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MADE IN THE USA
High Performance
Screws and Cylinders



PROCESSOR

WHEN THE GOING GETS TOUGH ... THE TOUGH GET INNOVATIVE

Dave Larson
President



Dave Larson

Like most businesses, Westland is looking at the next few months with a lot of questions about the economy. It is no understatement that we are in some rough times.

It is so easy to focus on the bad news when that is what dominates the media. Don't get me wrong, there is bad news out there. However, there are things that can be done to improve profits. This situation reminds me of the quote ... When the going gets tough, the tough get going!

On a webpage I recently visited, there was a discussion regarding this quote. What actually does "the tough get going" mean? I would suggest the meaning is that we get motivated or start producing results. In other words, **"the tough get innovative"**.

The question to ask in times such as these is: "Do I hunker down and just try to weather out the storm ... or do I make an effort to innovate and be more productive?"

When every dollar counts, it is important that every dollar is used wisely. Take this opportunity to

investigate more efficient ways of processing. In this issue of the Westland Processor, you can learn three specifics for improving your high temperature resin applications.

Now is the time to discover what a custom screw design can do for your application or applications. The back page of this issue illustrates an actual calculation on money that can be gained by shaving seconds off your process. Shaving seconds can be accomplished by using the best screw design for your application.

Now is definitely not the time for the infamous "we've always done it this way" attitude.

What actually does "the tough get going" mean?

Westland's employees are passionate about helping molders improve their process. We bring an inexhaustible source of energy towards that result by producing

quality products and offering extreme customer service after the sale.

Westland wants to earn your business in the good times and the challenging times. We are motivated to offer you more productive ways of manufacturing. We evaluate your process to provide the optimum screw design backed by our processing expertise.

Call us now at 800-247-1144 to discuss your processing issues. Westland's custom design services are included with the cost of a new screw. So, you have nothing to lose and innovation to gain.

DO YOU KNOW?

Innovation is a part of our American heritage. According to the US Patent Office website (www.uspto.gov) Josephine Garis Cochrane invented the first useful dishwasher in Shelbyville, Illinois and received Patent No. 355,139 on December 28, 1886. She showed the dishwasher at the 1893 Chicago World's Fair. Cochrane later founded a company to manufacture it which eventually became KitchenAid®.

Enter the link below to discover something patented on your birthday:
www.uspto.gov/web/offices/ac/ahrpa/opa/kids/calendar/index.html

Do you know the only American President to hold a patent?

(Answer Inside)



Dave Larson, Darren Osman, Dan Johnson

Darren Osman was recently recognized for 20 years of service at Westland Corporation. Darren is a Cylinder Operator whose duties include honing and prepping sleeves. He is also our resident father of triplets!

Darren's award raises the total number of employees at Westland with over 20 years of experience to 13. That experience pays off in a better quality product for our customers.

CONGRATULATIONS DARREN



Dave Larson, Janis Reida, Dan Johnson

Janis Reida was recently awarded a watch for having completed 10 years with Westland Corporation. Janis, a CPA, is our Senior Accountant. She does an excellent job of keeping our records correct and in-line.

Westland now has 9 employees with over 10 years of experience.

THANK YOU JANIS

Answer to Do You Know? Abraham Lincoln is the only president to hold a patent. His patent was for a system of chambers designed to refloat boats that had run aground. He received Patent No. 6469 on March 10, 1849. (As listed on the Lincoln Home National Historic Site: www.nps.gov/liho.)

HIGH TEMPERATURE RESIN PROCESSING

Three Specifics For Improving Your Process

As the quest for inventing better and more cost effective ways of manufacturing products continues, the resin manufacturer is being compelled to bring materials to the market that can withstand high temperatures without deformation. Many of these resins demand barrel temperatures to run in excess of 700°F. Processing at these temperatures can present challenges.

When running a high temperature application ...

Do you ever see inconsistency in your melt quality that causes random short shots or flashed parts?

Does your overall cycle time vary due to inconsistent recovery times?

Do you experience trouble filling your tool?

These issues could be due to insufficient heat availability for a high temperature application.

Plus, have you considered the consequence of running at high temperatures with your current screw and barrel?

There are several variables that must be addressed when running high temperature resins. This article focuses on the following three specifics that can help improve a process and profit:

- (1) Watts Per Square Inch
- (2) Feed Throat Temperature
- (3) Screw & Barrel Material

Watts Per Square Inch

All materials require a certain amount of heat (BTU [British

Thermal Unit]) over a certain amount of time to turn to melt and maintain a specific viscosity.

When evaluating a process for a high temperature application, careful consideration must be given to the watts per square inch on the barrel. Most original equipment manufacturers offer machines with approximately 15 to 22 watts per square inch on the barrel. This is typically fine for a process that runs in the 300°F to 600°F range and a plasticizing residence time over 1.5 minutes.

However, when running a high temperature resin or short plasticizing residence time, one must look at the watts per square inch on the barrel. (Please contact Westland for further details on short residence time issues.)

Indicators that there are not enough watts per square inch on the barrel include:

- 1) The machine struggles to maintain set point on heater zones;
- 2) The heater zones call for heat all the time;
- 3) Recovery times are inconsistent; and/or
- 4) The torque is high on the screw motor.

If experiencing any of these issues, a simple test can determine if it is a heater band issue. Lengthen the overall cycle time. If the issue is resolved, that is a good indicator of the need for higher wattage heater bands.

Feed Throat Temperature

Feed throat temperature could be another factor in achieving a repeatable process with high temperature materials. Feed throat temperature is a variable that is largely overlooked on the machine. This variable plays a significant part in overall process performance with high temperature resins.

Feed throat temperature relates to repeatable recovery times. Most machines are set up running 80°F to 120°F on the feed throat temperature. When running high temperature resins (like Ultem) at heat settings of 700°F to 800°F, the feed throat temperature needs to be raised, sometimes as high as 200°F, to accommodate the resin being processed.

By having the temperature elevated, the heat is transferred to the resin earlier, helping to minimize screw blockage. (See Vol 5, Iss 2 of Westland's Processor Newsletter for more information on how screw blockage can affect isothermal melt quality, recovery consistency, and repeatability of the process plus cause premature wear. Find this issue on our website www.westlandusa.com under Processing Resources.)

Screw & Barrel Material

High temperature materials also require screws and barrels manufactured out of alloys that can withstand the rate of thermal expansion at higher temperatures.

In most cases, Westland will recommend tool steel for the screw. The tool steel allows the ability to expand and contract the screw during processing without plating breaking loose from the base material. When processing with a plated or coated screw, the

question is: How does the rate of expansion of the coating compare to that of the base material?

If they are not equal and grow at different rates, the coating can pull apart and break loose.

For barrels the recommendation would be a tool steel or spun cast bimetallic that can withstand the temperature while still giving excellent wear resistance.

Further information on screw and barrel material can be found on our website plus pages 30 through 36 of the 8th Edition of Westland's Cylinder & Screw Handbook.

As the opportunity for processing high temperature resins continues to increase, so does the need for knowing the requirements for processing these materials profitably.

Westland is committed to helping our customers meet objectives by sharing our design capabilities and extensive processing knowledge.

Contact us today at 800-247-1144 for help with issues you are facing on any applications you run.

INCREASED HEATER BAND WATTAGE IMPROVES PROCESS

A Westland customer was struggling to run the quoted cycle time while processing Ultem.

As they would speed up the press to the quoted cycle, their reject rates would increase by more than 30%.

Westland calculated the residence time to be 1.4 minutes at the quoted cycle time while running temperatures in excess of 725°F.

Westland evaluated the faster cycle and discovered the duty cycles on each heat zone were running at 90 – 100% and could not stay up to the temperature settings. The wattage of the heater bands on the barrel calculated out at 21 watts per square inch.

Westland calculated the BTU's required to achieve the necessary temperature and recommended raising the heater bands to a minimum of 30 watts per square inch.

After the heater bands were changed, the duty cycles for the heat to call ratio on that machine were more in line at 40 - 50%.

This allowed the customer to run at the quoted cycle time while eliminating the increased scrap rate.

If you are having issues with a process, call Westland at 800-247-1144. We will evaluate it and offer recommendations for improvement.

WESTLAND Processor Newsletter Now Available Via Email

To receive your copy electronically, send an email to westland@westlandusa.com

Or follow the link: **REQUEST EMAIL NEWSLETTER** at the bottom of our website www.westlandusa.com



For more information on screw and barrel materials plus other maintenance issues, contact:

Westland Corporation

for a free copy of the 8th Edition of our Cylinder & Screw Handbook

Call: 800-247-1144 or Email: westland@westlandusa.com



THE ROI ON SCREW DESIGN

ROI, Return on Investment, isn't just a buzz word. It is crucial that a processor understands the true value of any purchase. What is the money gained or lost relative to the money invested?

Westland is not just another screw and barrel supplier. Our quality components provide the best value for your hard earned dollars.

Westland will evaluate your process in order to recommend the best design. This service is an added value as it is included in the cost of the screw.

A screw designed for a specific material will provide the greatest opportunity to process with the most efficiency.

The value of a custom designed screw for your application is measurable. The economic impact of cutting seconds off your cycle can be significant.

Remember Westland will also design a screw with the most latitude for all resins being processed. Our experienced sales engineers can then recommend adjustments on the machine variables to compensate for any weakness in the screw design in order to process a wider range of materials.

Following is an example of the return on investment experienced by cutting 0.9 seconds off a cycle.

CUSTOMER INPUT	
Hours / Day	24
Work Week	5
Weeks / Month	4.333
Part Sell \$	\$0.50
# Mold Cavities	8
Gross Profit	10%

A change in screw design produces the following cycle time change:

CYCLE TIME CHANGE	
Bench-Mark Cycle (sec)	30.0 sec
Actual Cycle	30.9 sec
Lost Cycle Time	0.9 sec
Cycle Time Lost / Month	15.1 hours
Equivalent Cycles Lost / Mo	1,817
Lost Production / Month	14,540 units
Sales Value / Unit	\$ 0.50
Revenue Lost / Month	\$ 7,270
Profit Lost / Month	\$ 727
Profit Lost / Year	\$ 8,724

In this illustration, the ROI was \$8,724. In many instances that would more than pay for a new screw.

If you would like to calculate the value of a cycle time change on your process, visit our website at www.westlandusa.com and go to the link under Processing Resources ... or call us at 800-247-1144.

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