



CONSISTENT, STABLE, PRECISE, COST EFFECTIVE

CPP - COATING PREPARATION PLANT

AUTOMATED COATING CONTROL & ADJUSTMENT

Reduced scrap and rework costs

Optimised drying

Superior casting quality

Higher productivity





High performance mould and core coating

high performance mould and core coatings should be applied consistently

Increasing requirements from foundry applications such as thinner wall sections, complex internal geometries and new alloys, is driving the demand for high-performance coatings. However, high performance coatings need to be applied consistently to achieve optimum results on a repeatable basis.

Poor application control can undermine coating performance and can in some instances lead to excessive scrap or rectification work.

Traditional coating application control

Baumé and viscosity testing are widely used in the industry. The primary objective of these and other measures and controls is the consistent achievement of optimum coating layer thickness. However, the robustness of such control methods is affected by a number of variables¹:

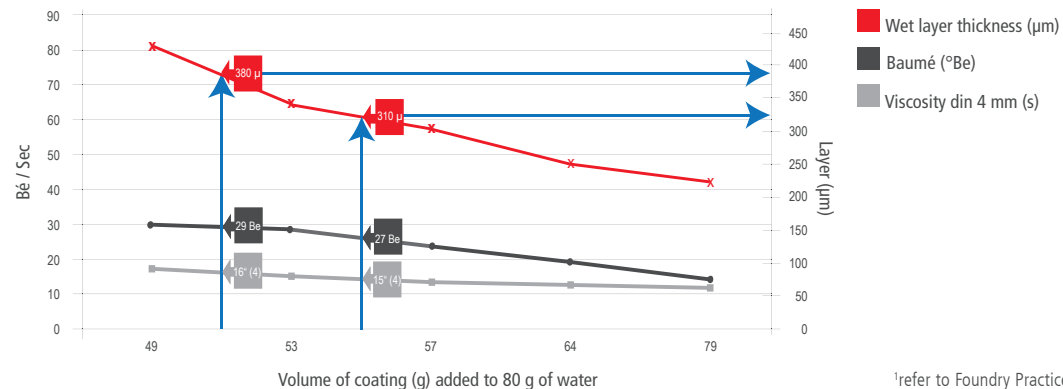
Variables

- operator influence
- coating temperature
- core temperature
- ambient foundry temperature
- energy put into a coating by pumping and mixing

The applied wet layer thickness changes significantly once either the Baumé or the viscosity control specification applied during the application is too broad (figure 1).

To leave these critical parameters to a manual control and possible adjustment risks a number of problems that can eventually lead to increased cleaning and scrap costs.

Fig. 1 Coating baumé and viscosity vs. wet layer thickness



¹refer to Foundry Practice 246 for more information

Viscosity is highly influenced by temperature, however, foundries do not typically adjust the set viscosity specifications in the cooler or warmer period of the year. Temperature induced viscosity change will have an influence on the final layer thickness applied, and therefore casting quality.

Density control

Density is directly related to the applied solids content in the coating (Fig. 2). Consequently, if coating density can be controlled, wet layer thickness consistency is greatly improved.

Automated coating control

The Coating Preparation Plant (CPP) uses density as the applied control measure. It automates the adjustment of the coating preparation from its as supplied state to the required density to achieve the

desired wet layer thickness. Consequently, application consistency is lifted to previously unachievable levels.

Process consistency

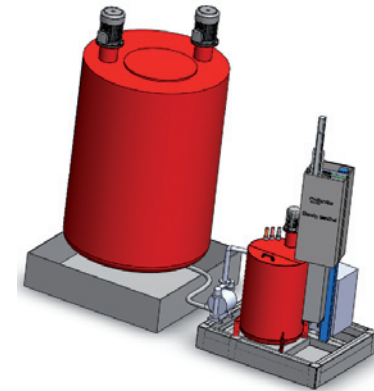
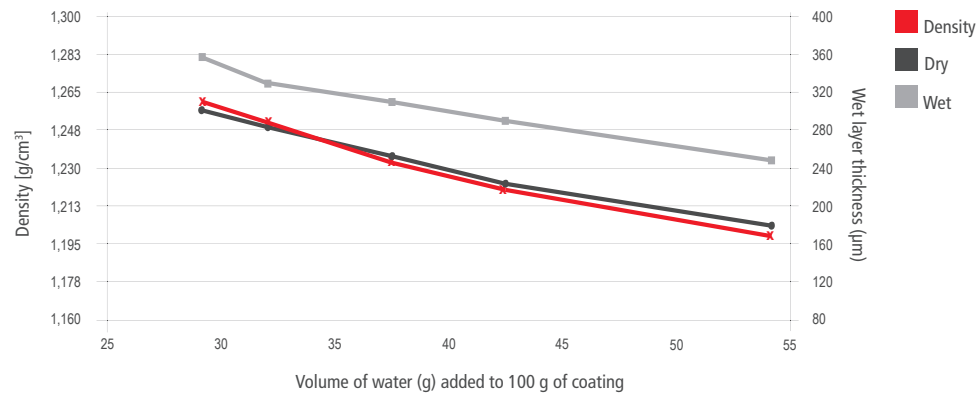
The consistency of the process is carefully monitored and controlled through a series of reports, information screens, text messages and alarms. The system also generates a comprehensive database of coating application information.

Versatility

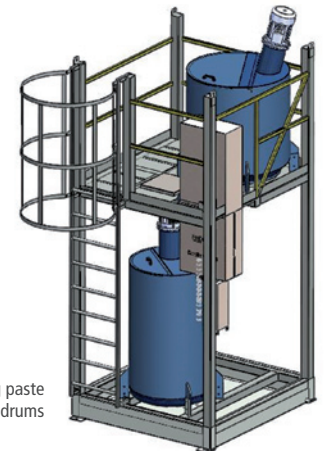
The CPP is highly customisable and can be connected to all application processes and all typical coating supply methods. It can be connected to dip tanks, as well as flow coating stations or spray equipment.

Water disinfection modules can also be incorporated.

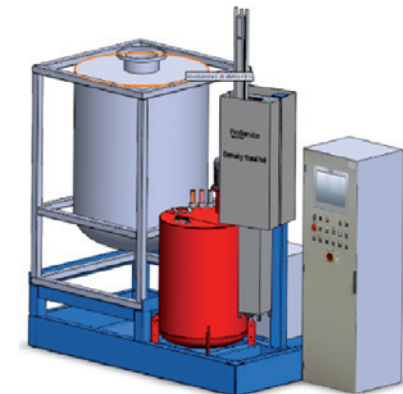
Fig. 2 Coating density vs. dry and wet layer thickness



CPP connected to a coating tank installation



Coating paste supplied in drums



Coating supplied in IBC

Automated coating control

Optimising coating application to achieve the highest performance

Controlling coating density, and ultimately wet layer thickness, enables the foundry to optimise coating application. Wet layer thickness can be adjusted to suit the demands of specific applications. Consequently, a number of benefits are achieved:

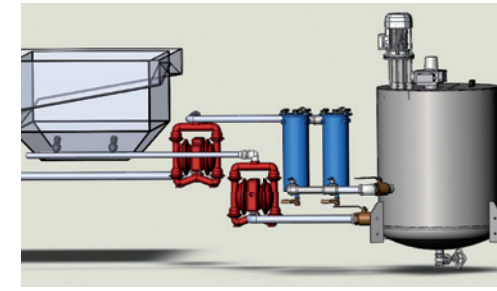
Benefits

- Consistent coating layer thickness
- Improved coating application efficiency
- Reduction of coating layer related defects
- Reduced casting scrap
- Fewer scrap moulds / cores
- Optimised drying
- Improved productivity
- Reduced coating dumping costs
- Improved working environment
- Lower casting manufacturing costs
- Improved foundry profitability

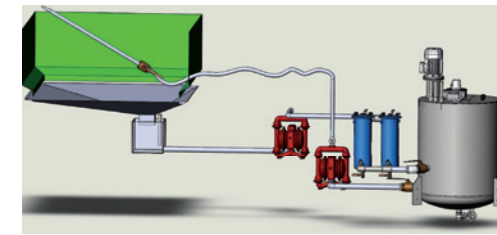
Enhanced supervision and control

The CPP revolutionises coating control and takes application consistency to new levels:

- Up to 8 different densimeters can be connected to help the shop supervisor control density trends
- Information on density can directly be given to operators by a LCD monitor
- Customisable alarms and text messages ensure process security
- Coating history database raises supervision and analysis to previously unachievable levels
- 24/7 remote assistance capability
- Automatic densimeter calibration



CPP for dip application



CPP for flow coat application

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