

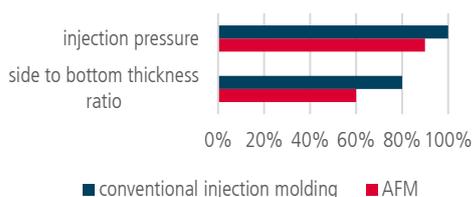


AFM Active Flow Molding

Thinner bases, less shearing, lower injection pressure: using movable cores in preform molds brings many great benefits.

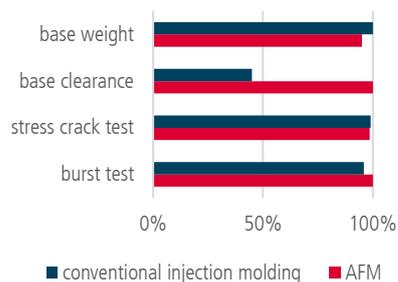
Advantages for the Preform

- Thinner bottom designs possible (material savings)
- AFM could achieve a side to bottom wall thickness ratio below 60 % (standard mold 75 % - 80 %)
- Reduction of injection pressure
- Lower stress for the material
- Broader length/thickness ratios



Advantages for the Bottle

- Lower base weight
- Higher base clearance under injection point
- Same good performance at stress crack and burst test



Active Flow Molding

As anybody who has ever struggled to open a bottle with a short thread can tell you, the scope for saving material in this area has been practically exhausted. But what about the bases of PET bottles? These have also been the subject of attempts at optimization for some time, as they are often thicker than they need to be for the stability of the bottle and use more plastic than strictly necessary. This high wall thickness can also sometimes be detrimental to the subsequent blow molding process, particularly when the blowing machines are running at high speeds. Active Flow Molding (AFM) offers a new opportunity to considerably reduce wall thickness right from the primary shaping stage, by using movable cores in the mold.

The key feature is that the cores are movable, resulting in a mechanism similar to those used in injection compression molding. The individual stages are as follows: during the injection process, the molten plastic pushes the core back and the available sprue opening increases. The plastic flows in more easily, the flow path ratio is more favorable, injection pressure drops and there is less shearing. Once the preform is almost completely full, the core moves forward up to the final position through the still-liquid molten plastic. Surplus mass at the base is pressed into the wall and the thread is completely filled right to the top. The thin base is achieved during primary shaping and therefore carries little tension.

