Production & Dosing Systems
To remain competitive a modern foundry cannot solely depend on traditional means to control the iron production process. To minimize variability and maximize productivity a broader approach is required.

Most metallurgical defects in iron foundries stem from insufficient control of the base iron production, followed by wrong inoculation and treatment process. The ITACA™ Production & Dosing system is designed to help counteract poor metallurgical condition and to simplify the process. Our customized solutions stretch from evaluation of base iron metallurgy, to final iron quality control with solutions to actively control the process and provide a higher level of traceability.

ITACA™ Production & Dosing System is more than the basic concept of thermal analysis. It is engineered to become an integrated platform of knowledge for better understanding and precision in your process.

Efficient base iron control

ITACA MeltDeck™ is developed to guide the foundry to produce base iron with low variability by applying state-of-the-art correction algorithms and simplifying the flow of information. With our latest version the interface has been simplified even further to provide the operators with information needed to control the process.

Our principle combines chemical & thermal analysis to fully evaluate the condition in a furnace and a right the first time approach for correction of the process. The import of chemical compositions is automatic and makes running with notes a thing of the past.

Temperature of the melt from immersion probes can be integrated and displayed to the operators together with both light and sound signals, but the new ITACA MeltDeck™ is even more process oriented than that: it allows the foundry to select any information required to control the process, including feedback from the pouring lines.

ITACA MeltDeck™ simplifies advanced thermal analysis and metallurgical concepts like solidification, nucleation status, position on the constitutional Fe-C diagram and provides it to the operator in a simple but process oriented interface.

Melt Correction module

The process oriented Melt Correction module in ITACA MeltDeck™ guides the operators to a tight range for thermal analysis and chemical composition required to give consistency to your castings. The recipe to reach the target of the process is provided to the operator in the interface in an easy-to-follow workflow.

Once the correction is calculated, the operator can prepare the alloys and add to the furnace; however this process generally lacks sufficient traceability. To counteract this situation the new development ITACA Scale™ provides an effective weighing solution to validate the additions.
With the state-of-the-art solutions and integration with ITACA MeltDeck™, base iron control has never been simpler.

The base iron corrections suggested by ITACA MeltDeck™ can be made, other than manually, in a fully automatic way, with even higher precision. ITACA OptiDose™ alloy dosing system makes the process standardized with a minimum of interference and assures higher traceability.

The configuration is customized to specific condition in the foundry such as cycle time, number of materials to be dosed (graphite, FeSi, Cu…), capacity of hoppers and size requirements.

The integration with ITACA MeltDeck™ is supported for calculation of optimal corrections based on thermal & chemical analysis.

The required correction can be dispensed directly into a ladle or into a conventional vessel for correction of a furnace.

Manual or Automatic corrections

ITACA Scale™ makes corrections for each furnace traceable and simple for the operators to perform.

The correction suggested by the Melt Correction module in ITACA MeltDeck™ is displayed in the interface of ITACA Scale™ and the added alloying element is validated against the calculated requirement.

Automate the dosing process

Many foundries rely on preconditioning of their base iron, but also this process lacks traceability. ITACA Stabilizer™ is designed to automate this process based on the nucleation status in the melting/holding furnace prior to transfer of the iron. It is commonly found that pre inoculation may not be required for every ladle, but never again will the operator miss to add it when it is required the most.

Optimal treatment solutions

ITACA Wire™ is a complete solution for cored wire treatment, but also for post-treatment inoculation. Both operations can be made in the same station, saving time and simplifying the process.

Control of the amount of wire can be automated through integration with ITACA MeltDeck™.

Feedback from the pouring lines will allow the foundry to verify if the treated iron is in compliance with the qualitative standards, in terms of nucleation status, compactness of the matrix and tendency to form carbides, and if required to modify the treatment for the next ladle.
Final iron quality control

ITACAX™ offers market leading customization and ways to communicate with other process equipment. The graphical interface has been developed in close cooperation with foundries and makes it even simpler to recognize the information required to control the process.

ITACAX™ monitors the status of the final iron with thermal analysis and other process data by comparing the current conditions to the requirements of each individual casting. The analysis can be adapted on the basis of geometrical features and historical defects of a casting. As an example, a heavy casting in ductile iron usually has a minor risk of external chills, but has a higher risk for graphite flotation. For a thin walled grey iron casting the opposite situation could be more likely.

Thermal Analysis is used to minimize & stabilize process variation that leads to more constant and predictable casting properties.

Born to communicate

ITACAX™ utilizes state-of-the-art PROFINET technology to communicate with other systems and allows real-time data from PLC’s. This makes ITACAX™ able to communicate with virtually any system and to use its data to control the process.

As an example ITACAX™ can communicate with a moulding machine: it thereby knows which pattern is being moulded and can adapt the metallurgical considerations for a specific casting without operator action. ITACAX™ is ready to receive and send information to any system, including sand properties from the sand preparation plant, pyrometers for pouring temperature or any external system that may affect the process.

ITACAX™ continuously communicates with ITACA MeltDeck™, which receives feedback from the pouring lines with trends of metallurgical defects & trends of pouring temperature in real time. The continuous feedback loop can be used to modify the correction of the next ladle to ensure the final iron is poured with near constant conditions and full traceability.
Precise stream inoculation virtually eliminates fading and permits a substantial reduction of inoculation, while assuring a good nucleation status.

ITACA Stream™ is designed to add controlled amounts of inoculant to the iron in the late stages of the process. Compared to other solutions the nozzle of ITACA Stream™ is not static, but can be moved with high precision to maximize the inoculants in the stream. With integration of ITACAX™, the inoculation level can be adjusted “dynamically” in function of the nucleation status of the iron in the pouring furnace. By knowing which casting is poured, the required amount of inoculation can be changed automatically in function of the casting.

One of our latest developments, ITACA Pyro™, provides an integrated solution for continuous temperature measurement during pouring. Plug&Play integration with ITACAX™ allows all vital process data (casting, pouring temperature, thermal & chemical analysis, sand data, etc) to be available for the QA department and significantly simplifies the investigation in case of a defect.

Our solution combines up to two optical pyrometers with an immersion probe for automatic calibration.

With ITACAX™ the status of the entire process can be viewed in real time in the Global View Module from any office. The Foundry Manager (or Process Engineer) can now overview the process from anywhere in the foundry on the new MYITACA™ - the ITACAX™ tablet.

This ensures information is always available where and when it is needed.

ITACAX™ extends ITACA™ Production & Dosing system to the most comprehensive system for metallurgical process control for iron foundries on the market. It is a key ingredient in our Smart Foundry concept where it plays an important role in the Integration, Continuous Control, Traceability & Knowledge transfer.

With the optional modules ITACA QualityCheck™ and ITACA Casting Designer™ also the Design & QA engineer can take part in the work with continuous improvements.
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.

The bottom line

By ensuring the process quality is not only good, but meets the requirements of the casting to be produced, unnecessary waste & inefficiencies in the process can be eliminated. Ultimately it will lead to lower production costs and increase the foundries competitiveness.

The combined effect of greater control, traceability, less scrap or rework goes hand in hand with greater focus on sustainability and will help to reduce the environmental impact of your foundry.

Support & Services

A comprehensive training is the initial stage of a new ITACA™ system and a key factor for a successful installation. ITACA™ Production & Dosing systems are provided with a certified & tailored training package for all involved staff and continuous support during the implementation phase.

Through our ITACA Care™ support program customers have access to our engineers to quickly resolve issues, regardless of their location.

Foundries having chosen ITACA™:

[Brand logos]

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