



Industrial Molds Group



October 2015 Newsletter

Manufacturing Day at Industrial Molds

Manufacturing Day was actually two days at Industrial Molds. On Thursday, Oct. 2, we hosted a group of high school students at Industrial Molds, giving this group of young people the opportunity to see what a modern, high-tech mold manufacturing company actually looks like. We provide information on the career opportunities that exist in mold manufacturing that include CAD design, programming, machine operator, quality, and engineering.

On Friday, Oct. 3, officially Manufacturing Day, we provided a Virtual Tour of Industrial Molds. Technology allowed us to open our doors to hundreds of people who wanted to see what a state-of-the-art mold manufacturing company looks like on the inside - and do it from the comfort of their own desk! We appreciate all those who came in and explored what we have to offer in equipment capabilities, personnel expertise and engineering talent.

Conformal Cooling - Faster Cycles, Better Parts

It's all about reducing cost-to-manufacture. While many OEMs say it's about quality parts, at the end of the day it's really about having that quality at the lowest possible cost-to-manufacture. So how do we get there?

One mold technology that has been getting more attention lately, primarily because it has the possibility of providing both higher-quality parts and reduced cost-to-

manufacture is conformal cooling.

Conformal cooling technology in injection molds was developed a number of years ago to provide a better, more uniform way of cooling parts with complex geometries or parts with thick wall sections, by creating cooling channels that "conform" to the shape of the molded part. This allows better cooling close to critical areas of the part that otherwise would be difficult to cool, reduces cycle time and improves productivity and quality.

There are many other advantages to conformal cooling as well. One of the first is freedom of design. Often parts have areas that are difficult to cool using straight-line cooling channels, which can add seconds to the cycle time and result in a non-conforming part. The use of conformal cooling allows the part designer to design the part required for functionality rather than having to design around cooling considerations or restrictions that the required design might create.

Molds need to be constructed properly so they do the job they were meant to do - get the heat out quickly to optimize cycle times. If water can't get close to the part, it takes longer to remove the heat from the part. Conformal cooling lines "conform" to the geometry of the part, meaning that parts with complex geometry - including parts with thick wall sections or thick-to-thin wall sections - can be optimized.

To ensure that the design of the mold and the conformal cooling channels are optimized, a material flow analysis should be performed. At Industrial Molds, we use Moldex 3D software that allows us to simulate the material flow with conformal cooling channels to ensure that optimum cycle times can be achieved. By reducing cycle times using conformally cooled molds, you can exponentially increase productivity - and thus capacity - without having to add more molding machines. According to Robert A. Beard, an industry expert in thermal technology for molds, a properly engineered mold using conformal cooling can typically reduce cycle time by 20%-40%.

Conformal cooling channels are good for almost any size part but are especially helpful for large parts with thick wall sections that typically have longer cycle times. Even smaller parts, such as those we see for industrial applications

that have extremely thick walls and molded using high-temperature engineering thermoplastic materials can gain these benefits from conformal cooling channels.

There are a couple of standard ways of creating these conformal cooling channels. One is via vacuum brazing or a "fusing" technology. The channels are machined into the mold plates to conform to the part; the plates are then fused together, resulting in perfectly round channels in the mold to accommodate turbulent flow of the cooling water.

Another way to create cooling channels is through the metal 3D printing (additive manufacturing) technology, which "prints" the channels which are then inserted into the mold. The advantage of the 3D printed channels is that they are less likely to leak than vacuum brazed channels. However, vacuum brazing has been around for many years, and a good supplier can provide quality channels that don't have leakage problems.

At Industrial Molds, we can help you determine what type of cooling is optimum for the parts you require and whether or not conformal cooling will give you faster cycle times and higher quality parts. Contact us for an evaluation of your next project.

Sincerely,
Industrial Molds

Contact us:
customer.service@industrialmolds.com
815-381-7648



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Industrial Molds, Inc. | 5175 27th Ave | Rockford | IL | 61109