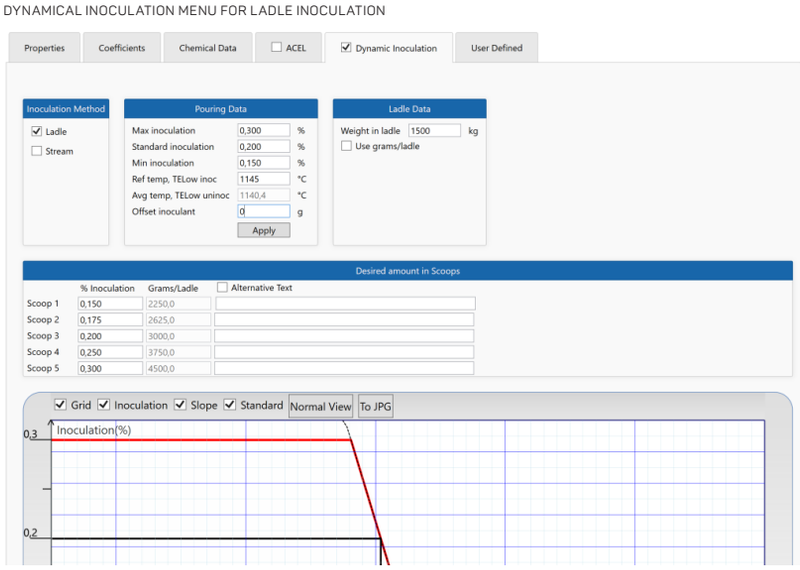
ATAS METSTAR
DYNAMIC INOCULATION MODULE

The purpose of dynamic inoculation is to ensure that the final iron has a high and constant nucleation level even if the nucleation in the base iron varies.

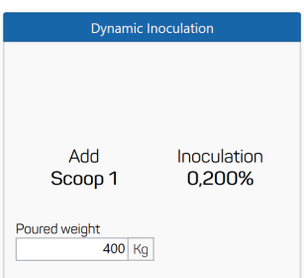
Normally, foundries add the same amount of inoculant all the time, e.g. 0.2%. As the nucleation varies in the base iron due to various melt temperatures, holding times, oxygen content etc the effect is that the final iron is sometimes over-inoculated and sometimes under-inoculated. If the iron is over-inoculated, the risk for shrinkages often increases as well as the risk for slag defects. There is also a high risk for wall movement (in case of the sand mold). If the iron is under-inoculated, TElow decreases (most important quality parameter), the eutectic point moves to higher values and the risk for primary carbides and shrinkage increases.

DYNAMICAL INOCULATION MENU FOR LADLE INOCULATION



With Dynamic Inoculation, a sample is taken for every new melt or once an hour if a holding furnace is used, and analysed by ATAS MetStar. The optimal amount of inoculant is then calculated and displayed on the screen. The nucleation level in the final iron will thereby be on the same level all the time. The grey eutectic temperature will be more constant, which has the effect that the true eutectic point (TEP) is at a constant position. The inoculation will thus be situation-based. ATAS MetStar system has the possibility to connect to instream inoculant machine directly with an aim to avoid human error.

SUGGESTION TO OPERATOR FOR OPTIMAL AMOUNT OF INOCULANT IN THE LADLE



The main benefits of using dynamical inoculant module for gray and ductile iron are:

- Reduced casting defects (shrinkage, chill, slag)
- More stable physical properties (constant amount of primary austenite)
- Add only necessary amount of inoculant to reach perfect conditions in the melt/casting
- Less consumption of inoculants = higher cost efficiency of production
- Less inoculant, less variations, less defects