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ZML Industries is following the trend of CO2-neutral melting by ABP Induction furnaces

Climate-friendly melt shop conversion from cupolas to induction furnaces

The conversion of melting operations from thermally fired cupolas to CO2-neutral medium-frequency induction furnaces is a major trend of the foundry industry. Technology leader in this field, ABP Induction offers the IFM series of high-performance induction melting furnaces with state-of-the-art process control for demanding foundries worldwide. ZML Industries S.p.a. has now made use of this.

Having been part of Gruppo Cividale since 2006, the Italian company is considered a leader in the field of aluminum die-casting, gray cast iron or ductile cast iron, as well as in the production of enameled wire. The company is a sought-after partner on the European market for the most prestigious brands in the household electrical appliance, automotive and mechanical engineering industries.

The tradition-steeped foundry was faced with the decision to fundamentally modernize its own facilities. Previously, the site in Maniago, Italy, had relied on cupola furnaces, but now it needed to switch to more flexible and environmentally friendly induction furnaces. Unlike cupolas, induction furnaces generate fewer emissions, slags and waste. The overall CO2 direct emissions of the Cast Iron division will be reduced by 95%. What's more, users are more flexible in day-to-day production, including fluctuations in production and regular switching between varying gray and ductile iron grades. The respective compositions of the casting alloys can be adjusted precisely. The energy is induced directly into the melting material without any chemical reaction. ABP Induction's IFM crucible induction furnaces are known here for their repeatably fast melting times, high reliability, operational safety and serviceability. The capacity of IFM furnaces ranges from eight to 65 tons with available power supplies between one and 42 megawatts (MW). They can be employed for ferrous and non-ferrous alloys.

ZML has selected 2 IFM 9 (23.2 t) / 12 MW TWIN-POWER® and 2 IFM 6 (9.9 t) / 6.1 MW TWIN-POWER® furnace system, for production of gray iron and ductile iron components. The final commissioning of the overall melt shop is slated for September 2022. The first deliveries will take place in December 2021, and production with the IFM 9 tandem is scheduled to commence in March 2022. Demolition of the cupola furnace plant at the site will take place afterwards. Delivery of the IFM 6 tandem is then scheduled for June 2022 at the current cupola installation site. The ABP furnaces will be the core of the renewed melting shop highly automized from scrap charging to iron preparation and transportation.

ABP was able to convince the customer with its high competence in the field of induction furnace technology and its experience in the conversion from cupola furnaces to induction furnaces. This was topped off with compelling references for plants in high performance classes and TWIN-POWER® converters with high production capacities, which are already in operation in the ABP customer network. ZML employees had also already gained experience with ABP IFM furnaces and particularly appreciated the high quality and high availability. Finally, the coherent ABP service concept, which

includes local representation in Italy by Carutti Srl was convincing for a successful start of a long lasting business partnership.

Efficiency of operating the ABP induction furnaces type IFM is based on different modules. Thanks to the TWIN-POWER® principle, the converter power can be freely distributed to both furnaces. As such, increased inverter utilization, lower maintenance costs, and lower investment costs compared to separate power supplies can be achieved. In addition, the melt processor PRODAPT® Enterprise, and the ABP customer portal myABP provide intelligent solutions for the progressing digitalization and networking of processes at ZML. The melt processor PRODAPT® Enterprise is responsible for the demand-oriented control of the energy supply for melting, holding, cold start-up and sintering between the two furnaces. Operating data and statuses are recorded and displayed in the myABP portal and processed for targeted data exchange with the plant management system. The technical furnace parameters, captured via the digital inverter control, are converted into recommended actions for energy-efficient charging via the patented OptiCharge® system. When starting up a batch with a partial charge of ferromagnetic melting material, small portions of this material are automatically refilled. This results in measurable energy savings and production increases in daily production operations compared to uncontrolled charging. Studies show that induction furnaces produce less than half the scope 1 and scope 2 CO2 emissions for melting one ton of cast iron compared to cupolas. Thanks to the ABP plants, not only ZML Industries will reap the benefits of this in the future, but also the environment.

About ABP Induction Systems GmbH

ABP is a leading manufacturer of induction furnaces and systems for inductive melting and holding for the metal and metalworking industries. ABP is an expert in melting, pouring, holding and heating iron, steel and non-ferrous metals with design, production, assembly and services for foundries, forges and steelworks. The ABP Induction Systems Group with over 400 employees has companies in the USA, Mexico, Sweden, Germany, South Africa, Russia, India, Thailand and China. It is represented by service and sales partners in most of the world's industrialized countries.

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