



OTTO JUNKER

WE UNDERSTAND METALS

NEWS

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INNOVATIVE AND
ENERGY-EFFICIENT
EQUIPMENT
TECHNOLOGY

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- | ENERGY-EFFICIENT BILLET HEATER
- | SAVING ENERGY AT TILT ROTAR FURNACE
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Global and Close to the Customer

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IMPRINT

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DEAR CUSTOMERS AND BUSINESS PARTNERS, DEAR STAFF MEMBERS!



At the commencement of my duties as Chairman of the Managing Team of Otto Junker GmbH since August 18th, 2008, I welcome this opportunity to address you through

the medium of the present "Junker News". The Otto Junker Group possesses an excellent employee base and valuable product know-how. Our melting systems and thermal process equipment enjoy an outstanding reputation in the world's iron, aluminium and copper processing industries, and the same holds true for the specialty products coming out of our high-grade steel foundry.

For many years, we have been offering our customers a trusting and reliable cooperation based essentially on two qualities, i.e.,

1. the ability to design metallurgical process technologies (**technological competence**) and
2. the capability to manufacture industrial furnace systems and products true to schedule, and to commission them on time (**project handling competence**).

Our key themes, "We understand metals" and "Global and close to the customer", are thus filled with meaning.

We are determined to strengthen and further expand our market leadership in the international competitive marketplace. The diligence and commitment of our staff, efficient business processes and new technological developments are the guarantors to fulfillment of that ambition, and I consider it my duty to promote each of them.

The articles in this issue clearly demonstrate how existing know-how and experience can be combined in an innovative manner with the latest academic research results to produce high-grade products with an optimized energy efficiency on an unsurpassed quality level.

With this in mind, I am looking forward to good and successful teamwork with our partners in industry and science!

Yours,

Hans Rinnhofer

DR. HANS RINNHOFFER (45) HAS TAKEN OFFICE AS CHAIRMAN OF THE BOARD OF OTTO JUNKER GMBH

"With Dr. Rinnhofer we have enlisted a proven expert in the technology areas of our group of companies. Based on sound understanding of markets and products as well as his extensive international experience, he will provide valuable new impetus for our company's future development", says the Chairman of the Supervisory Board, Mr. Klaus K. Moll. Hans Rinnhofer studied mechanical engineering at the Technical University of Vienna and obtained his PhD in 2001 while in professional employment. He started his industrial career in 1989 in the liquid metal sector. After serving four years as Managing

Director of a Voest Alpine Group company in Sydney, Australia, he joined the RHI Group in 1997 where he held various executive positions including Managing Director of Maerz Gautschi Industrieofenanlagen GmbH based in Düsseldorf, Germany. From 2006 to 2008, Hans Rinnhofer headed Austria's largest non-university research enterprise, Austrian Research Centers GmbH in Vienna, as Chairman of the Board. Furthermore Hans Rinnhofer lectures industrial furnace technology at the University of Leoben in Austria.

THAI CUSTOMERS' DAY



In cooperation with our agency in Thailand, Messrs. CHANAN-CHAI 1993 CO., LTD., and the King Mongkut's University of Technology Thonburi, the first Thai Customers' Day of the Foundry Equipment Division took place at the Hotel Grand Mercure Bangkok on 27th May 2008.

Mr. Ali Scharei (Head of the OTTO JUNKER Group Middle East Office in Dubai), Assoc. Prof. Dr. Chaowalit Limmaneevichitr (Head of Foundry and Metallurgical Engineering Section, King Mongkut's University of Technology Thonburi) and Prof. Chao Nieamsorn presented the following topics for discussion:

- Characteristics of induction furnaces with regard to costs, availability and efficiency
- New developments for the induction melting and pouring of spheroidal cast iron
- Practical examples of melting operations in Thailand and modernization of existing equipment

- Metallurgical aspects as criteria for selection of the most suitable furnace
- Practical considerations for selection of the induction furnace
- Practical experience in connection with the refractory lining of induction furnaces
- How to reduce the energy required when using induction furnaces.

More than 60 interested parties from Thai foundries attended the lectures and actively participated in the discussions and professional exchange of information.

The Customers' Day ended pleasantly with an informal dinner.



SUCCESSFUL PARTICIPATION OF OTTO JUNKER EXTRUSION IN ET 2008

Together with its Swedish subsidiary IUT, OTTO JUNKER extrusion presented its wide range of equipment technology for the production of aluminium sections at the international trade fair ET 2008 in Orlando, Florida.

The fair proved quite successful for us, both with regard to large interest from

customers and the number of technical discussions concerning new projects and developments. In the course of the accompanying symposium, Dr. Menzler and Mr. Willi Johnen had the opportunity to present our product innovations.



“FROST PROOF“ PATENTED WATER RECOOLING TECHNOLOGY

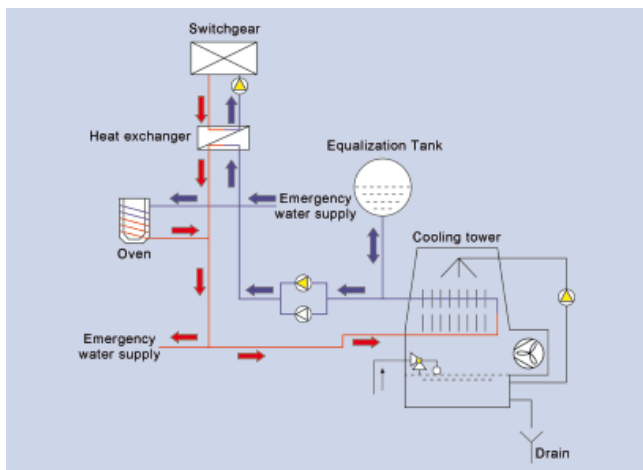
The heart of each induction furnace is its coil made of water-cooled copper sections. On high-powered furnaces, electrical currents up to 30,000 A may pass through the coil. As furnace technology progressed, it has become possible to achieve high efficiencies and to reduce losses. However, the ohmic losses across the coil which determine the amount of overall power loss cannot be avoided altogether at such high current levels. This power loss may amount to 20 - 25% of the overall furnace rating, including the losses of the requisite water cooling system, the frequency converter, the capacitors and, to some extent, the transformer. In other words, the heat loss of one 8-MW furnace would be enough to heat around 100 single-family homes.

Needless to say, intense efforts are being made to reduce these losses further, while work on heat recovery solutions is ongoing at the same time.

Recooling the water from its temperature of around 70-80 °C can basically be achieved in two ways. In either case one should bear in mind that the frequency converter's electronic components as well as the furnace capacitors need low cooling water temperatures.

COOLING TOWER

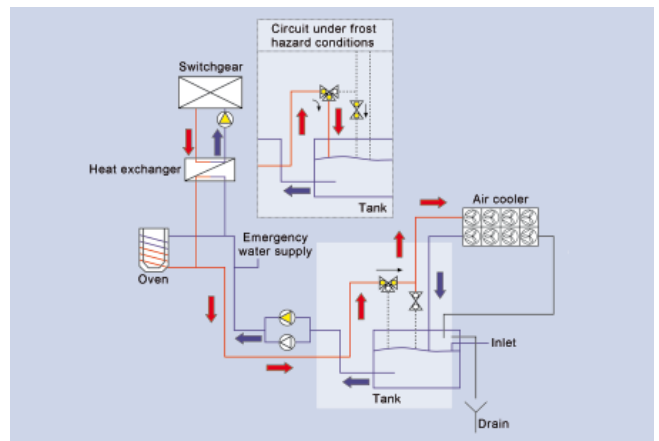
One advantage of cooling tower systems is that they can ensure adequate cooling even at high outdoor temperatures due to the water's evaporative cooling capability. On the downside, this type of open system requires a high level of maintenance. More significantly, costs are incurred due to the fact that the water will evaporate. In an 8-MW furnace system, the maximum water consumption at full load may reach as much as 8 m³ per hour.



Water recooling system based on cooling tower

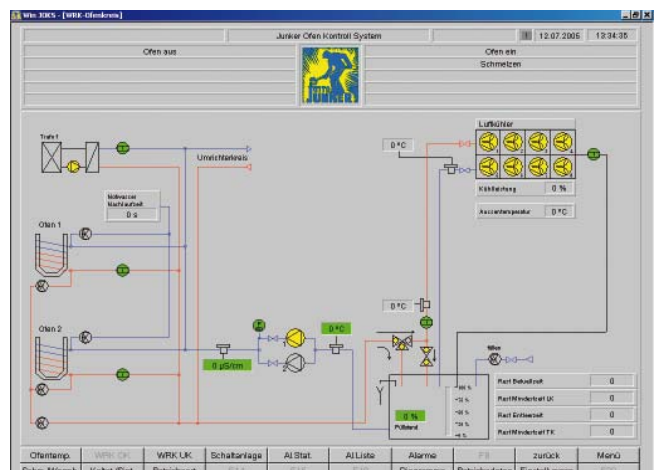
AIR COOLERS

The second engineering solution consists of an air-to-water heat exchanger operating in a closed circuit. At outdoor temperatures up to 30-32°C, such systems can cool the water down to a suitable temperature level for cooling electrical components such as capacitors and thyristors or IGBTs (transistors). In addition, it is recommended to use an auxiliary water-to-water cooler. Since the latter operates with draining (lost) water, this technology will only make sense if the air temperature rises beyond 32°C on just a few days during the year, as it does in Central and Northern Europe. In geographic locations where temperatures over 32°C prevail over extended periods, it is still possible to use a water chiller operating on the refrigerator principle. However, in determining the economic efficiency of such a configuration, the power/water cost ratio must be duly taken into account.



Water recooling system with air cooler

In Northern and Central Europe, the air cooler with additional heat exchanger is gaining predominance in virtually all applications as a solution with outstanding technical and economic benefits.



JOKS screen showing the water recooling system (WRKA)

EXAMPLE OF A PRE-INVESTMENT ANALYSIS:

Technical data:	Induction furnace system, 8 MW
Operation:	approx. 5,000 operating hours p.a.
Assumed water costs:	€ 1.50 / m ³ (feed water)
	€ 5.00 / m ³ (waste water)
Energy costs:	€ 0.09 / kWh*
The assumed water hardness is 8° dH (German hardness degrees).	

Note:

In calculating the water consumption of the evaporation cooler, the latter was assumed to be in service during 35% of the total equipment runtime (in hours).

The costs of water and chemicals associated with the operation of an evaporation cooler will increase substantially with increasing water hardness.

	AIR COOLER	EVAPORATION COOLER
Total water consumption	450**	14,030 m ³
• Evaporation volume	0	7,350 m ³
• Waste water	450**	6,680 m ³
Water costs		
• Feed water	675 €	21,045 €
• Waste water	2,250 €	33,400 €
Annual electric power requirements	550,000 kWh	310,000 kWh
Electric power costs	49,500 €	27,900 €
Maintenance costs (€ 20 / h) including chemicals	1,500 €	5,000 €
TOTAL COSTS P.A.	53,925 €	87,345 €



Frost Proof air cooler

* Based on the average price of € 0.0967 reported by German foundries for 2007 (DGV survey).

** Water consumption of the auxiliary cooler.

If air coolers are used, frost protection must be reliably ensured by all means. The Frost Proof system developed by OTTO JUNKER (German patent No. 10307065) has by now been implemented in numerous installations. With this system, a trouble-free operation of the air cooler can be achieved even in winter without any additional heating or addition of an antifreeze medium (glycol).

The drawbacks of additional heating are obvious. It requires electrical power and, even worse, the protection of the air cooler liable to freezing up will no longer be ensured in the case of a power failure. An antifreeze agent (glycol) is expensive, not least because it must meet appropriate electrical conductivity requirements. In the event of a power failure, emergency water from the town water mains is fed into the induction furnace via a solenoid valve to prevent damage to the furnace. When this occurs, a significant portion of the cooling water still present in the furnace will be discharged to the sewer along with its content of antifreeze agent. Apart from the resulting environmental burden, this entails the risk of the glycol concentration dropping to the point where, at low outdoor temperatures, the furnace will no longer be protected.

The water recooling system is operated either in standard mode or, at low outdoor temperatures, in special mode.

In special mode the cooler is automatically drained entirely into an intermediate tank which closes the cooling circuit.

KEY ADVANTAGES OF THE FROST PROOF SYSTEM:

- No risk of equipment freeze-up
- No need to check glycol concentrations or to monitor additional heating equipment
- No cost of glycol or heating energy
- No glycol will enter and pollute the waste water in case of emergency water input.

The use of a heat recovery system is also an option. To this end, a further heat exchanger is inserted into the recooling system to heat up sanitary water, for instance. It is also possible to heat workshops or manufacturing buildings via additional air-to-water heat exchangers.

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ENERGY-EFFICIENT BILLET HEATER PLANT FOR COPPER

The equipment is made up of a directly gas-fired furnace with newly developed burners for continuous power control and a multi-stage utilization of the hot furnace exhaust gas in billet preheat zones. In the 1st stage the hot furnace exhaust gas flows through a countercurrent preheat zone. In the 2nd stage heat transfer to the billet takes place by high convection. In the 3rd stage the remaining energy is further utilized by preheating the combustion air to 400°C.

The required expenditure for reaching the high efficiency is clearly demonstrated by the ratio of preheat zone length to heater length.

FURTHER IMPROVEMENTS ARE:

- better and thicker insulation of all components including walking beam

- special walking beam design which is virtually gas-tight due to water seal
- improved nozzle system in the preheat zones
- high preheat temperature of the combustion air
- optimized gas/air mixture
- process control system for optimum adaptation to current power requirement

The measures taken reduce the gas and power consumption so that a calculated efficiency of approx. 80% is reached in relation to the gas consumption.

The equipment is presently being installed at the customer's.

Winfried Sommereisen (+49 2473 601-227)

TILT ROTARY DOOR RETROFIT SAVES ENERGY AT UK SECONDARY FOUNDRY

The latest Otto Junker UK tilt rotary continues to deliver outstanding performance for Norton Aluminium. In particular the new innovative 'multi directional door' - a unique Otto Junker feature - has saved so much energy and optimised process control so that Norton recently awarded a second contract to Otto Junker UK to retrofit the new door system to a second existing tilt rotary in their foundry.

Considerable energy savings were recorded on the new furnace, when compared to the existing tilt rotary, with the same capacity melting exactly the same charges of scrap. As the door remains closed during metal pouring and even slag removal, the furnace refractories are not allowed to cool saving reheating time and energy.

Also being able to view the charge easily and quickly without shutting off the burner has greatly improved melt control and process optimisation.

The savings speak for themselves and the new door will have a short payback.



Furnace changing

By careful designing of the burner and flue positions it is now possible to continuously charge, using a vibratory charging machine, with the burner still firing so very little energy is lost even when charging.

For more information on the new Tilt Rotary Door system and how this can be retrofitted and what savings can be made, please contact Clive Hall at Otto Junker UK.

Clive Hall (+44 16 75 470-551)

OTTO JUNKER TO SUPPLY A LARGE-SCALE MEDIUM-FREQUENCY FURNACE PLANT FOR A STEELMAKING CUSTOMER

ASO siderurgica s.r.l., founded in 1971 and located at Ospitaletto (Upper Italy), is a renowned manufacturer of forging ingots and slabs made of high-quality steel alloys.

The company relies on sophisticated melting and pouring technology based on an electric arc furnace. Ladle and vacuum furnaces are employed for refining and degassing to ensure the outstanding quality of the forging ingots.

To increase its flexibility and output capacity, the company had commissioned OTTO JUNKER to provide a custom-built 35-tonne medium-frequency furnace installation with a power rating of 4,000 kW.

The new furnace is intended to serve as a storage and collecting system but also for melting down large ingot ends returned from the production line. It is intended to run with a liquid heel part of the time. Depending on its operating regime, the plant can deliver 6.7 tonnes/h of melting capacity, heating the metal to a final temperature of 1,600 °C.

The furnace system has been custom-designed to meet this requirement profile and can boast a number of special features.

The frequency converter system, incorporating IGBT technology, will be equipped with a 250/125 Hz frequency switching capability to control the bath movement in response to metallurgical needs. A gas bubbling system in the furnace bottom allows the melt to be treated with inert gas for purification.

The entire furnace can travel 4.5m in the transverse direction to serve the various pouring stations.

Our scope of supply comprises an additional complete furnace body with quick-change connections. This allows the operator to change the entire furnace body in minimum time to maintain high



Furnace coil manufacture

availability rates while facilitating a rapid changeover to other alloy groups.

Apart from a JOKS melt processor, the furnace plant will be equipped with the OCP crucible monitoring system.

A water recooling system, based on a water-to-water heat exchanger fed with factory water, will round out the scope of supply.

The design of the system has been completed, and component fabrication is progressing at a rapid pace. Our illustration shows the production of the coil for the 35-tonne furnace. The huge, massive coil profile calls for the use of a special winding rig.

The equipment was shipped this summer and is being installed.

Herbert Johnen (+49 2473 601-250)

NEWS

OTTO JUNKER DELIVER THEIR 100TH IGBT CONVERTER

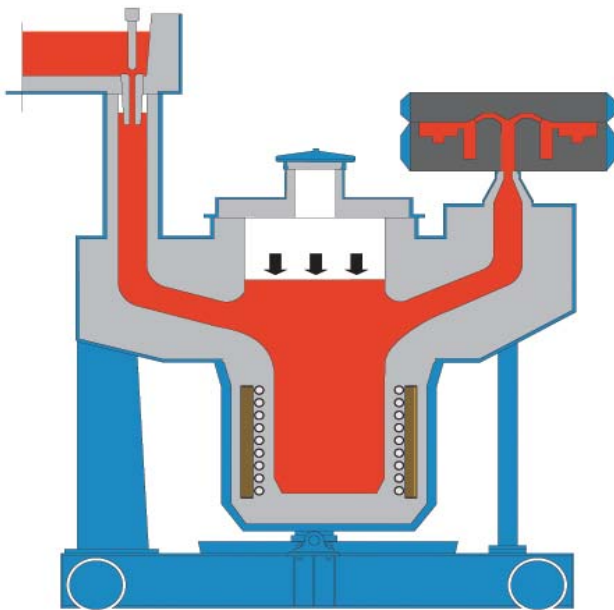
OTTO JUNKER are about to supply their 100th IGBT converter to the Ossenberg high-grade steel foundry in Altena where an old induction furnace will be replaced by a state-of-the-art unit of IGBT technology, equipped with a JOKS melting processor and an OCP (Optical Coil Protection System). As compared to the conventional thyristor technology, the IGBT stands out due to its inherent overload protection against current, voltage and temperature peaks, a constant power factor at the converter entry and low cooling water requirements due to indirect cooling.

OTTO JUNKER have supplied this technology since 2001 and are now capable of coping with power ratings of up to 4,000 kW.

The OCP (Optical Coil Protection System) allows a complete monitoring of the temperature field between crucible and coil by using an optical measuring process.

NEW: THE FIRST EVER CONTINUOUSLY OPERATED LOW-PRESSURE CASTING FURNACE

INDUGA GmbH & Co. KG recently commissioned two low-pressure casting furnaces at a world leading company for the production of aluminium engine blocks by the sand casting technique which – for the first time world-wide – operate totally continuously. For this the quantity of metal injected into the box on the casting side of the furnace is replaced respectively in the filling area parallel to the casting process.



Furnace diagram

In order to be able to do this, the filling area is fitted with a filling spout in which the metal rises under pressure during the casting process and is coupled to a filling pipe through which the cast quantity of metal is refilled from a gutter mounted above the furnace. The quantity of metal in the furnace therefore remains virtually constant and acts as a buffer should any faults occur in the upstream smelting and treating line. The furnaces are equipped with load cells which are used to control the stroke and opening time of the launder dosing stopper for precise refilling.

Above and beyond the mere implementation of low-pressure casting, the continuous method of operation means a great progress in the plant availability because previously either two alternately operating furnaces (one casts while the other is refilled) were necessary for such plants or the casting process had to be interrupted for a certain time to refill the furnace.

The casting furnaces have a useful capacity of 1.6 t and produce castings of approx. 15kg in a cycle time of 25 sec. They are equipped with a 200 kW coreless inductor for heating and temperature regulation. The pressure curves can be adapted to the necessary casting process almost as you like and therefore ensure a systematically reproducible lamina filling of the boxes.

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NEWS

IUT AWARDED CONTRACT WITH KAISER ALUMINUM

In the beginning of May IUT AB was awarded the contract to install a new continuous homogenizing plant in the Kalamazoo plant, Michigan, United States.

BACKGROUND

The continuous homogenizing plant will have an annual capacity of 100,000 metric tonnes. The major reasons for choosing IUT was the ability to meet customer demands and to supply a technology enabling a flexible, cost-effective and energy efficient production at a low life cycle cost.



OTTO JUNKER TO PROVIDE LARGEST-EVER CORELESS MEDIUM-FREQUENCY INDUCTION FURNACE FOR ALUMINIUM

The new furnace system for Alcan Děčín, our long-standing customer in the Czech Republic, can hold 13.5 tonnes of aluminium - its size corresponds to that of a 36-tonne furnace for cast iron. In recent years, OTTO JUNKER has supplied a number of very large and powerful furnaces to a clientele which includes such big names as Impol (Slo), Comital (I), Rhenalu (F) and others. Nevertheless, the plant for Děčín, with a furnace body height of over 4m and more than 3.6m in width, is the largest of its kind to date.

Designed to melt chips, pipes and sections, extruded and cast billet ends as well as ingots, the furnace will preferably be run with a 2.5-tonne heel.

Thanks to its advanced frequency converter system with an out-

put rating of 4,000 kW and a frequency of 85 Hz, the unit will be able to melt up to 7.7 tonnes of aluminium per hour at a temperature of 750°C. The furnace will be equipped with vibration sensors allowing a smooth crucible operation. If these sensors detect significant crucible vibrations, the JOKS melt processor will automatically ramp down the electric power input until vibration levels have returned to within an acceptable range.

An OCP optical coil protection system will be fitted for continuous accurate measurement of local temperature fields of the crucible.

The furnace will be designed for use of both crucibles with a monolithic lining (dry ramming compound) and ready-made crucibles.

The water recooling system comprises two separate circuits: one for the furnace and one for the switchgear system. An appropriate cooling water return temperature is ensured by separate plate-type heat exchangers fed with factory water.

The new 13.5-tonne unit is intended to replace a smaller furnace and was commissioned in the summer of 2008.

We have also delivered several billet heaters and ageing furnaces to Alcan Děčín, and the company recently ordered another induction billet heating system from OTTO JUNKER.

Elmar Neumann (+49 2473 601-312)



Melting of charge material

CUSTOMER PROFILE

Kaiser Aluminum is a leading producer of fabricated aluminum products for aerospace/high strength, general engineering, automotive and custom industrial applications. The headquarters are in Foothill Ranch, California and the company has 11 fabricating facilities in North America. There are more than 2,000 employees and the company ships more than 500 million pounds of product annually.

Kaiser Aluminum is focused on developing the highest-quality fabricated aluminum products for major suppliers and manufacturers in the aerospace, general engineering, automotive and custom industrial markets. Together with other suppliers the IUT installation will help Kaiser to achieve their growth strategies in the North American market.

IUT has a long standing relationship with the major aluminum corporations in the world. The strategic alliance with Kaiser Aluminum is important for IUT and the Otto Junker group.



ROLLER HEARTH FURNACE FOR HOMOGENIZING AND ANNEALING ALUMINIUM STRIP COILS CZECH REGULAR CUSTOMER PLACES NEW ORDER

OTTO JUNKER supplied a state-of-the-art roller hearth furnace plant and two foil annealing furnaces to the renowned Czech company AL INVEST Bridlicna, a.s. in 2004 and 2005 respectively. The high customer satisfaction was the deciding factor for the latest order for another roller hearth furnace placed with OTTO JUNKER in early summer 2008.

The electrically-heated foil annealing furnaces supplied two years ago (see photo) offer a wide range of applications as they are capable of annealing both thin and thick foils. Thin foils, for example, need to be heated up and cooled down very slowly and accurately. In order to cover different applications, the furnaces can be heated up either rapidly or slowly and in a controlled manner via heating ramps.

Annealing can take place under protective atmosphere (nitrogen) or air.

Another feature of the high flexibility of these furnaces are alternative cooling modes:

Soft cooling while maintaining extremely tight temperature tolerances and rapid cooling for less critical material.

After two years of continuous production operation, the furnaces have clearly proved their reliability and profitability.

The new roller hearth furnace plant – similar in design to the plant supplied four years ago – is supposed to replace an existing furnace plant with the clear aim to increase productivity and throughput. The annealing quality and the energy efficiency must also be improved.

Annealing of large coils with a dia. of up to 2.4m takes place under nitrogen atmosphere. The indirect gas-fired furnaces are equipped with high convection systems for the furnace zone and the air cooling chamber.

In order to save space, the coils are transported into the cooling chamber directly, i.e. without charging machine.

The chamber is designed for cooling down the coils from homogenizing temperature to 200°C and is variably usable. The air cooling chamber also serves for cooling down the strip coils cast on the roller caster.

The successful delivery of the OTTO JUNKER furnace plants already supplied represents both a challenge and an obligation to again prove our competitiveness with this new order.

Bernd Deimann (+49 2473 601-241)



Foil annealing furnace

NEWS

INNOVATIVE OTTO JUNKER FURNACE TECHNOLOGY IS KEY TO HARNESSING SOLAR ENERGY

The operating principle of solar cells is critically dependent on the use of high-purity polycrystalline silicon. Renowned manufacturers have approached OTTO JUNKER with requests for development of a suitable melting furnace technology for the production of high-purity silicon. Extensive testing was conducted to design and optimize induction furnace technology that addresses the demands of this application. A particular challenge lies not merely in the specified purity of the silicon, but also in the fact that it is not electrically conductive in its solid state

and hence requires a very high input of energy for melting (four times higher than for melting aluminium or cast iron). A first pilot system is currently undergoing trials at a customer's site, and two renowned companies have placed several orders with OTTO JUNKER.

ANNEALING OF HEAVY-GAUGE STRIP AT HIGH TEMPERATURES – INNOVATIVE MODERNIZATION OF A STRIP TREATMENT LINE

Being renowned equipment manufacturers, we stopped “fiddling around in our own backyard” a long time ago. But finding innovative solutions for challenging new requirements of our customers has remained the core competence of our engineering staff.

The task we faced when we accepted the order from Prymetall was not only to replace a strip treatment furnace with cooling zone and machinery but also to rate it for the annealing of thicker strip at higher temperatures.

The special requirement was to anneal copper and copper alloy strip with over 1 mm thickness and a mean strip width at 850 °C under protective atmosphere with the strip floating through furnace and cooling zone horizontally and without physical contact.

The well-known solutions for strip flotation furnaces were not suitable for handling this task because the strips were too thick for being annealed at 800 °C.

What are the limiting factors? At temperatures above 800 °C, the material strength of fan impellers drops considerably so that the rev ratings required to generate sufficiently high pressures cannot be achieved while at the same time maintaining reasonable service lives of the impellers.

By a clever arrangement and connecting two fans in series, a sufficient overall pressure in the nozzle system could be achieved without exceeding critical limit values.

Replacement of the components including the entire switchgear was carried out between Dec 17th, 2007, and Jan 6th, 2008, and commissioning and hand-over for production were completed by Feb 4th, 2008.



Strip treatment line

In combination with our new nozzle system, the line works to the customer's full satisfaction and was accepted after 8 weeks of trouble-free test operation on April 7th, 2008.

The nozzle system and the fan combination were developed in close cooperation with the Institute of Industrial Furnace Engineering of the Technical University of Aachen under the guidance of Professor Pfeifer together with Dr. Bölling and Dipl.-Ing. Hornig. Patent rights are pending.

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NEWS

COMPLEX FURNACE PLANT SUCCESSFULLY COMMISSIONED AT CHINALCO LUOYANG

The complex furnace plant for high-grade copper alloys for CHINALCO LUOYANG Copper Co., Ltd. (China) consists of two melting furnaces and one holding/pouring furnace supplying a vertical semi-continuous casting plant for slabs with a max. weight of 25 tonnes.

For this demanding application the overall competence of the OTTO JUNKER group was required: design, delivery and supervision of erection of the equipment were shared between OTTO JUNKER GmbH and INDUGA.

Two 25-tonne medium frequency coreless furnaces with a rated power input of 4,000 kW each are used for melting the charge material.

The pouring furnace has a capacity of 32 tonnes and a rated power of 500 kW. A stopper system in the furnace forehearth controls the metal supply to the casting plant. After the pour, the pouring furnace is tilted backwards so that the forehearth is free of metal. Afterwards, the furnace is moved to the side. In this position the nozzle can be cleaned or replaced, if necessary.

Close temperature control and analysis accuracy as well as a reduction of the gas pick-up during melting and pouring ensure a high material quality.

TOPIC:

OUR TRADEMARK: INNOVATIVE AND ENERGY-EFFICIENT EQUIPMENT TECHNOLOGY

Process reliability, energy efficiency, profitability and increased throughput have been main requirements for industrial furnace engineering for decades and still are today, more than ever.

Today, though, we are forced to achieve major improvements in the above criteria if we want to avoid failure in global competition. Providing the required sources of energy and raw materials not only is an economical challenge but a real supply issue: Resources are shrinking and, as a consequence, prices are going up!

For example, the prices of electric power and gas in Germany have gone up by approx. 60 % and more than 200 % respectively since 2000! And further price increases have already been announced. Add to that the necessity to considerably lower the CO₂ pollution by reducing energy consumption and

improving burner technology.

The users of industrial furnaces are among the largest consumers of energy. Almost 40 % of the industrially utilized energy is consumed in industrial furnaces. As industrial furnace manufacturers, we therefore have a special responsibility to improve the energy efficiency of our equipment.

Due to the huge amounts of energy lost as process heat in industrial furnaces, even small improvements in efficiency can result in major overall savings.

If the efficiency of a 10 MW melting furnace plant is improved by 5 % by using our new energy saving coil, 1,500,000 kWh can be saved per year (based on the plant running 3,000 hr/year).

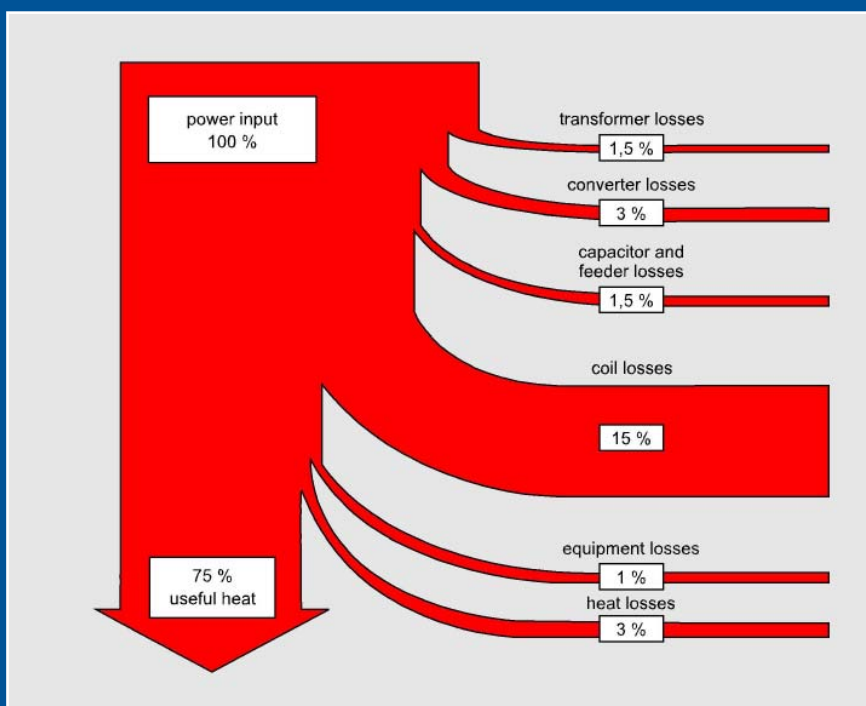
Apart from the energy efficiency, the increase in material efficiency is another

challenge, i.e. production of a high quality product using as little material as possible. Material efficiency is the ratio between product output and material input.

For our branch of industry, this means the need to minimize the metal losses due to firing losses, returns, scrap and chips and thus a reduction of the energy consumption.

The below example shows one of many successful Junker developments in this regard. By using two saw blades, the Junker-developed saw for cutting aluminium logs can use a thinner cutting width. Chips are reduced by 60 %, thus saving 100,000 €/year based on average production figures.

All our innovations and developments aim at increasing the customers' benefits which is our main target.



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