Cavity ID's vs. Flow Group ID's

Cavity ID's are used to help distinguish one cavity from another cavity. This becomes more important when looking at such things as part quality, mold maintenance data, and short shot analyses. They are often put into the molds without much thought given to them. But new troubleshooting techniques bring to light some very important aspects of cavity ID's.

The first important point to make is their location within the cavity relative to the gate. Our recommendation would be as close to the gate as possible. So when evaluating the parts from your short shot analysis you will be able to see the cavity ID's.

Second, avoid putting cavity ID's on EJ pins. Pins tend to get moved around during routine mold maintenance, and what was once cavity 3 may not be cavity 6 thus making it more difficult to accurately track historical data.

Third, if using a cold runner system, we would recommend putting the same cavity ID markings on the cold runner itself near the gate. This way you know which gate is feeding which cavity and how the runner is oriented in the mold when looking at your data.

And fourth, we recommend using Flow Group ID's versus traditional cavity ID's. Please read on…

$$\Delta P = \frac{8Ql\eta}{\pi r^4}$$

Figure 1

The science behind Flow Groups comes from fundamental plastic flow principles along with the pressure drop equation (**Figure 1**). Using Flow Groups will help you see through much of the noise by separating variations into "steel" vs. "viscosity" variables based on the pressure drop equation itself.

Figure 2 shows short shot data from a 16-cavity mold using conventional cavity ID's numbered 1 through 16.

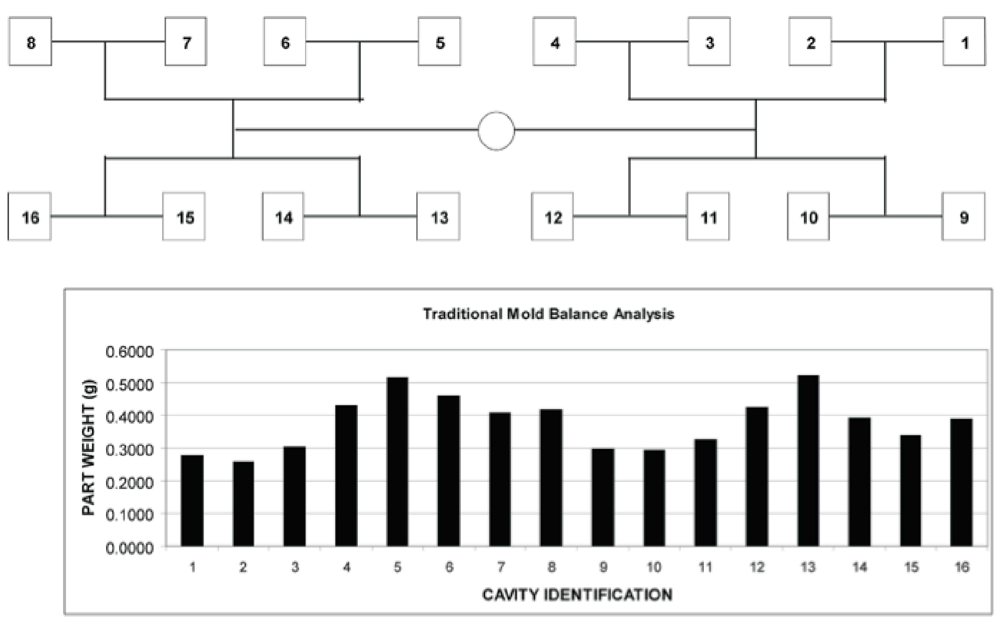

Figure 2

Tips of the Trade Continued

The data shows a calculated variation of 51%. From here you can see there is a great deal of variation, but no rhyme or reason as to what is causing the variation.

Figure 3 was created using the same data but now we are looking at it according to Flow Group ID's. This allows us to easily identify a pattern in which the cavities in the A & D Regions were the heaviest cavities in all Flow Groups. We then kept asking the question "what would cause this to happen?" until the root cause was found, which ultimately led to identifying a variation of .006æ" (.152 mm) in one half of the primary runner. The larger primary runner was on the left side of the sprue (Regions A & D), which correlates with the data according to the pressure drop equation.

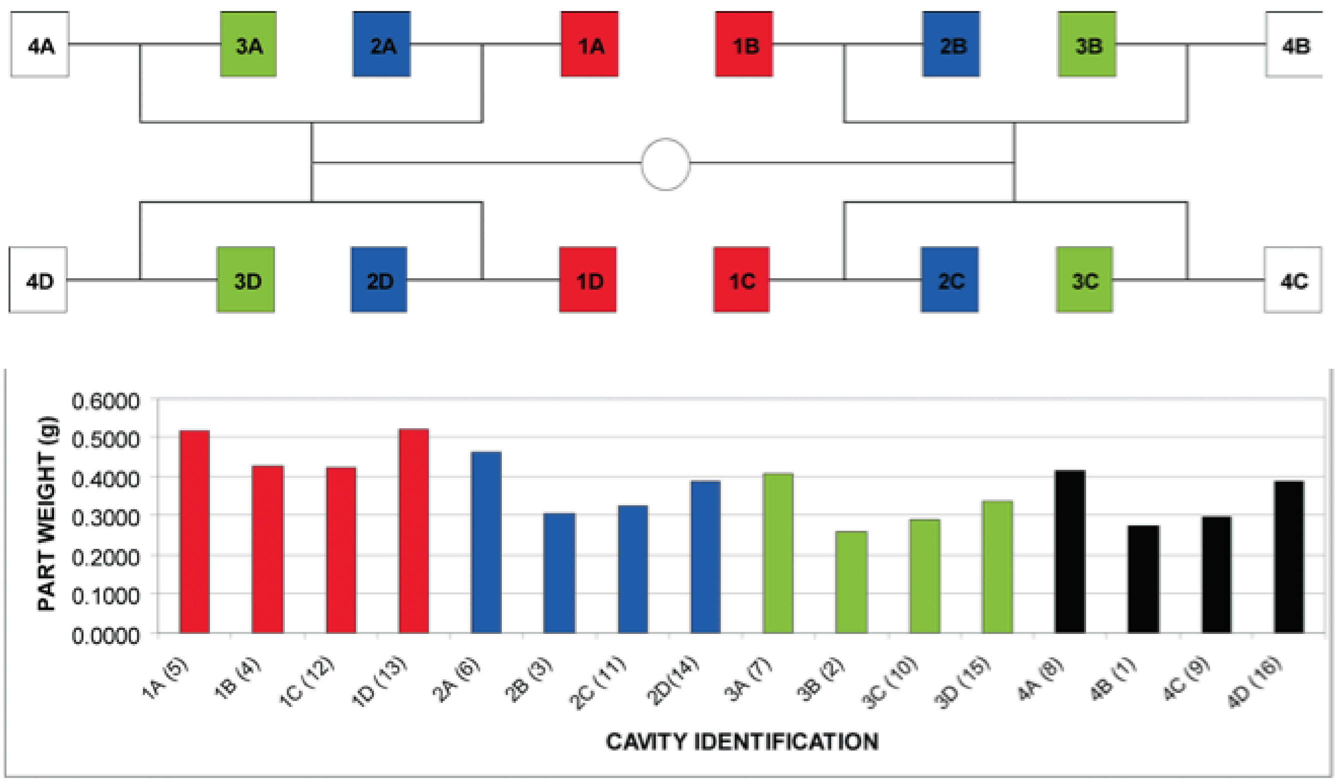

Figure 3

For more information on this month's tip contact:

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