Solutions for coating & drying for cores and moulds
Coating Preparation Plants (CPP™)

Our customized Coating Preparation Plant provides a modern alternative to traditional measurement procedures, but more importantly it provides quality assurance for foundries that need to control the coating features with high precision.

Optimizing coating features

A CPP™ system is an automatic preparation unit of coatings for cores and moulds. It is based on continuous measurement of density and automatic batch measurements of viscosity (using Ford cup or cup according to DIN 53211), assisted by optical sensors. Based on the measurements, the ratio of dense coating paste (from silos, drums or bulk storage tanks) and solvent (water or alcohol) is managed in a preparation tank independently of operators. By controlling the density of the coating, inconsistency of the layer thickness on cores and moulds can be minimized.

The coating is being prepared inside a closed system that improves the surrounding working environment, but also reduces the consumption and maintenance. The coating is continuously passing minimum one filter unit, allowing removal of sand, dried coating and broken pieces of cores from the system. Additional filter units can also be fitted. One single CPP™ system is often enough to supply multiple consumers (dipping tanks, robotic coating cells or flow coating/spraying stations).

Optional items are available, as cooling/heating systems to keep the coating at constant temperature having the total control of the process, or UV treatment of the water to dose in the preparation tank for installations where bacterial contamination in water-based coatings are more frequent.

Tech specifications

Production capacity: from 10 Lt/h up to 500 Lt/h
Density range of measurement: (0.90 – 2.80 kg/Lt)
Accuracy: < 0.01 Kg/Lt.
Frequency of the density measurement: 1 sample / sec
For water or alcohol based foundry coatings.

Coating Application Solutions

We customize solutions from simple dip tanks to highly automated plants for complete coating preparation and application.

Our philosophy is to avoid sedimentation and have homogeneous density by careful, but consistent movements in the entire system.

Our unique solutions continuously filter the coating from broken pieces of sand that otherwise may cause a defect in a casting.

All our coating applications system can be connected to a CPP™ for a complete and automatic system for preparation of all types of foundry coatings.

Our customized solutions for coating applications include:

- Dip tanks (w or w/o constant level)
- Flow coating stations
- Spraying stations
- Flow coating stations with cascade
- Combinations of above
- Automated applications (automatic manipulation of cores, automated robotic coating cells)

Consistency in coating layer thickness

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Core & Mould Drying

We have long experience in customized drying solutions for high volume production of cores and moulds. Our unique technology involves a combination of heat radiation and convection to remove moisture from the mould/cores in a fast and energy efficient process.

Efficiency in drying process

With the combination of heat radiation and convection, lower drying temperature is needed which improves the quality of the cores, but still requires less drying time compared to conventional technologies. Lower temperatures mean less energy consumption. Heat is generated using gas burners or electrical heaters, depending on the required specification.

Efficient burners and an extraction system that drives combustion fumes out of the drying chamber through tubular heat exchangers allow energy to be conserved and used elsewhere.

Our solution can be customized and integrated into any existing process, or be equipped with a fully automatic loading/unloading system and any type of conveying system for cores, pallets, moulds or flasks. A drying solution can be designed as a continuous horizontal line, vertical line when the space is limited or static for batch drying. There is always a solution that will fit your process.

Why using CPP™?

Increasing quality requirements on cores and moulds combined with high sophistication of modern coatings are driving foundries to control this tricky phase of the production process, increase its traceability and to reduce its related defects.

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Traceability of the preparation process

The QA Manager of the foundry will have real-time access to the current density, viscosity and temperature and may analyse the database through an analysis module. A report module will allow creation of customized reports.

All data (alarms, data from Densimeter/Viscometer, temperature, operator notes) are saved in a dedicated database that allows managers to view the coating process in a graphical interface and to correlate the coating parameters saved in our database with scraps of castings and cores. The continuous measurement technique used by the CPP™ is independent of operator or test method and provides more consistent and accurate results in the production environment.

Defects related to the coating preparation process

The purpose of greater control of the coating preparation process is to reduce the number of defect cores and moulds, but also coating related effects on a poured casting. Some of these defects are described below:

• A coating acts as a thermal barrier between the core/mould and the liquid metal. If the layer thickness is not correct the barrier may not withstand the thermal effects and cause thermal expansion of the sand, leading to cracks and so called “Veining” (AFS standard A 112) on the casting surface.
• Inconsistencies in the layer thickness caused by too high or low density of the coating may cause a complicated casting (such as a cylinder head) to fail as the dimensional variances may become too great.
• Inconsistencies in the layer thickness may cause remaining moisture to generate Gas Defects (AFS Standard B 111).
• Contaminated coating may cause inclusions defects such as described in AFS Standard G132 or D233.
• Broken pieces of sand from non-filtered coatings may cause indentations in the casting surface when stuck to a core during the coating process.

Driving foundries to control

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ProService is an energetic company on the forefront of foundry process technology, with 20 employees within metallurgy, mechanics & IT. Since our foundation in 2002 we have gathered significant experience in process technology from international foundries. In our premises close to Venice, Italy, we have in-house production, training facilities and a metallurgical laboratory to satisfy needs from fully customized equipment to technical projects. With our know-how and experience we are a competent partner to develop the process in your foundry.

Our systems & solutions are installed in over 130 foundries worldwide and our customers are found in all sectors of the foundry industry. Regardless of the foundry we are committed to supply world class support & assistance to help our customers reach their goals.

Education program

We are not only a manufacturer of systems and equipment for foundries. We are also a knowledge based company founded on the skills and know-how of our technicians. Above all ProService is a complete partner who can offer advanced systems but also a high level of technical support & relevant up-to-date training. We provide all our systems with a certified & tailored training package for all involved staff, but also specific courses tailored to the individual needs of the customer and on request at the foundry premises.

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