Anything underlined in the body may be clicked to a direct hyperlink for more info
Close the hyperlinked box to exit the window and return to this newsletter

Discussed topics are boxed to reduce the need to scroll pages - read each box as a section.

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MetalLife NEWS ThermalLife

Window of Opportunity

Volume #007-10-02 **Badger Metal Tech, Inc.** **October Letter 2002**

IN THIS ISSUE CHOICES:

FAQ (questions?)
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Quote Request
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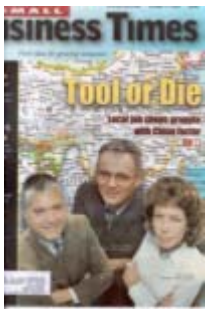
Tool or Die
Two recent articles in the Milwaukee Small Business Times drives home the effect China is having on our manufacturing. Click Here to view or download the pdf file.
Need a viewer for Acrobat pdf -click here



Question:
What if every tool shop in the US refused to rework, repair, or make engineering changes to any die not made in the US?

In the tooling industry there seems to be a very small window from the time a die is taken out of production to when it will again be required to run product. This is usually the time when all of the repairs, engineering changes, and reworks are performed. A common reason for not being proactive or reactive to a die's condition is "there simply isn't any time to get the needed work done".

Badger Metal Tech appreciates your needs in this area and has attempted to come up with a possible way to make the window appear a little larger. If we can answer your questions regarding both of our processes and also provide you with a means to communicate your needs prior to shipping a tool to us, this could possibly help to provide the needed time.

In this newsletter we will utilize the Badger Metal web site's Frequently Asked Questions (FAQ) section (**see sidebar**) to answer the most common inquiries we get regarding both of our processes. For those interested, we will direct you to some in depth information regarding our Thermallife process and its roots - see **sidebar Info FNC**.

In addition we will briefly discuss our newly developed online quote request section.

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Metallife **S A V E S D I E S.** Our **Metallife** section on our web sites explains each of the benefits associated with the above upper case phrase.

Metallife is not a coating, plating, or chemical process. It is a mechanical process performed at room ambient conditions. The mechanics of the process places the surface of a tool into a compressive state. This compression helps to prevent NEW and retard EXISTING thermal cracking in hot work steels whose rockwell hardness is in the 40's. Small cracks in the surface of the tool are closed under compression. The compressive forces also prevent larger existing cracks from propagating on the ends. The compressive layer varies in depth depending on the application applied. **Graphs show** various depths using different parameters for processing and a **composite graph** of all processes for comparison purposes.

The subsequent topography provides two extra benefits.
1. Flow of the molten metal is improved.
2. The micro pockets on the tool tend to hold die lubricant which aid in helping to reduce soldering of aluminum and alloy casting materials.

In the case of Drawing and Forming applications, these pockets help to reduce galling and pickup.

Customers in the last 20 years have also reported other benefits including:
Reduced casting pressures
Substrate preparation for coatings
Better adhesion of painted surfaces
Increased die thermal heat transfer

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Thermallife (also a registered process) was introduced in the summer of 2001. It is a thermal chemical process performed in controlled atmosphere equipment that involves heat, gases, and time.

When the die is at the proper temperature, gases are introduced into the system that cause a diffusion of nitrogen and carbon atoms into the surface of the tool. This stretches the surface of the steel, placing it in an opposing compressive layer. Graphs showing this relatively shallow layer and compressive value can be compared to the deeper and higher Metallife levels.

The mechanics of Thermallife are known in the industry as Ferritic Nitrocarburizng (FNC). The process is common and known by many trade names. Thermallife is unique because of our state of the art technology that is used. Our fully automated and computer controlled equipment is the only one of its kind in the United States. This guarantees the consistent repeatability of the process, something that other suppliers have difficulty doing.

When proper recipes are utilized, Thermallife has an ability to form a compound layer on the surface. It is this compound or epsilon layer that establishes the barrier to prevent the interaction of aluminum (Al) and the tool steel iron (Fe). Die casters know this unwanted phenomenon by the name "solder" or "soldering".

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In order to quote our services, we need to know surface area for Metallife and weight for Thermallife. Usually for die casting, we request a casting for the Metallife requirement. This gives us the ability to quote and at the same time see a fingerprint of the tool under actual operating conditions which helps when processing.

What do we do when the tool will be a new design or no casting is available to send us? Gathering the proper information can then be a time consuming effort for both us and our customers or clients.

Not anymore! Badger has developed an interactive web means of transmitting the needed information via email. Just go to the page that is appropriate - with a casting (**Short**) or without (**Regular**).

Then just fill in the information, and click SUBMIT. We will do the rest. You will even find links to our pricing structure for both processes along with formulas for figuring surface area for different geometric shapes.

To be taken directly to these referenced pages, just click on the sidebar Quote links. We are always open to suggestions on improving this feature. If you have any suggestions or comments, please email us and let us know what you like and don't like about this feature.

We trust that this newsletter has helped to make the "Window of Opportunity" a little larger and more accessible to your tooling needs. We thank you for your continued business.

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