Postema has assisted extruders worldwide in defining the best equipment to meet their handling and heating processes requirements.

"We have been privileged to have worked with Jerry and Roger, and they have served Granco Clark well," says Larry Difatta, President of Granco Clark. "We wish them all the best in retirement, and thank them for their years of dedication." ●



Gerald McPherson



Roger Postema

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ensuring that the composition of the alloy being extruded is selected to maximize the extrusion speed, while meeting the mechanical properties required by the end-use application. This is achieved by managing all stages of the extrusion process and ensuring that the in-line quench press systems can cool the extrusions at the required rate.



Granco Clark Overhead Cooling Duct System

Increasingly complex structural aluminum sections, which would distort in water quenches, while sometimes requiring the injection of a fine water spray, can often be quenched satisfactorily in high velocity air. ●

1. Barry, W.G., and R.W. Hains, "Current and New AA 6xxx Series Extrusion Alloys," Proceedings of the Second International Extrusion Technology Seminar, Vol. 1, pp. 271-284
2. Barry, W.G., "Rationalization of Structural Al-Mg-Si Extrusion Alloys," Proceedings of the Third International Extrusion Technology Seminar, ET 1984, Vol. 1, pp. 7-15
3. Parson, N., J. Hankin, K. Hicklin, and C.W. Jowett, "Comparison of the Extrusion Performance and Product Characteristics of Three Structural Extrusion Alloys: AA6061, AA6082, and AA6005A," Proceedings of the Seventh International Extrusion Technology Seminar, ET 2000, Vol. 2, pp. 1-12
4. Marchive, D., and P. Faivre, "Medium Strength Extrusion Alloys in the AA6xxx Series," *Alliage de Transformation*, Societe de Vente de l'Aluminium Pechiney, Voreppe Research Centre

# Customer Support You Can Count On

**F**or Granco Clark customers, getting expert technical support is as simple as making a single call to Granco Clark's main number. Customers are immediately connected to a Granco Clark engineer who can assist in diagnosing and solving any problems.

## Quick Problem Resolution Through Modem Support

One key tool Granco Clark uses to solve technical issues is modem support. Instituted back in 1990, modem support is now integrated into all of Granco Clark's extrusion systems. All the customer needs to do is supply a dedicated phone line, and Granco Clark can run diagnostics on their system from a remote location.

It's changed the way Granco Clark assists customers. Before modem support was available, an engineer would have to rely on the customer to explain what was happening; then try to talk him through possible problems and how to solve them. If that approach proved unsuccessful, a Granco Clark technician would travel to the customer's location to fix the problem on-site—so the customer's equipment might be down for days.

Now, a Granco Clark technician can simply dial in, see what's going on, and tell the customer exactly how to fix the problem in just a few minutes. For example, when a customer was having problems with their handling system, one of Granco Clark's engineers ran diagnostics and found out the program for the handling processor had disappeared. He quickly downloaded the program to the customer's system and got it back up and running right away.



## Support for Diverse Needs

Along with providing modem diagnostics, Granco Clark's staff assists customers with a wide range of issues, from answering questions on equipment specifications to replacing lost equipment manuals.

And for Granco Clark equipment produced prior to the inception of modem support, support staff can still access data about customers' particular systems. Granco Clark maintains electronic archives of drawings and specifications for every system installed—even some dating back as far as the 1950s—so the technical team can quickly retrieve information to assist in troubleshooting.

## Teamwork is Key

Teamwork is an essential part of Granco Clark's customer support program. Parts

Manager Rance Stowell, who staffs Granco Clark's 24-hour parts hotline, plays a key role when modem diagnostics reveal that a new part is needed. Stowell makes sure the part is shipped to the customer right away, and if a replacement part isn't in stock, he'll contact the vendor to have it shipped directly to the customer.

It's all part of a coordinated effort dedicated to a single goal: ensuring that customers enjoy maximum uptime from their Granco Clark equipment. ●



# New Equipment Installations

## North America

### Auth-Florence

Manhattan, Kansas, USA

Granco Clark recently received an order for a Precision Sawing System from Auth-Florence Corporate in Chicago, Illinois. The company is the foremost manufacturer of commercial



Granco Clark Precision Sawing System

and residential mailboxes, and offers full service from design, development, and fabrication to finishing and assembly.

The Precision Sawing System will be installed at Auth-Florence's new Manhattan, Kansas, plant. The Granco Clark Precision Sawing System (Model 824-15) and Chip Collection System with Rotary Valve has a cutting window of 24" wide x 8" high and cut length of .357" through 180". The system will allow for extremely rapid throughput while maintaining superior dimensional accuracy, squareness, and quality RMS finish. An added provision to the backgauge clamping will allow for an extremely fast cutting cycle and the capability to maintain two inches of tail scrap.

### Aisin Light Metals

Marion, Illinois, USA

Aisin Light Metals, LLC, has awarded another order to Granco Clark. Earlier this year Granco Clark received an order from Aisin for the supply of the complete handling and heating equipment surrounding their new extrusion press line in Marion, Illinois.

Now Aisin has selected Granco Clark to supply the die heaters and a reversing-end-flow age oven complete with floor tracks and load cars. This type of age oven was selected to meet the tight temperature tolerance specification required to achieve the material properties requested by Aisin's automotive customers.

# ET '04

**May 18-21, 2004**  
**Orlando, Florida**

Mark your calendar for ET 2004, May 18-21, at the Gaylord Palms Resort & Convention Center in Orlando, Florida. You won't want to miss this opportunity to see the latest in aluminum extrusion technology—be sure to visit Granco Clark at booth #323. For more information on ET 2004, visit [www.etfoundation.org](http://www.etfoundation.org).



# Worldwide

*Performance. Productivity. Peace of Mind.*

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

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