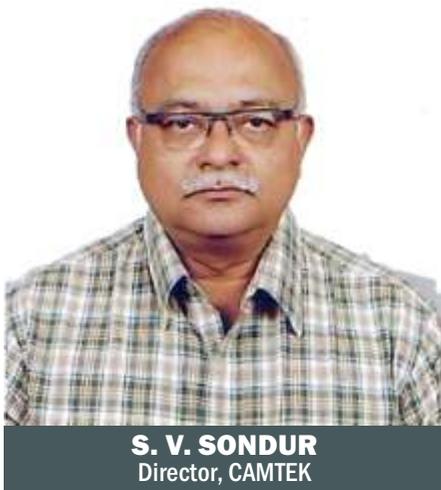# Simulation Technology
## and Foundry Sector

- S. V. Sondur

S. V. SONDUR
Director, CAMTEK

S. V. Sondur, Director of CAMTEK got introduced to the Simulation Technology in 90's S. V. Sondur, Director of CAMTEK got introduced to the Simulation Technology in 90's when he met Dr. Konrad Weiss in Germany and from then on he started working closely with the foundries Since the beginning Sunil Sondur has handled various projects in CI, SGI, Steel, Aluminium, Copper, Brass materials. The experience in handling projects in Gravity, LPDC, HPDC, TILT Casting, Lost Foam Casting, Investment Casting, Continuous Casting methods has not only helped the end users to take care of the detects but also improve in the yield, which is the most important requirement of any Foundry Man.

We are all well aware that the Simulation Technology started getting evolved in the late 80's before this period there was no such technology was available in the world. This was found necessary because of the complexities of the geometries of the components to be casted as well as various different types of materials required to be used for the casting purposes.

Simulation Technology was built to cast "GOOD CASTING THE FIRST TIME", when we say a good casting it means a casting that meets the expectations of the customer, however, at times we also need to settle for conditions that may not fully meet the customer's requirements.

It is necessary to understand that the Simulation Technology in the form of Software is a "TEAM MEMEBR" of the team in the foundry. Good simulation software gives you necessary guideline about the gating
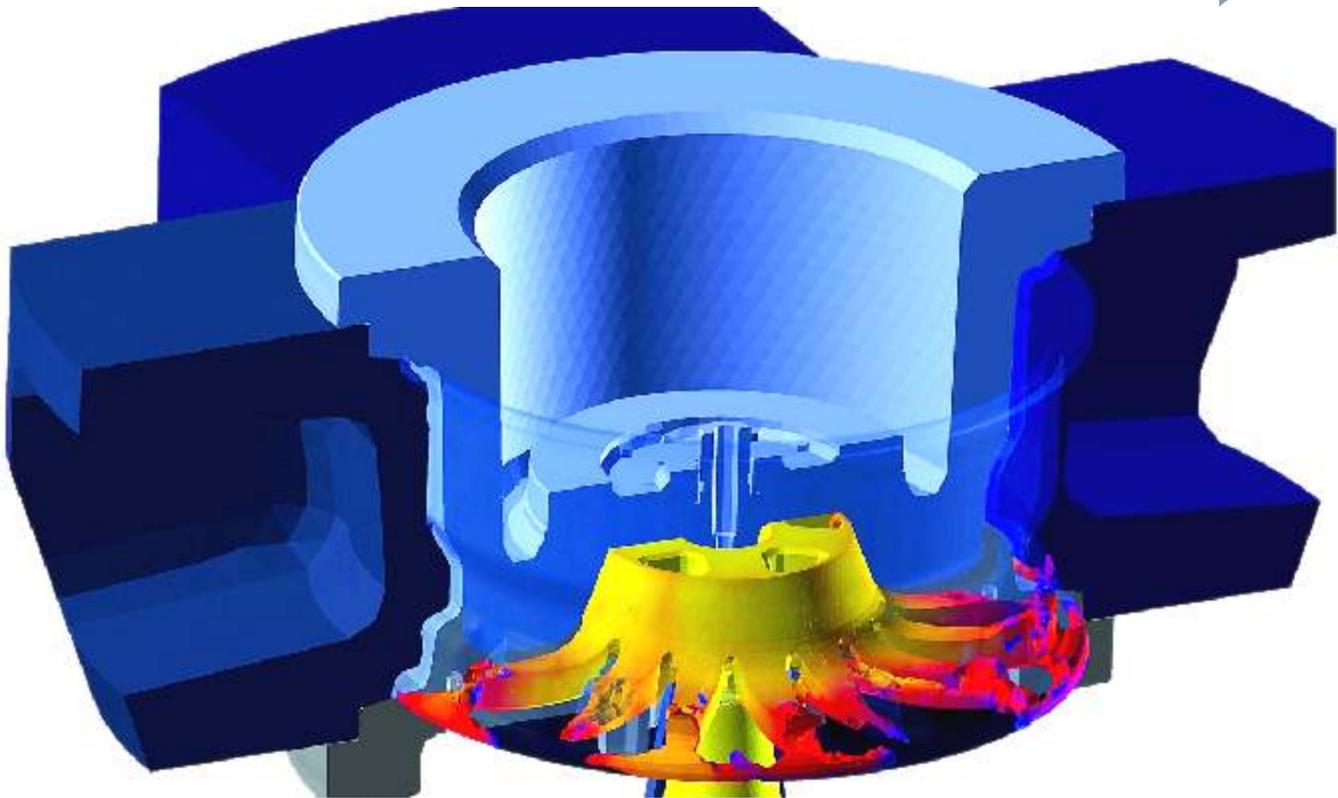
system to be that should be adopted.

Simulation technology is useful in finding the defects arising due to he present gating system adapted in the foundry and it does not stop here because it should also be used to optimize the gating system such that the yields in the foundry are improved there by reducing the costs incurred in the casting process.

WinCast Expert® is one such software developed by RWP GmbH, under the leadership of Dr. Konrad Weiss, President of RWP GmbH, Germany who has a vast experience in the foundry area. He has completed his PhD in foundry engineering and while developing the software included all his experience to make the software as one of the most useful tool.

Information required in WinCast Expert® required for simulation process?

● CAD data in .STL format

● Material composition OR the ASTM, DIN, ISO standard name

● Information about the cores, chills, sleeves etc.

● Heat transfer coefficient of all the materials

Once this data is available simulation can be run easily. WinCast Expert® helps to understand mold filling, solidification pattern and also the possible defect areas.

It is imperative to understand and accept the fact that the use of the simulation technology should start before the foundry man thinks and decides about making the pattern / die etc.

The reason for this is if one simulates the casting component without any gating system (the condition as if the mold is filled) it is easily possible to understand the modulus that helps the foundry man in deciding the correct gating system. Whether to use the risers / chills etc. and define the gating system such that he can get the FIRST CASTING THE RIGHT CASTING.

However, in the foundry generally the patterns / dies are designed immediately after receiving the drawing from the customer and from here the problems could start.

WinCast Expert® is one such software that helps you to design a good gating system and once the end user has reached the solution on the computer the same can be applied

without any changes and get a good casting.

WinCast Expert® can be used for any kind of process as well as any kind of material used in the foundry for casting purposes. It has a built in data bank that helps the end user in selecting the parameters directly from the data bank and start the simulation process.

WinCast Expert® being a FEM (Finite Element Method) based software can handle large file sizes easily since it has a triangulated mesh generation facility that gives you at least 30% more accuracy than other methods. It being windows based system the results can be arrived at quickly. It does not require high end hardware either. Our experience in the CI, SGI, Steel, Aluminium, Copper, Brass foundries has been very good. The end users have expressed their happiness about the results achieved using this software and apart from getting the first casting the right casting many have reverted back informing us that they have successfully used the software in improving the yield in their foundry.

(Cont...to Next Issue)

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