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Special points of interest:

- Alternative for Cooling Water Chemical Treatment
- Processing Tips, the Third in our Series
- **Click on the Rapid Logo for our "Granulator Garage Sale." New granulators at used prices.**
- **Click on the Advantage Logo for a list of stock new and used equipment.**



WHAT IS YOUR WATER COSTING YOU? THE STAGGERING IMPACT OF SCALE

Calcium, combining with carbon dioxide, is what creates scale inside heat exchangers, condensers, molds, piping and any other component that comes in contact with your water system. Scale is produced when heat energy breaks down the solvent "cages" that keep minerals in solution. Scale will form in it's highest concentration at the source of heat, but it will also appear throughout the rest of your cooling tower or chiller system, often with staggering costs. Only one-sixteenth of an inch of scale results in an 11% loss of energy or heat transfer! Put more simply: **poor heat transfer equals money lost.**

Traditional methods of water softening and adding chemicals only seem to manage the problem by keeping the minerals in suspension until the water's conductivity (measured in total dissolved solids) becomes so high that your system must blow down and fresh water must be added. These endless cycles waste a great deal of water and, let's face it, your system still has scale buildup. Discharging salt and chemicals into the environment, handling heavy barrels of chemicals and paying that monthly invoice to the chemical company are more good reasons to ask, "What's our alternative?"

Efficient Water (**e-h2o**) has developed a complete treatment system that eliminates existing scale, prevents new scale from forming, stops any biological growth, and maintains your system's conductivity at an optimal performance level. **e-h2o** can do this **without** the use of any



chemicals or softening and with water savings reaching 50-80 percent! They back this claim up with a list of reference installations and a one-year, money back guarantee.

When WAK Plastics Machinery first heard about this system, developed by a team from the U of M, we were skeptical. It sounded too good to be true. So we did the most logical thing; we talked to several companies already using the Efficient Water Treatment system. We discovered the system not only does everything the manufacturer claims, but in most cases, it does the job for a much lower cost than conventional chemical treatments!

For more information or a demonstration of the Efficient Water Treatment system call Fred Fulsher at (616) 642-6080 or visit our website (www.waksite.com).

State of Michigan DEQ matching funds may be available to your company for the implementation of this technology. Call Fred for the details. Offer ends 4/4/03.

EQUIPMENT FINANCING ALTERNATIVES:

As companies move closer to purchasing decisions, the subject of financing may come up. If you haven't already, you may want to consider leasing your new equipment. Here are some of the reasons that leasing is a preferred method of acquiring commercial equipment:

- Since leasing generally provides 100% financing,

companies are attracted by the minimum upfront expenses and down payments required by other financing alternatives. You may even include out of pocket expenses like shipping, freight and installation.

- Leasing is a fixed expense. With the uncertainty of interest rates and inflation, it is advantageous to lock-in long term expense with today's dollars. In addition, you have

the opportunity to pay for the equipment while it generates income.

- Leasing preserves existing lines of credit. Growing businesses generally have substantial credit needs to finance their development. By diversifying lending relationships, your business maximizes its access to credit and you never "put all your eggs in one basket."
- Leasing protects against equipment obsolescence.

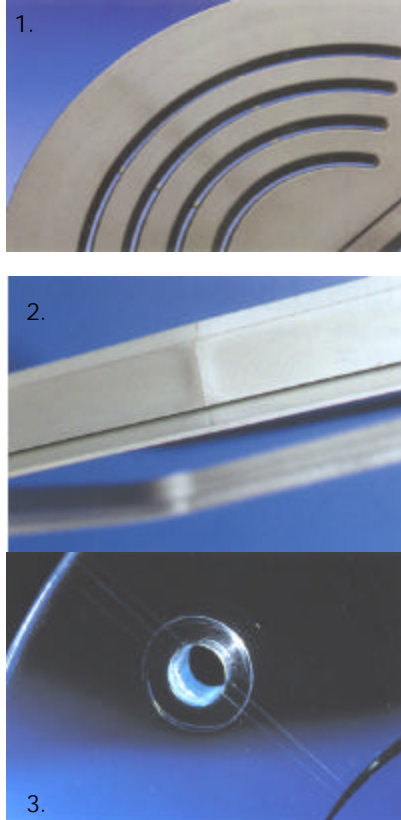
3. WELD LINE

The weld line on plastic parts typically represents an optical and mechanical weakness. A notch and or a color change can appear. Notches are particularly visible on dark or transparent parts with smooth or highly polished surfaces. Color changes are particularly visible on parts with metallic flake or metal effect pigments.

Figure 1. & 2. shows color differences at weld lines. Figure 3. shows a visible notch on the top and bottom side of a transparent part.

Cause: Weld lines are created when two or more melt flows meet. The rounded flow fronts of the melt streams are flattened and bond when they

touch each other. This process results in the stretching of already highly viscous flow fronts. If the temperature and pressure are not high enough, the corners of the flow fronts will not completely develop, creating a notch. In addition, the flow fronts no longer melt together homogeneously and can potentially produce a weak spot in the part. If molding materials containing additives like color pigments are used, strong orientation of these additives near the weld line are possible. This can also lead to color changes near the weld line. Typically, significant improvements can only be achieved through increased material or mold temperatures, unless special molding technologies are employed.



Corrective Action:

1. Color change near weld line?

NO

— YES —

- 1. Use smaller pigment particulate
- 2. Use spherical pigments
- 3. Use material lighter in color

2. Can alternative or special molding technologies be applied?

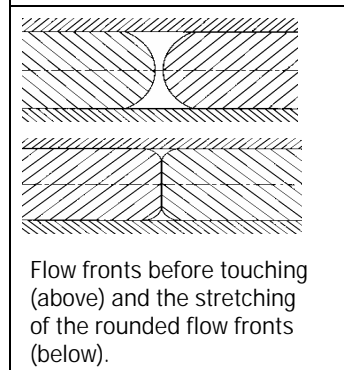
— YES —

- 1. Investigate gas assist or gas counter pressure technologies
- 2. Investigate low pressure molding

NO

- 1. Increase mold wall temperature *
- 2. Increase injection speed or rate
- 3. Increase melt temperature
- 4. Increase holding pressure
- 5. Check mold vents, confirm depth of same
- 6. Consider cavity surface with texturing to mask knit line
- 7. Consider repositioning gate location in an effort to reposition knit line to a less problematic area of the part.

* Increasing mold temperature can reduce the defect but may lead to an increase in cycle time (2% per °C).



Flow fronts before touching (above) and the stretching of the rounded flow fronts (below).

EQUIPMENT FINANCING ALTERNATIVES CONTINUED:

cence. With dramatic advances in technology and productivity improvements, it is difficult to stay current with the best equipment on the market. By leasing, you can easily upgrade to better equipment when you need it.

- Flexible repayment structure. Leasing may allow for your equipment to be running and generating

income before payments are required, by matching your payments to your cash flow or budget requirements. Skip payments, annual payments, and deferred payments are all examples of lease structuring.

As a service to our customers, we can arrange for the leasing of your new equipment. We have developed relationships with several leasing companies throughout the United States, which

enables us to secure the best possible terms for our customers. Whether your purchase is large or small, we will be happy to assist you. Give our Lease Department a call or ask you WAK Plastics Sales Representative for more information. Our Leasing Department can be reached at (616) 642-6080.