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Simulation of High Pressure Die Casting (HPDC) via STAR-Cast

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Presented at the STAR Global Conference 2012

STAR-Cast?s multiphase approach, the HRIC algorithm for interface capturing, the advanced meshing techniques and the STAR-Cast power session are the key features in rigorous simulation of HPDC processes. The predominant process input parameter is the shot curve, which determines melt flow from the filling chamber via controlled piston movement into the mold insert, and thus the compression and outflow of air.

All input parameters can be defined via the STAR-Cast graphical user interface for HPDC-processes: the cooling and heating system conditions of the mold insert, die cycle warm-up, shot curve, air outlet conditions and casting temperature. STAR-Cast provides shot curve definition including a switch point from velocity control to pressure control.

In particular HPDC processes under reduced pressure in the mold cavity can be simulated by applying appropriate pressure outlet boundary conditions. STAR-Cast?s multiphase approach enables precise modeling of mold filling, air entrapment and misrun formation. A special application is the simulation of die venting by means of venting blocks, acting as outflow valves for liquid metal through misrun formation in the venting block

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