STEEL SOLUTIONS

ONE SUITE. MANY ANSWERS.

iso sistemi

INNOVATIVE. SMART. ORIGINAL

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THE FUTURE COMES FROM EXPERIENCE

ABOUT US

Established in 1996, Iso Sistemi is based in Genoa and operates internationally in the areas of Consulting, Information Technology, Industrial Automation and Professional Training.
Born as a management consulting company, Iso Sistemi has rapidly evolved into the design and development of complex and technologically advanced projects.
Iso Sistemi is an ideal partner for medium-size companies: its business is heavily focused on customer support and on the use of Information Technology as a strategic leverage of competitiveness.
Since its establishment and thanks to the long and deep experience of its founding partners and senior consultants, Iso Sistemi has found its core business in the steel industry, where it has collected strong references.

THE SUITE

By developing significant projects with international players, the Iso Sistemi team continuousely increased its specific skills: in this frame the **SteelSolutions** suite was created, with the aim of responding to the complex requirements of steel industry.

STEEL SOLUTIONS

ONE SUITE. MANY ANSWERS.

ONE SUITE
MANY ANSWERS

PLANTLOAD

To manage production capacities and to define Order Delivery dates

STEELSCHED

To generate the optimized schedules of the Steel Making Area

MILLSCHED

To generate the optimized schedules of the Mill Area

FINSCHED

To generate the optimized schedules of the Finishing Area

STEELTRACK

To support the optimum management of Steel Making and Continuous Casting

OPTIMET

To optimize scrap and ferroalloy charges aiming to reduce costs and improve quality

PRODSIM

To support plant management by simulating the evolution of the production processes

PlantLoad

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PlantLoad is an advanced system of production capacity management and of support for Order Acceptance, which emphasizes the collaboration between Sales and Production Planning Departments.

Compliance with delivery dates is verified using the **Master Production Plan (MPP)**, called the "buckets" system. Capacities can be defined and "consumed" by using any attributes eligible for the order or combinations thereof.

PlantLoad, based on Order Status progress, periodically and automatically updates the material produced in advance or not produced, and aligns system status to the actual situation of the plant.

PLANTLOAD IS WIDELY CONFIGURABLE ACCORDING TO THE SPECIFIC NEEDS OF THE CUSTOMER

PlantLoad performs the following functions:

It manages the information about the production capacities of the Plant, determined by the Planning Department according to the approved production budgets

Based on Technical Dressing, it determines for each order (customer's or internal) the "consumption" of production capacity for each main facility and the related limit date of passing through the facility

It compares the production capacities required by the order with those still available, with the aim of confirming the requested delivery date or proposing alternative dates

It provides a simulation tool to determine the best delivery date for a new order based on the workload of the plant resulting from the orders already accepted

It allows booking production capacities for orders not yet confirmed by important customers, so as to assure their acceptance

It shows the updated load situation of the equipment, highlighting overloading or residual capacities

Scheduling

SteelSched STEEL SOLUTIONS

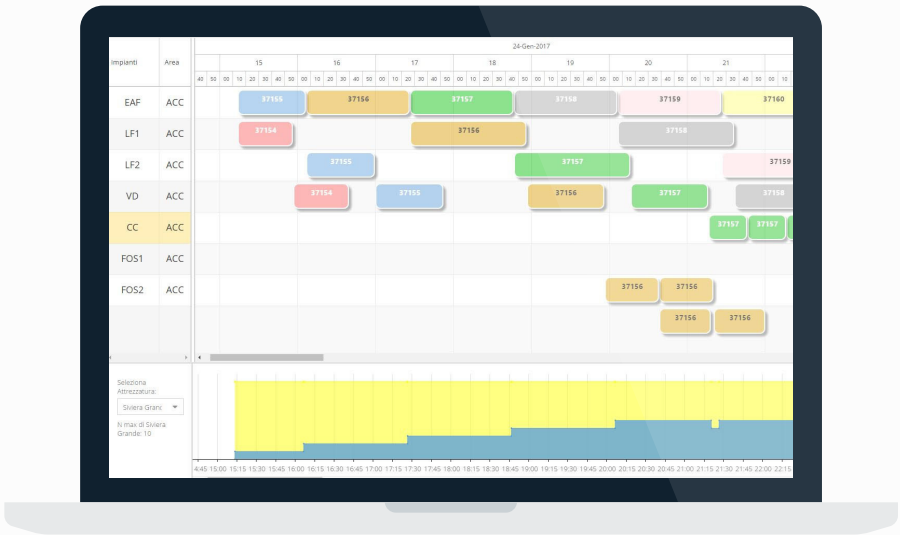
MillSched STEEL SOLUTIONS

FinSched STEEL SOLUTIONS

The **Scheduling** systems are the tool for achieving the objectives of Period Planning:

- to produce orders in accordance with the delivery dates agreed upon with the customers or internally defined;
- to maximize plant productivity and optimize resource utilization, while respecting constraints (operational, dimensional, and quality);
- to reduce raw material and consumption costs.

By their nature, the **Scheduling** systems are specific to the various types of plants. There are therefore "families" of Scheduling systems that meet specific requirements.



SteelSched (Steelmaking and Continuous Casting Area), **MillSched** (Reheating Furnaces and Mills) and **FinSched (Finishing Lines)** have a short time horizon (shifts or days) and generally operate on the basis of the material available upstream (raw materials or semi-finished products); where necessary, they can also use the concept of 'virtual material', that is the material that will become availabile according to the production programs of the upstream equipment.

Iso Sistemi Scheduling systems use three main components:

The **ProdSim Process Simulator** , a generalized tool that, based on past and ongoing operations and on active production programs, determines the evolution of the plant's situation in the short term.

The **Scheduling Model**, which determines the sequence of operations to be performed on each machine according to the cycles, the types of products and the equipment and the operators' constraints.
The Scheduling Model is equipment specific (e.g. it determines the sequence of the castings to produce, the sequence of the slabs to roll, the charge of the furnaces, etc.).

An **interactive interface**, which allows the operator to modify, if necessary, the proposed schedule in a controlled manner, by deleting or inserting program rows.
At the end, the operator can make the schedule operational either entirely or partially.

SteelSched, **MillSched** e **FinSched** systems allow to:

Calculate optimum production programs, achieving significant advantages over traditional manual or semi-manual processes

Improve compliance with customer requirements

Improve product quality

Reduce consumption and maximize plant productivity

SteelSched, **MillSched** e **FinSched** are the basis for generating work instructions to be passed on to the operators (e.g. picking-up and handling of materials for processing, storing of processed materials, performing upstream or downstream activities) and to the automation systems that manage most of the steel plants.

SteelTrack

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SteelTrack includes all necessary functions for the optimum management of the plant:

- Level 1 Interface (field data collection)
- Level 3 Interface (production programs acquisition);
- Should a Level 3 not be available, possibility of directly entering the programs through an appropriate interface
- Full production and Steelmaking accessory equipment tracking
- Management of anomalous events (deviations and noncompliance)
- Operator HMI, implemented through a graphical interface
- Reporting
- Historical archiving of production and process data on a suitable Data Base.

STEELTRACK IS AN ADVANCED SUPERVISORY SYSTEM FOR THE ELECTRIC STEEL PLANT

SteelTrack is used by prestigious international steel groups.
Among the most important and proven advantages:

Improved management and operational practices

Realtime availability of actual results for all decision levels

Possibility of historical data analyses addressed to improvement projects

Significant cost reductions

Reduction of out-of-analysis materials

Increased productivity

Reduced consumptions

Support to the purchasing policies of raw materials and energy

Support to production planning and scheduling

Depending on the different plant configurations and operating rules of the electric steelmaking, **SteelTrack,** as a configurable system, can easily adapt to the customer needs, also with reference to the interfaces with Levels 1 and 3.

The **SteelTrack** supervisory system is integrated with the Iso Sistemi **OptiMet** charge optimization model: the two systems are designed to work together to maximize users' benefits.
OptiMet is supplied as an optional add-on module of **SteelTrack**.

OptiMet

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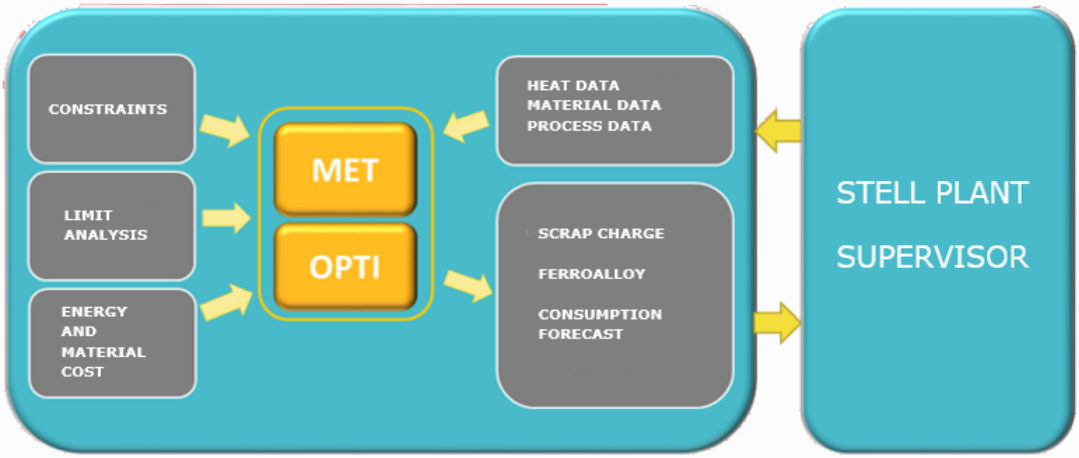
THE STEELTRACK AND OPTIMET PRODUCTS ARE TWO COMPONENTS OF THE STEEL SOLUTIONS SUITE, AIMED AT SUPPORTING THE MANAGEMENT OF ELECTRIC STEEL PLANTS

OptiMet is an advanced application addressed to the Electric Steel Plants, for reducing costs and improving steel quality.

OptiMet calculates the qualities and quantities of charge materials (scrap and ferroalloys) as needed to produce the programmed steel at the lowest cost, while respecting all the plant physical and operational constraints.

The **OptiMet** solution is a powerful tool for an economical and precise running of the Steelmaking; moreover it is a valid support to specialists in the continuous improvement of operational practices and quality.

It also allows an accurate quantification of the "value in use" of the charge materials available on the market and hence of their relative affordability.



OptiMet is structured in two parts:

- The Met metallurgical model, which correlates the features of the outgoing flows to those of the incoming flows. **Met** is based on the materials and enthalpy balances of each stage of the process.
- The calculation includes all the elements involved in the process that influence the quality of the steel to be produced. It also provides an estimate of the consumption of electrical and chemical energies and of the melting times required for each given charge mix.
- The **Opti** optimization algorithm, which seeks the feasible solution at the lowest cost. Opti, which is based on a non-linear version of the Simplex method, generates the composition of the scrap charge and the weights of ferroalloys corresponding to the minimum cost of casting, taking into account the energy consumptions and the tap-to-tap time.

The experience gained in the field has shown that the investment in **OptiMet** returns in a very short time: the cost of the system is compensated by the benefits accrued within times that, for a special steel manufacturer, may be in the order of few months of operations.

OptiMet is integrated with the Iso Sistemi **SteelTrack** supervisory system: the two products were designed to work together providing the customer with the maximum benefit. It is also possible to integrate **OptiMet** with legacy tracking systems already installed at the Customer.

ProdSim

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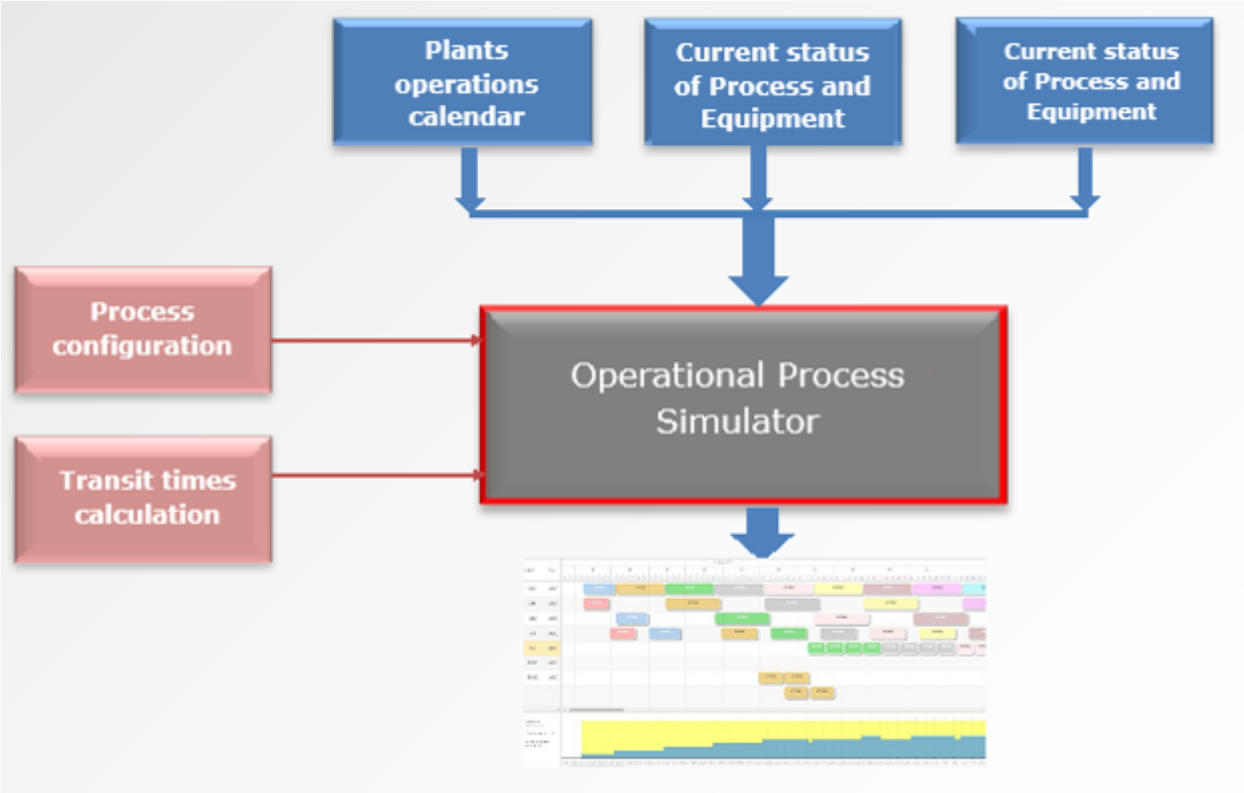
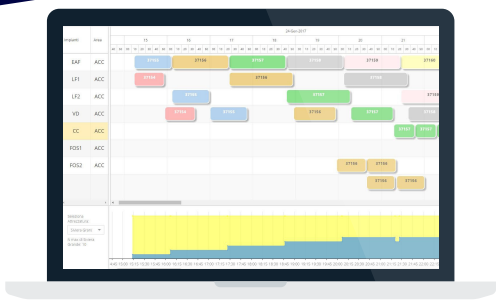
In the operational management of a production plant it is essential to understand the evolution of the situation in the short term, in order to timely implement the necessary interventions. This is particularly true for steel plants, often characterized by complexity and operational uncertainty.

ProdSim is a simulation tool that answers this need in an agile and effective mode, thanks to its intuitive graphical interface.

The aim of **ProdSim** is to provide a view of the situation that, starting from the current state, takes into account the evolution over a time horizon determined by the completion of the ongoing operations and by the activities already programmed through the active schedules.

Therefore **ProdSim** operates on a horizon that may include some shifts or - at the most - a few days of production.





ProdSim operates on the basis of three main inputs:

The Equipment **Operations Calendar**, which describes the periods of activity of each facility involved in the concerned production process, taking into account work shifts, maintenance schedules, festivities and exceptional events such as stops for strikes.

The **Current Process and Equipment Status** is obtained from the production control systems, and describes the current situation of the running process, taking into account ongoing operations, related timing and setup or evacuation times.

The **active Production Schedules**, which can be calculated using an automatic or possibly manual Scheduling system, define the details of the future production commitments of the plant and the facilities involved in the process.

ProdSim is configured using a tool that allows to define the schema of the process, by describing all the relevant phases (either productive and logistic or of control), their sequences, and the machinery possibly involved (e.g. the ladles in the Steelmaking).

The actual stages of the process are defined by the cycle associated with the material to be produced, derived from the production order.

Additionally, **ProdSim** uses a calculation algorithm for the crossing times that is not based on standard average times, but on the specific characteristics of the ongoing process or operation, which are usually conditioned by the type of material to be produced.

ProdSim can be activated on demand or periodically, based on configurable intervals.

The scope of use of ProdSim can be:

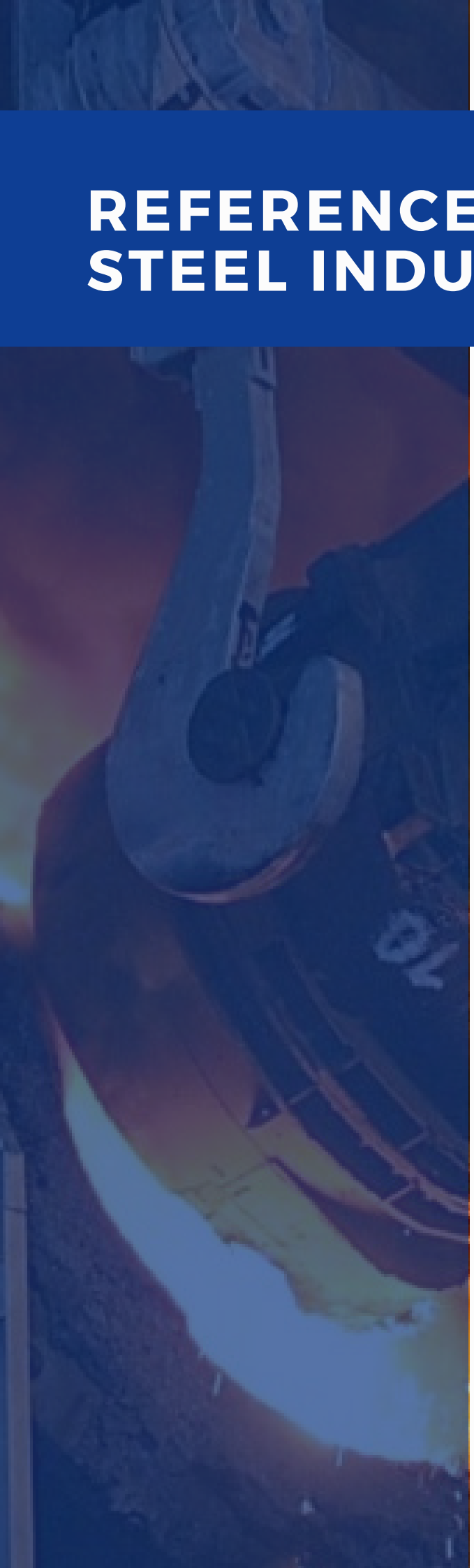
Scheduling,
to which ProdSim provides the situation of the plant and the equipment up to the time when the active schedules have been completed. In this context, ProdSim is the first step in the Scheduling flow.

Forecasting of **progress of operations** within the process, in order to identify in advance any bottlenecks or problems.

Forecasting of the use of machinery in order to identify any problems of shortages that may occur after the elaboration of the schedules .

ProdSim calculates and dispays some KPIs (Key Performance Indicators) that provide a synthetic overview of elements such as plant utilization coefficient, forecasted total and hourly production, etc., so as to allow calculating a theoretical OEE (Overall Equipment Effectiveness).

ProdSim is therefore a control dashboard that can be made available to all corporate executives, from Plant or Production Area Managers, to Department Managers and Foremen.



REFERENCES IN STEEL INDUSTRY

MARCEGAGLIA

MOBARAKEH STEEL

NLMK Verona

SMS group

ASCOMETAL

Duferco
Forging New Frontiers

PAUL WURTH
SMS group

MAGNITOGORSK IRON & STEEL WORKS

METINVEST

DANIELI

TERNI

URALMASHPLANT

ABB

LUCCHINI

THERE ARE NO PROBLEMS WITHOUT SOLUTION

THE COMPANY

Since over 20 years, Iso Sistemi is an international player in the areas of Information Technology and IIndustrial Automation.

THE ACTIVITY

Management consulting, design and development of complex and technologically advanced systems Professional Training.

INNOVATIVE
We develop solutions with a look to the future

SMART
We qickly understand your needs and give you the right answers

ORIGINAL
We design an original solution tailored for you

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Contacts • +39 010 537491 • Piazza della Vittoria 11A/8 - 16136 Genova (Italy) • www.isosistemi.it