

Achieving Control of Coating Process in your Foundry - DTU Orbit (08/11/2017)

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Achieving control of coating thickness in foundry moulds is needed in order to guarantee uniform properties of the mould but also to achieve control of drying time. Since drying time of water based coatings is heavily dependent on the amount of water present in the coating layer, a stable coating process is prerequisite for a stable drying process. In this study, we analyse the effect of different variables on the coating layer properties. We start by considering four critical variables identified in a previous study such as sand compaction, coating density, dipping time and gravity and then we add centre points to the original experimental plans to identify possible non-linear effects and variation in process stability. Finally, we investigate the relation between coating penetration (a variable that is relatively simple to measure in production) and other coating layer thickness properties (relevant for the drying process design). Correlations are found and equations are provided. In particular it is found that water thickness can be directly correlated to penetration with a simple linear equation and without the need to account for other variables.

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