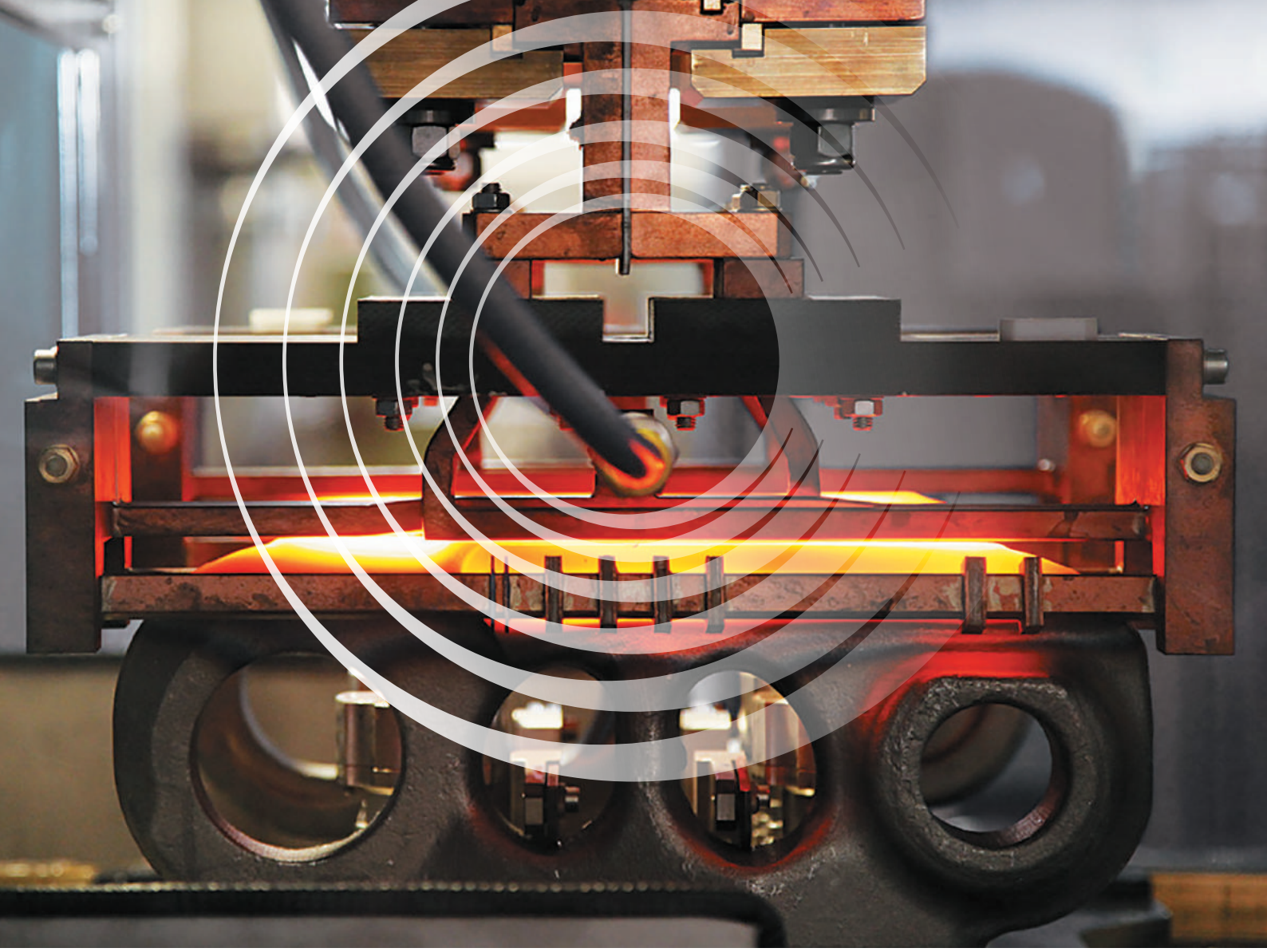


SAET

A GLOBAL LEADER IN
INDUSTRIAL INDUCTION TECHNOLOGY
AND APPLICATIONS

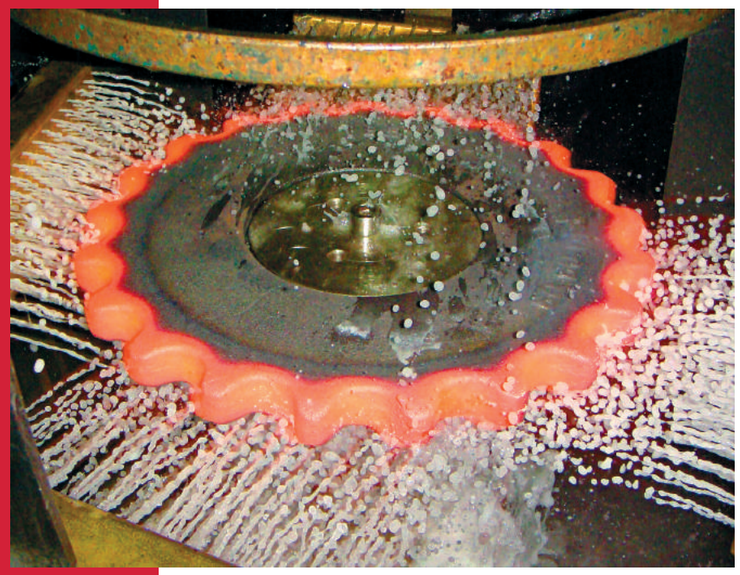
INDUSTRY 4.0
READY

SAET

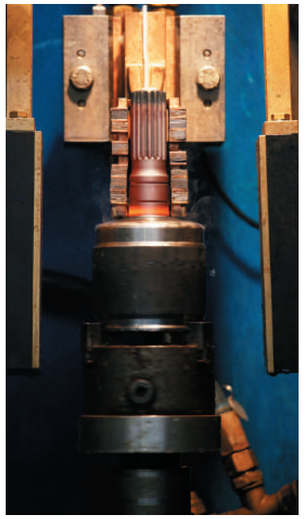
IS A COMPANY THAT PRODUCES AND DEVELOPS CUTTING-EDGE TECHNOLOGY SOLUTIONS IN INDUCTION HEATING.

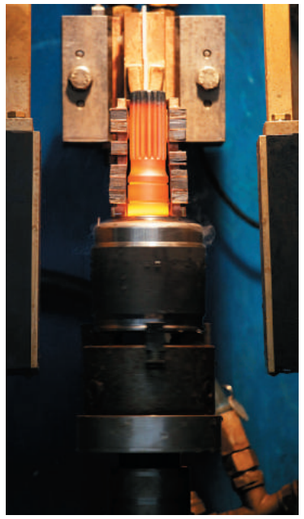
Deriving from a long tradition of know-how, Saet is now an international group with a renowned expertise and an open approach that leads it to offer tailor-made products and services.
The Company main goal is to supply the customers with the best solutions through collaborative relationship, mutual reliability and understanding.

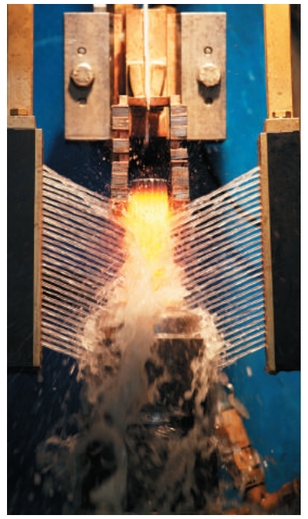
FOUNDED IN 1966 IN LEINÌ, IN THE SURROUNDINGS OF TURIN, SAET QUICKLY TURNED TO INNOVATION TO MAKE THE DIFFERENCE AMONG THE NUMEROUS SUPPLIERS OF THE CAR INDUSTRY PRESENT AROUND TURIN IN ITALY AND BECAME THE 1ST INDUCTION HEATING COMPANY OF THE COUNTRY, A WORLDWIDE CENTER OF EXCELLENCE IN INDUCTION TECHNOLOGY AND APPLICATIONS.



After some years, unique technical solutions and increasing range of machines allowed Saet to develop activities in Europe and beyond.
2006 marks the real turn of Saet development with integration of additional product lines such as EMMEDI which provides a premium solution for theTube & Pipe industry.
It also initiated the international development through acquisitions in India and in USA and build-up in China.
As a technology provider Saet started a useful collaboration with some Universities, in order to develop and implement its Research and Development department.







INDUCTION IS

FAST - Induction generates heat directly into the work-piece with no need to waste time for conduction and system thermal inertia.
This means increasing efficiency and improving throughput by reducing process times.

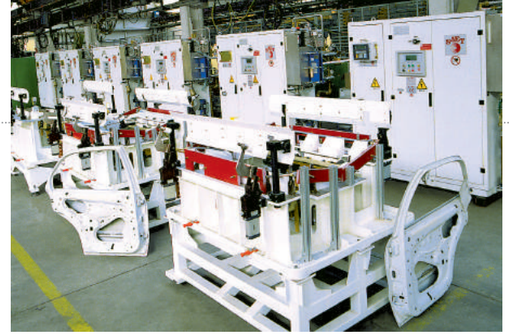
PRECISE - The right mix of frequency, power and inductor's geometry can be designed to heat just a specific part of your work-piece in a fully automated, stable and software controlled way.
This means obtaining the perfect thermal profile, the desired hardening or the right relieving, quality and repeatability.

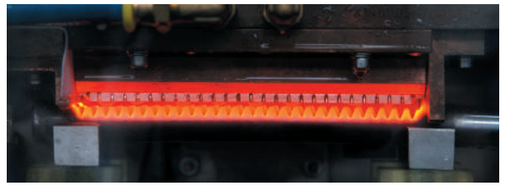
GREEN - Efficient and fast: induction technology is the way to increase primary energy saving and hence reduce CO_2 emissions in the atmosphere.
Moreover compared with other thermo-chemical treatment, induction technology is clean and safe both for people and environment.

ONE TECHNOLOGY, MANY APPLICATIONS

Wind Energy
Automotive
Construction Machinery
Aerospace
Rail and Locomotive
Heat Treating

INDUCTION IS A VERSATILE TECHNOLOGY USED FOR MANY DIFFERENT HEATING PROCESSES THAT REQUIRE RELIABLE, FAST AND EFFICIENT PRODUCTIVITY.
This heating process involves parameters like power, frequency and heating time that allow repeatability and accuracy in every step of the process.
Induction heating can be applied to parts with different shapes and sizes ranging from few millimeters to substantial diameters and thicknesses depending on final application.



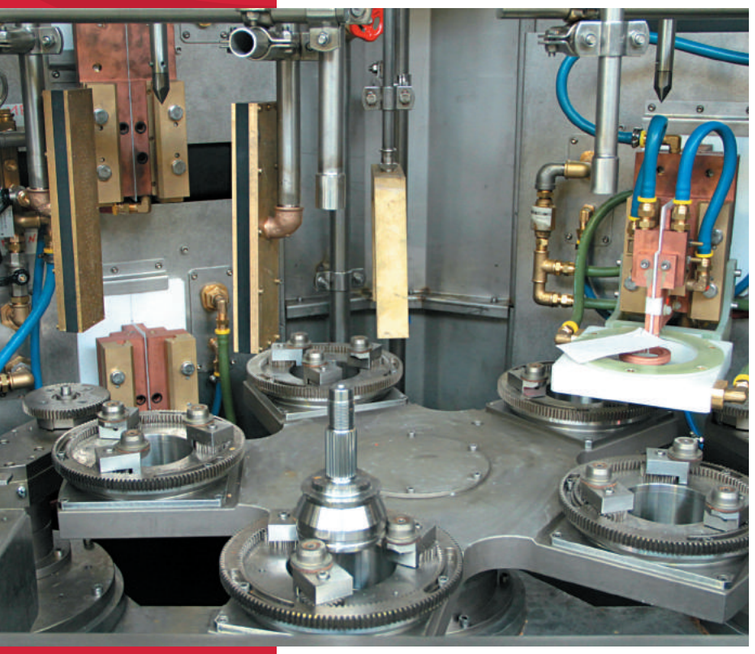


AUTOMOTIVE

DRIVELINE COMPONENTS

MORE THAN 300 MACHINES
MANUFACTURED SINCE 1979

Saet is a strategic supplier for all major players of this industry segment with a long consolidated experience on the treatment of the different driveline components.
SAET tailored machines are able to grant ambitious productivity level with very short cycle time together with highest level of flexibility and easy maintenance according to actual market trends.
The extensive metallurgical know-how and the continuous innovation carried out with our customers allows to push hardening and tempering process to their limits:
it results in very short heating time, minimal part deformation and precise control of metallurgical structure of security components.
Machine handling configurations go from linear transfer system to rotary tables up to stand alone and robotic cells.



STEERING COMPONENTS

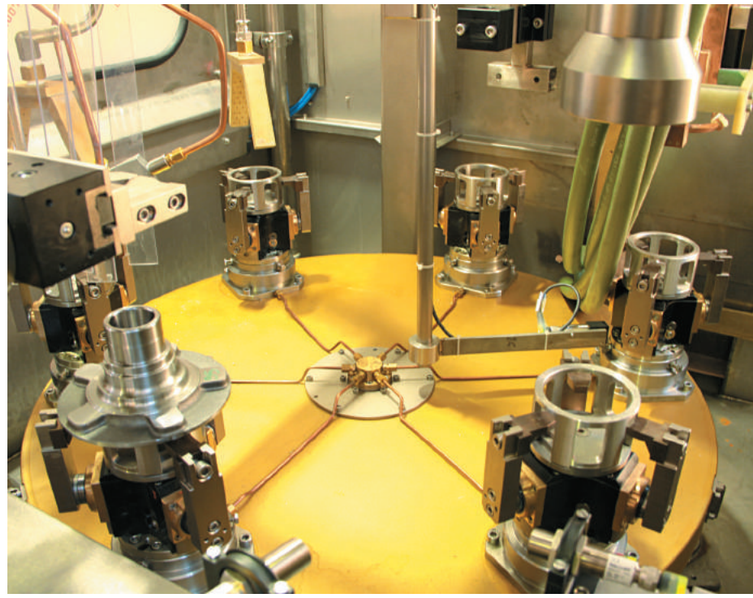
REALIZED MORE THAN 200 PROJECTS

We are able to carry out all types of hardening process:
induction and conduction hardening as well as teeth or backside process hardening.
Saet has developed an high expertise in steering components induction heat processes.
Processes included scanning of rack teeth, pinion, ball screw and barrel, using stand alone or robotics cells.

HUB AND SPINDLE BEARINGS

150 EQUIPMENT DELIVERED
WORLDWIDE

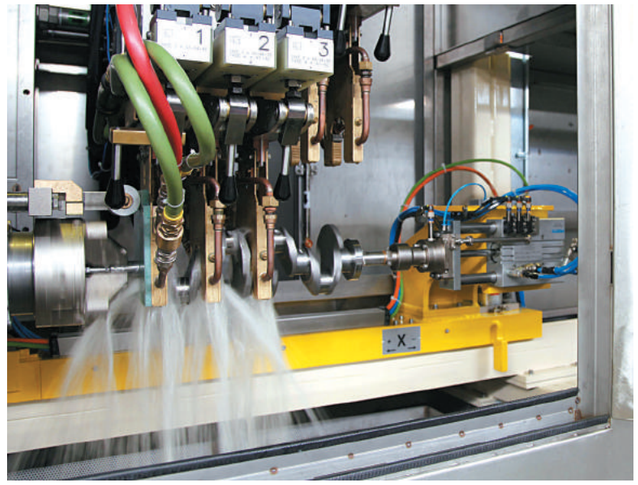
A unique experience in hardening and tempering of Hub and Spindle wheel bearings with machines installed worldwide in very demanding productivity conditions (production rate: 8-40 sec/part). Specific coil design allows us to obtain particular heating and cooling treatment process that provides a perfect hardening pattern and the management of tempering process permits to reach high homogeneity of temperature in the part.
Machine configuration:
rotary tables, stand alone and robotic cells.



CRANKSHAFT, CAMSHAFT AND ENGINE COMPONENTS

OVER 70 INSTALLATIONS
FOR ADVANCE HARDENING PROCESS
APPLIED TO COMPONENTS
IN MOTION

Today's engines are important users of induction heating process.
From top to bottom, most of the component in motion are hardened by induction.
Valve, crankshaft, camshaft, flywheel, balancing shaft are among the components needing advanced hardening process. In particular SAET experience in crankshaft application has evolved towards the shuttle configuration with a high degree of flexibility, in parallel to the traditional transfer solution. Our innovation effort has led to several patents concerning contactless technology in order to reduce the deformation of the piece, improving the engine's performance.



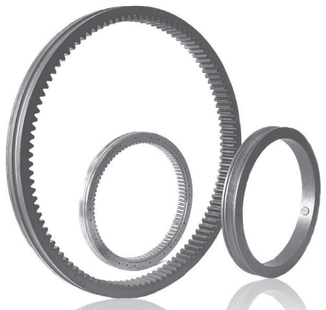
WIND ENERGY

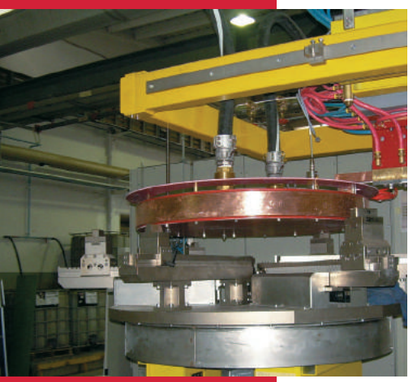
ROLLER BEARINGS / SLEWING BEARINGS

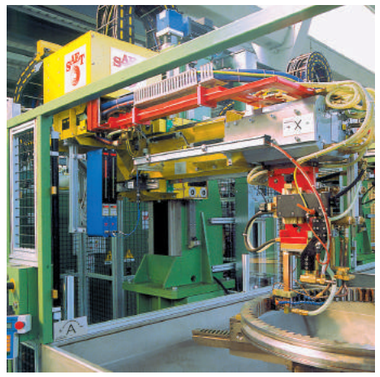
OVER 100 TAILOR-MADE EQUIPMENT REALIZED WORLDWIDE

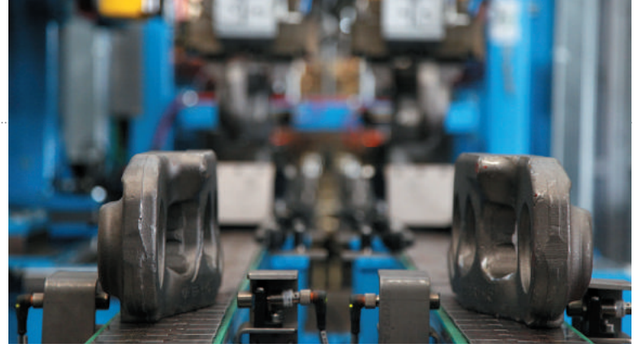
For more than 20 years Saet has developed highly recognized expertise in large gear and slewing ring hardening solutions with and without soft zone.
The continuous research in the sector with many patents filed has led to the cutting-edge seamless technology with 4 heating heads.
A widespread range of applications has been industrialized over the years with vertical and horizontal scanning machine configuration both for tracks and gears up to a part diameter of 8 meters.
Saet has also pioneered high power single shot hardening machines up to 2500 mm diameter and 2500kW power.

A new tailored tracking system is apt to keep constant the air gap with the inductor while the relevant scanning speed achievable allows a perfect fulfillment of the customers' hardening profile requirements.







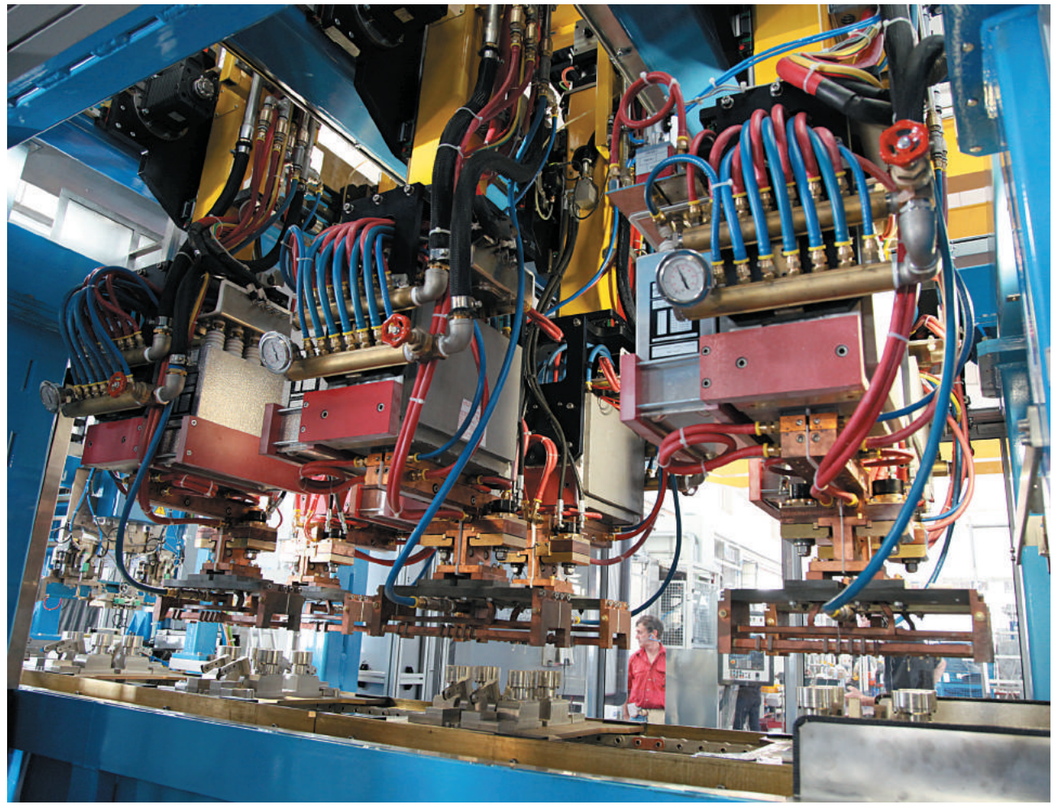


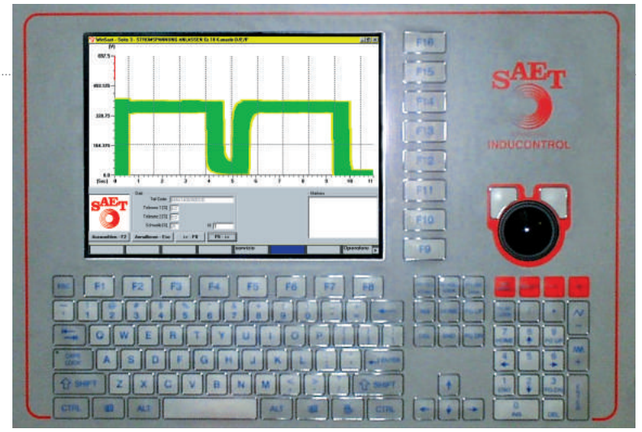
CONSTRUCTION MACHINERY

OVER 400 INNOVATIVE SOLUTIONS REFERRING THE UNDERCARRIAGE FIELD

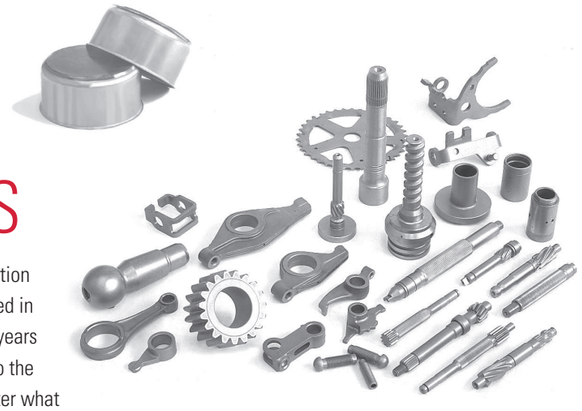
The construction machinery is a very demanding segment where machine flexibility is a must, since production rate can range from very low to very high output.
We deliver high customized machines depending on the costumers needs.
Within undercarriage sector our equipments might treat pins, rollers, bushing, sprocket (single shot hardening up to 1200 mm diameter), idler, tracklink.

New process innovations led us improving important features on the machines, among which, the automatic regulation of inductors positioning in order to maintain the air gap constant without caring of the specific tolerance of the working piece.



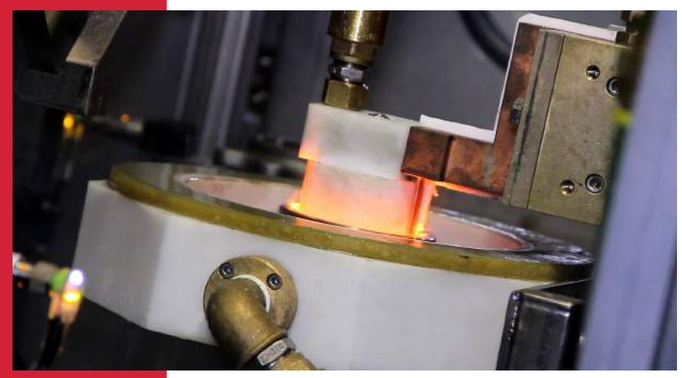


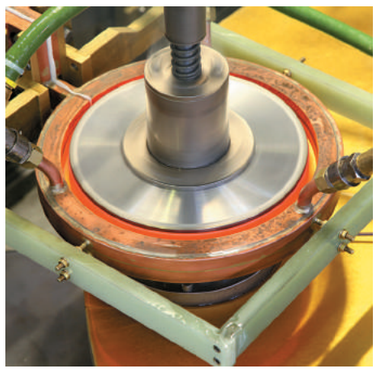
OTHER INDUSTRIES



Induction technology is a versatile solution to heat a component and may be applied in many different applications. Along the years SAET has been always ready to listen to the needs of every single customer, no matter what is its sector of activity, providing tailor-made solutions that fulfill its requirements.
This flexibility allows us to deal from micromechanics up to applications of more than twenty tons. The process is the same for the specific application it refers to, the machine is built around accordingly: that is our excellence.
Equipments have been designed and built for the most varied industrie:
automotive, construction machinery, components for special application devices, aerospace, trains, machine tools, medicine, cooking, energy production, oil industry.

Saet heat treat machines result from the convergence of all designs required to make suitable components fit for the application.
In addition to the many machines where proper treatment, either hardening or tempering or annealing and control systems are a must, it comes the induction system, which is composed of MF/HF lines (capacitor, connection heating heads, heating treatment), cooling system (for electrical apparatus and/or quenching line) that Saet designs, manufactures, assembly, sets up and installs.





POWER SUPPLIES

Saet offers a wide range of power supply solutions based on transistor and tube R.F. technology and using advance design and common commercial components.

> CONTROL SYSTEMS

For years Saet implements high end control system by means of PLC and CNC units. Accuracy, repeatability are the keywords when defining modern induction machines. Saet works with international brands such as SIEMENS, FANUC, REXROTH, OMRON, ALLEN-BRADLEY and MITSUBISIH.
Saet Customers also benefit from real time process monitoring Systems UNDUCONTROL.

> QUENCHING AND COOLING UNITS

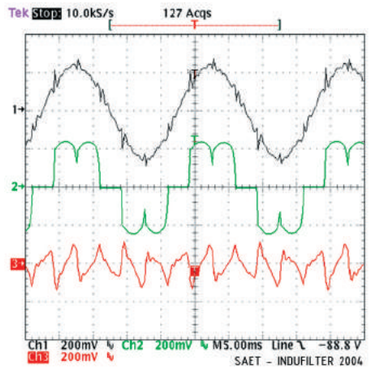
When talking about heat process, Quench medium management unit is a very important part of the process. Accurate and repeatable Quench medium flow, precise temperature are needed to provide proper results. Cooling of the electrical components is needed to maintain the equipment in good conditions for years of use.

> HARDENING UNIT

For years automation of production cell have brought Saet in the field of easier solutions and simplified part hardening. We offer all kinds of solutions ranging from multi-axis robot (FANUC, ABB, COMAU, KUKA, MOTOMAN) to simple pick and place unit.

> NON DESTRUCTIVE TEST (NAT)

NAT is becoming a must when considering large size part or high production output solutions. Saet works with the most well known and reliable name for proper integration and support.

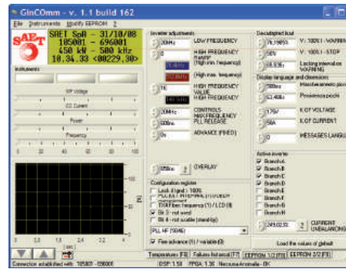


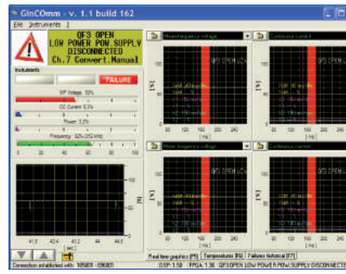
PROCESS MONITORING SYSTEM - INDUCONTROL -TELESERVICE

For the continuous check and certification of induction heating treatment parameters, Saet has developed a system for process monitoring, called Inducontrol.
According to the type of treatment, the controlled parameters which could come out from the equipment as voltage / current signal can be:

- M.F. / H.F. power
- M.F. / H.F. frequency
- M.F. / H.F. voltage
- M.F. / H.F. current
- Heating time
- Quenching fluid pressure, temperature and flow
- Part surface temperature
- Energy
- Others

Data can be recorded in a proper folder for each type of piece, part per day, per week, per year in order to grant a proper traceability of the production. They can be taken out and transferred by means of a pen drive or putting the control system in a intranet with proper software. As a primary tool to support our customers for a successful trouble shooting, every Saet machine is equipped with our Teleservice module providing remote access to the control system of the machine and/or power supply.
That feature enables Saet Group Service Team to connect with the machine in customer's plant. Using this unique solution our technical department is able to detect the failure and communicates with maintenance service to solve quickly pending problems.



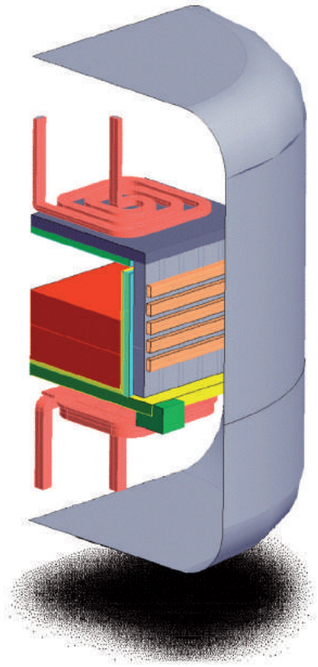


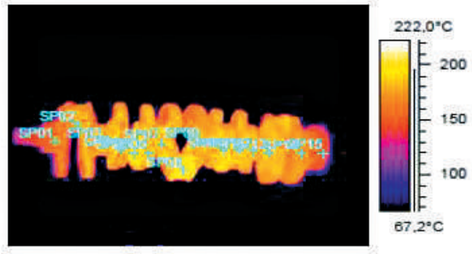
PROCESS STUDY & DEVELOPMENT

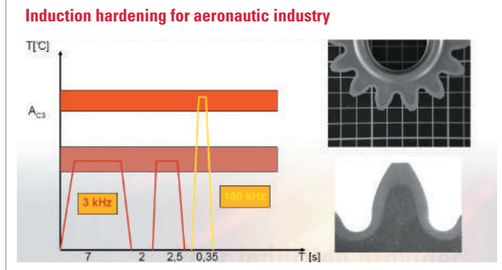
More than fifty years of experience in the development of innovative and tailor-made processes based on induction heating.
This is the strength of Saet's approach to the customer's needs: the capability of meeting specific, evolving and more and more demanding manufacturing requirements.
The game point is a special combination: on one hand, more than twenty years of expertise in simulation of induction heating; on the other hand, a metallurgic laboratory with up-to-date equipment and experienced people.
The simulation is a powerful tool for virtual prototyping and shortens the time needed for the experimental set up of the process.
When the simulation is especially demanding, SAET R&D team has the capability to handle it with the support of a powerful workstation cluster.

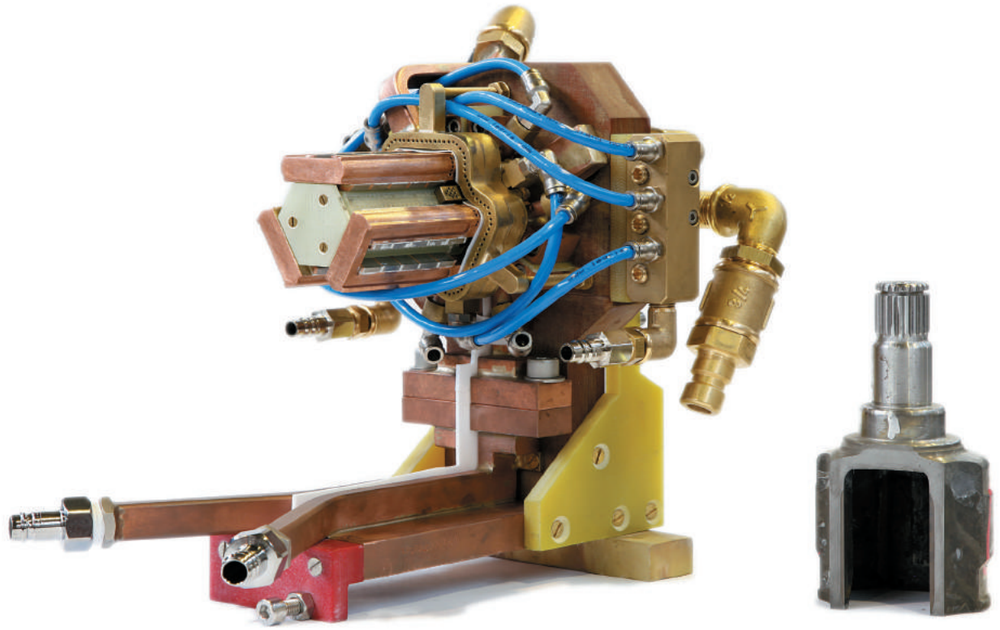
The activities offered by Saet are:

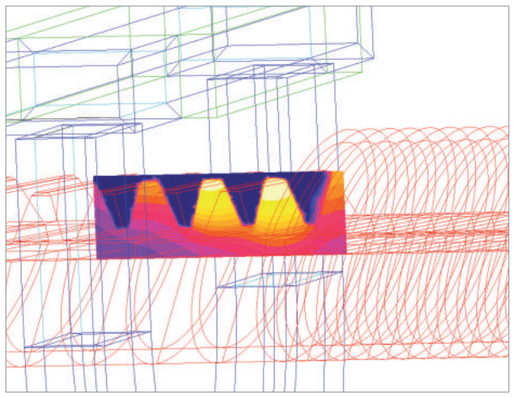
- Induction process simulation
- Process analysis
- Process development
- Partnership in new process
- R&D contracts











Worldwide Service

SAET and EMMEDI customers can benefit from the resources of a global corporation.
We provide worldwide assistance through our network of regional sales and service engineers.
Our experienced service team is strategically placed for quick response to customers wherever they are located.
Our commitment to customer support means that SAET and EMMEDI are available to deal with emergencies at any location worldwide.

World Headquarters

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Le Roeulx (Belgium)	32-64-67-37-77
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Albertville, AL (Usa)	1-256-279-1200
Wickliffe, OH (Usa)	1-440-833-0386
North Canton, OH (Usa)	1-330-818-8080
Longview, TX (Usa)	1-903-297-2526
Madison Heights, MI (Usa)	1-248-399-8601
Sterling Heights, MI (Usa)	1-586-254-8470
Brookfield, WI (Usa)	1-262-317-5300
Rochester (Usa)	1-585-368-2120
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Queretaro (Mexico)	52-44-2221-5415
Cotia (Brazil)	55-11-4617 2710
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