### MONDAY, MAY 16

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Advanced Automation Solutions for Steelmaking and Environmental Plants

9:30 am / Room 402

Authors: Andreas Rohrhofer, Primetals Technologies Austria GmbH; Thomas Kurzmann, Primetals Technologies Austria GmbH; Franz Hartl, Primetals Technologies Austria GmbH; Phillip Aufreiter, Primetals Technologies Austria GmbH

Abstract: Environmental plants have become a main part of steelmaking plants. Highest performance in combination with optimized energy consumption is the main target in Primetals Technologies' innovations in automation optimization packages for dedusting systems. For primary-dry type dedusting systems, energy savings up to 60% could be reached with Precon, an energy optimization system. With optimization packages for bag filter systems, operational costs were reduced and at the same time the lifetime of the filter is increased. A new approach for preventive maintenance and operator assistance is introduced with the Acoustic Expert System. It enables a wide field of application for process observation by acoustic monitoring of the specific noise of various equipment.

Blast Furnace Cooling Stave Design

9:30 am / Room 405

Authors: Paul Balmer, Primetals Technologies Ltd.; Martin Smith, Primetals Technologies Ltd.; Jeremy Fletcher, Primetals Technologies Ltd.; Richard Harvey, Primetals Technologies Ltd.; Robert Horwood, Primetals Technologies Ltd.

Abstract: In recent years, the latest evolution of the cooling system design, in the shape of the copper stave, has been seen as state-of-the-art and an established feature on a large number of furnaces around the world. When first put forward, the copper stave was marketed as the ultimate cooling element, since it not only provided a cooling function but also self-protected by forming an accretion layer. More recently, on some furnaces that have copper staves in their design, significant problems have arisen during operation, causing premature failure of the staves and reduced campaign life. This paper will review the evolution of the copper stave design and illustrate the latest techniques being applied by Primetals in this critical area of blast furnace design.

Rod Mill Modernization at OneSteel Laverton for Increased Productivity, Utilization and Product Quality

9:30 am / Room 308

Authors: Mohamed Ahmed, Primetals Technologies USA LLC; Ashanti Arangala, OneSteel Market Mills; Bruce Kiefer, Primetals Technologies USA LLC

Abstract: Several improvements were made to the single-strand rod mill at OneSteel Laverton to increase production, reduce maintenance and improve several aspects of product quality. With changes to the water cooling line and control system, cobbles could be reduced, more consistent properties obtained and yield improved. An upgrade of the laying head enabled vibrations to be reduced and thus allow for higher speeds on small sizes. With potential for dramatically increased pipe life, a new pipe support and laying pipe system provides for improved laying pattern on small sizes and thus more uniform cooling on the conveyor and better coil package. This paper discussed details of these equipment and control system upgrades and the resulting benefits that have been realized from the project.

The Vision of a Fully Automated Mini-Mill

10:00 am / Room 317

Authors: Jan Lueckhoff, Primetals Technologies Germany GmbH; Jens Apfel, Primetals Technologies Germany GmbH; Joerg Buttler, Primetals Technologies USA LLC

Abstract: It has been proven that automation solutions improve productivity, safety and availability of a steel plant. Primetals Technologies together with its partners is now taking the next step: The fully automated Mini Mill. From the automated scrap
yard to several EAF charging solutions, the first process steps are already partly implemented. With modern measuring devices, the melting process is fully automated. Equipment supervision and process models allow prediction of possible failures of critical plant components and lead to a reliable preventive maintenance system. The combination of these technologies brings us closer to our vision of a fully automated mini mill.

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**Influence of Slag Properties on the Alkali Cycle of a Blast Furnace**

10:30 am / Room 404

**Authors:** Anton Pichler, Montanuniversitaet Leoben; Johannes Schenk, Montanuniversitaet Leoben; Franz Hauzenberger, Primetals Technologies Austria GmbH; Hugo Stocker, voestalpine Stahl Donawitz GmbH; Christoph Thaler, voestalpine Stahl GmbH

**Abstract:** Slag properties like temperature and basicity are generally known as influencing parameters for the evaporation of potassium and sodium in the blast furnace hearth. Due to their harmful effect on refractories, coke, burden material and top gas, the operator wants to decrease the generation of gaseous alkali compounds by the slag phase. To predict the influence of temperature and slag composition on the alkali mass flows, a thermochemical model was developed. This multi-zone model enables a determination of the alkali concentration over the blast furnace height and gives an understanding of the most effective parameters on the alkali cycle.

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**iBox Pickling Tank for Production Improvement of Advanced High-Strength Steel Upgraded From Deep Bath Tank**

10:30 am / Room 307

**Authors:** Kosei Tsuji, Primetals Technologies Japan Ltd.; Jumpei Sato, Primetals Technologies Japan Ltd.; Hiroshi Watanabe, Primetals Technologies Japan Ltd.; Masao Tambara, Primetals Technologies Japan Ltd.; Ryusuke Nakatsuka, Primetals Technologies Japan Ltd.

**Abstract:** As production demands increase for advanced high strength steel (AHSS), steel manufacturers face short production capacity of pickling lines. Primetals Technologies Japan Ltd. (PTJ) has proposed the iBox pickling tank to improve production capacity, save energy and provide ease of maintenance. Since the iBox pickling process needs storage tanks filled with acid solution to reduce over-pickling at line stop, a wider space for them is required. To reduce the necessary space, PTJ has proposed a new and unique configuration of the iBox pickling tank as a revamp from the deep bath tank.

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**Pre-Finishing Mill Modernization on the Sterling Steel Rod Mill**

10:30 am / Room 308

**Authors:** Wade Krejdovsky, Primetals Technologies USA LLC; Neil Gow, Sterling Steel Co. LLC; Kermit Reins, Primetals Technologies USA LLC

**Abstract:** The most recent modernization phase of the wire rod mill at Sterling Steel involved installation of a pre-finishing mill, using a Morgan Vee Mini-Block, a new water box and shear with utility systems and automation. The new mill configuration adds more stands to the mill for better drafting and is designed to improve finished product quality by providing a more uniform entry temperature, better control of the feed section into the No-Twist mill, as well as enhanced surface quality. The new shear improves cut length accuracy as well as decreases the amount of trimming to reduce yield loss. This paper explains the changes made in the mill and the features of the new equipment and automation system.

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**Extensive Automation Upgrade at the JSW Steel Plant at Vijayanagar**

10:30 am / Room 317

**Authors:** Andreas Rohrhofer, Primetals Technologies Austria GmbH; Rudolf Hubmer, Primetals Technologies Austria GmbH; Josef Weiss, Primetals Technologies Austria GmbH; Navin Desai, JSW Steel Ltd.

**Abstract:** Primetals Technologies received at the end of 2013 an order from JSW Steel Ltd. to install an extensive automation
upgrade at the JSW Steel Vijayanagar plant in Toranagallu, India. The upgrade includes the implementation of level 2 process optimization systems for 25 existing plant units of various suppliers in both steel meltshops. New level 2 systems are provided for the hot metal and secondary metallurgy area as well as slab casters. Furthermore, a shop supervisory system is supplied. The integration of the new optimization systems into the JSW automation environment, as well as highlights of the implemented automation systems, are described.

Raw Material Flexibility in Electric Steelmaking

11:30 am / Room 406

Authors: Jan Lueckhoff, Primetals Technologies Germany GmbH; Jens Apfel, Primetals Technologies Germany GmbH; Joerg Buttler, Primetals Technologies USA LLC

Abstract: Due to high fluctuation in price and availability of scrap and its substitutes, modern electric arc furnace have to be highly flexible on their charge mix. Primetals Technologies designs EAFs for hot and cold DRI input up to 100%. With a special tapping design the furnace can be operated continuously with minimum power off time. Existing installations can be revamped to allow DRI or HBI feeding through the 5th hole. Hot metal charging can be done via a launder through the slag door of the EAF. A wide range of scrap / hot metal ratios can be used.

Improvement of Side Trimming Quality Based on Use of Optical Inspection Device

11:30 am / Room 318

Authors: Brian Smith, Primetals Technologies USA LLC; Helmut Hlobil, Primetals Technologies Austria GmbH; N Doulfis, ArcelorMittal Atlantique et Lorraine; Afchine Nassarian, Primetals Technologies France SAS; Thomas Vallée, Primetals Technologies France SAS

Abstract: The demands on the side-trimming process are increasing steadily. Consecutive faults may lead to surface defects, roll defects, strip breakage... EdgeMon an edge inspection device from Primetals Technologies is a leading technology to automatically observe the trimming quality. ArcelorMittal Florange / France investigated this process step in a project with the goal to find general process improvement actions. Major goal that was focused at ArcelorMittal plant were reduction of customer complaints and safety issues due to saw tooth, knife breakouts and burr at IF and AHSS steel grades. Based on these results and completed with recent market trends two new directions of impact were started: the new version of EdgeMon for side-trimmer integration with new supportive features was developed and a first pilot for fully automatic side-trimmer parameter optimization was successfully finished.

Panel Discussion: Postponing BF Relines & Capital Expenditures

2:00 pm / Room 404

Panel Members: Albert Dzermejko, Magneco/Metrel, Inc.; Randy Fischer, ArcelorMittal Dofasco Inc.; Barry Hyde, Hatch Ltd.; Ken Wing, U.S. Steel; John Seaman, ArcelorMittal Indiana Harbor; Paul Balmer, Primetals Technologies Limited; Volker Dulz, Paul Wurth Refractory & Engineering GmbH; Frank Huang, ArcelorMittal Global R&D; Robert Nightingale, University of Wollongong; Peter Zonneveld, Danieli Corus BV; Andrea Kuciak, ArcelorMittal Dofasco Inc.


2:00 pm / Room 405

Authors: Angelika Klinger, Primetals Technologies Austria GmbH; Alois Altendorfer, Primetals Technologies Austria GmbH; Greg Hughes, Midrex Technologies Inc.; Adil Abdulla Al-Husseini, Qatar Steel Company; Durgesh R. Gupta, Qatar Steel Company

Abstract: The DR Plant Process Optimization System described is an integrated process optimization system for a MIDREX DR Plant developed by Primetals Technologies and MIDREX Technologies. Recently, a completely new version of this DR Plant Process Optimization System was launched, which is currently installed at the MIDREX DR plants of Qatar Steel, ESISCO and voestalpine Texas LLC. The installation of the new system at Qatar Steel demonstrates the high prediction accuracy of the
product metallization and carbon content achieved with the new prediction models. This paper describes the experiences and benefits. Significant improvements are identified and the positive results are documented. Furthermore, a newly developed rule-based advisory system, the DR Plant Expert System, is introduced which is installed for the first time at the new MIDREX DR Plant of voestalpine Texas LLC in Corpus Christi, Texas.

EVO Roll Master — Examples of Modeling and Simulation of Rolling Schedules

2:00 pm / Room 308

Authors: Alberto Lainati, Primetals Technologies Italy Srl; A Nardini, Primetals Technologies Italy Srl; Federico Pegorin, Primetals Technologies Italy Srl; L Valente, Ecotre Valente Srl

Abstract: Reliable process models assisted by modern simulation software can provide long rolling operators with great insight into the whole process, which must address the dimensional accuracy, the mechanical properties and microstructure. Using a FEM technique based on DEFORM code, Primetals developed and applied the new EVO Roll Master technological platform, which defines the overall process arrangement, from grooves to pass schedule, be it in an alternating breakdown sequence for blooms or in a continuous mill for bars and sections. Through the clear understanding of the actual material flow, a better control of material microstructure and properties is obtained.

Operational Results: PL-TCM with Jet Pickling and Crown Control for Tin Plate Applications

2:30 pm / Room 307

Authors: Eiji Ishikawa, Primetals Technologies Japan Ltd.; Hiroki Masui, Primetals Technologies Japan Ltd.; Akihisa Fukumura, Hitachi,Ltd.; Keiki Takata, Hitachi,Ltd.

Abstract: For surging demands of can products in China, Primetals Technologies Japan Ltd. supplied the most advanced continuous pickling line and tandem cold mill (PL-TCM) for tin steel application. For tin rolling, various techniques for harder, thinner and faster strip stable rolling are required to achieve excellent shape and gauge control and thermal crown compensation. The 5-stand TCM with a 6-high universal crown control mill (UCM-mill) is provided to meet these requirements to produce tin steel with a minimum thickness of 0.15 mm and maximum rolling speed of 2,000 m/minute. This paper will introduce the main new features and configuration of the PL-TCM.

Operational Excellence of Gerdau Steckel Mill Producing High-Quality Products for End Customers

2:30 pm / Room 412

Authors: John Beaumont, Primetals Technologies; Rodney Pardo Alves, Gerdau Ouro Branco; Jose Herbert Dolabela Silveira, Gerdau Ouro Branco; Willy Schuwarten Junior, Gerdau Ouro Branco

Abstract: As part of the strategic investment of Gerdau, a new Steckel mill was commissioned in 2013 at Ouro Branco with the latest design and innovative features from Primetals Technologies. Since then, the plant is continuously improving its product quality in cooperation with Primetals Technologies. This paper illustrates the flexible design and new techniques incorporated in the Steckel mill. Typical results are analyzed, showing the capability of the plant to produce high-quality products meeting end customer requirements. In addition, an update on the next phase of the original contract for a new 3.8-m plate mill will be presented.

Continuous Casting Process Automation — Recent Innovations and Advancements

3:30 pm / Room 317

Authors: Reinhold Leitner, Primetals Technologies Austria GmbH; Wolfgang Oberaigner, Primetals Technologies Austria GmbH

Abstract: A completely new innovative human machine interface (HMI) for the level 2 automation system has been developed by Primetals and successfully installed within recent projects. Direct quality improvements during the solidification phase in the continuous casting process are augmented by a suite of dynamic secondary cooling and soft reduction packages: Dynacs
3D, DynaPhase and DynaGap. The Speed Expert calculates an optimum casting speed for every casting situation, including a proposed speed so that the point of final solidification is positioned at the end of a segment for optimum soft reduction. Nozzle Expert is a model which detects clogged nozzles and broken hoses in secondary cooling systems. This paper describes the above-mentioned solutions, outlines installation results and gives an outlook to future developments.

**The Latest Evolution of MULPIC® Plate Cooling Technology for Enhanced Performance and Flexibility**

4:00 pm / Room 412

Authors: Sandip Samanta, Primetals Technologies Limited; Mark Chalmers, Primetals Technologies Limited

Abstract: Since its introduction to the market in 2001, Primetals’ MULPIC has been leading the way in accelerated cooling for steel plate production. While its lab-designed and site-proven nozzle arrangement remains constant, the supporting mechanics, automation, and actuators have all been continually developed to keep the MULPIC at the forefront of plate cooling technology. New flow control valves were designed in-house, and this paper will demonstrate improvements in accuracy and response over the first-generation MULPICs using the latest site data. The authors will discuss the development of the MULPIC automation to give the flexibility required to allow MULPIC + laminar cooling hybrid cooling systems and more user control over the cooling rate and temperature drops within each section.

**Modernization of Existing Assets to Meet the Growing Demand for Advanced High-Strength Steels**

4:30 pm / Room 311

Authors: Leland Robinson, Primetals Technologies USA LLC

Abstract: Due to growing demand for advanced high-strength steels (AHSS), particularly from the automotive market, steel producers are faced with a unique and interesting challenge in producing materials that strain or exceed the capabilities of equipment designed to produce low-carbon sheet. With significant investment required of greenfield projects, many instead turn to modernizing their current assets. While specialty steel producers have known for decades how to process high-strength steels, this equipment does not offer the yield desired by the market, necessitating innovation in re-engineering existing equipment to accommodate variable roll geometries, innovative cooling, and continuous rolling more economically than new construction.
Successful Revamp of Sublance Manipulators for the LD Converters at voestalpine Stahl GmbH — Operational Experience Gained in the First Year

10:00 am / Room 409

Authors: Martin Egger, voestalpine Stahl GmbH; Joachim Lehner, voestalpine Stahl GmbH; Hannes Nogratnig, voestalpine Stahl GmbH; Andreas Priesner, Primetals Technologies Austria GmbH; Helmut Lechner, Primetals Technologies Austria GmbH; Gerald Wimmer, Primetals Technologies Austria GmbH

Abstract: To further reduce process times and increase availability at the LD converters in the high-performance steel mill of voestalpine Stahl GmbH in Linz, Austria, the old hydraulic sublance manipulators were replaced with three new robotic sublance systems by Primetals Technologies Austria GmbH. Main criteria for the project were: high availability, short cycle times in sublance-probe handling, fully automatic probe replacing in confined spaces, fully automatic probe supply from customized exchangeable containers, monitoring, testing and calibration of sublances, low maintenance, latest safety standards, and ergonomic design. The old manipulator was dismantled and the new robot solution installed during a 5-day converter relining. Performance was excellent in the first days, and an availability of 95% was achieved in the start-up period.

State-of-the-Art Developments in Hot Flat Product Surface Inspection

10:00 am / Room 306

Authors: Brian Smith, Primetals Technologies USA LLC; Afchine Nasserian, Primetals Technologies; Sébastien Maillard, Primetals Technologies; Laurent Dorel, Primetals Technologies; Jean-Paul Faure, Primetals Technologies

Abstract: Surface quality monitoring is primarily implemented in the last steps of steel manufacturing before shipment to the end user. However, an increasing trend for also addressing this topic in the upstream stages, such as hot rolling plant, is tackled by Primetals Technologies to give steel producers the key to a global optimized yield management, and efficient “lessons learned” processes. After the latest developments of SIAS® Next Gen platform technology in the field of hot strip and hot plate surface inspection, including high resolution and near infrared, some site results will be presented on the very specific high-constraints lines such as ESP endless strip production and plate mills.

Intelligent Planning and Scheduling for Minimills and Arvedi ESP

10:30 am / Room 403

Authors: Rene Grabowski, Primetals Technologies Germany GmbH

Abstract: The utilization of production facilities in an optimum way, with reliable due date fulfillment, reducing raw material and energy consumption, are challenges iron and steel companies are facing in their business every day. By using an APS Advanced Planning and Scheduling System such goals can be achieved to increase the competitiveness of iron and steel producers. A sophisticated APS supports the overall planning process by applying complex rules based on product and order mix, its production routings with corresponding processing and transport times and resource availability. Specific technological as well as steel grade and energy related constraints are also considered to meet company specific KPIs. In general the task of APS is to support the preferred work-to-order concept, by assigning work-orders to available production facilities along the product specific process route and generate optimized material sequences for critical work centers. Orders describe the type and amount of products to be produced by a required due date in a specific production plant.

Blast Furnace Process Optimization With Closed-Loop Expert Systems — 25 Years of Experience

11:30 am / Room 405

Authors: Martin Schaler, Primetals Technologies Austria GmbH; Harald Fritschek, Primetals Technologies Austria GmbH; Thomas Kronberger, Primetals Technologies Austria GmbH; Bernhard Schürz, Primetals Technologies Austria GmbH

Abstract: In 1991, voestalpine Stahl Linz and Primetals Technologies joined forces and started the development of an integrated
process optimization system for blast furnaces. This cooperation resulted in the successful market launch of the closed-loop expert system for blast furnaces, which is involved in more than 10% of the world hot metal production. The first part of this paper describes the structure of the process optimization system, and it focuses on the latest developments of the process models. It describes the possibilities of project-specific extensions of the expert system, and it outlines the application of the closed-loop concept for a variety of operational conditions. The second section gives an overview of the worldwide references of the process optimization system, and it reviews recent installations that resulted in considerable reductions of CO2 emissions. The paper concludes with an outlook on the short-term improvements and developments of the optimization system and the long-term vision of a fully automatic blast furnace.

Rizhao Steel Counters the Chinese High-Quality Hot Strip Market With Thin Gauges From the New ESP Lines

2:00 pm / Room 306

Authors: Andreas Jungbauer, Primetals Technologies Austria GmbH; B Linzer, Primetals Technologies Austria GmbH; A Viehböck, Primetals Technologies Austria GmbH

Abstract: High-strength but lightweight car bodies, ultrathin structures paired with the highest tensile strength — and all at the lowest production costs. Innovative processes are required in order to fulfill the demands of the car and metals industries. After years of successful operation in Italy and five more plants sold to China, today Arvedi ESP is accepted as a proven technology that provides endless rolling possibilities to meet these requirements. Using 0.8-mm-thin hot rolled product as a cold rolled substitute — either directly or by processing the hot rolled coils in continuous pickling and galvanizing lines — is a valuable approach. Three of the five ESP lines sold to Rizhao Steel are already in operation since 2015 and are setting new standards for hot strip rolling. The results of operations will be discussed in this paper.

Closed-Loop Simulation of the Emergence of Mold Level Oscillations in a Continuous Casting Machine

2:30 pm / Room 317

Authors: Gottfried Simon, JKU; Philipp Wieser, Primetals Technologies Austria GmbH; Andreas Schiefermüller, voestalpine Stahl GmbH; Helmut Holl, JKU; Hans Irschik, JKU

Abstract: An efficient model for the simulation of unsteady bulging in a continuous slab casting machine is presented. The model contains a beam-type mechanical subsystem representing the strand, supported by the rolls, with a non-constant temperature field — the temperature depending material parameters and a non-constant shell thickness distribution. Additional subsystems contain models for the mold level (mass balance considering inflow and outflow) and the mold level controller. In order to gain a closed-loop system, a model for the initial shell solidification in the mold is added. With these models, it is possible to obtain realistic simulation results considering the emergence of mold level fluctuations from unsteady bulging induced by arbitrary disturbances, e.g., from unclogging.

Corex® Gas based DRI Production – Combining the Power of Hot Metal and DRI Production

2:30 pm / Room 405

Authors: Wolfgang Sterrer, Primetals Technologies; Plaul Friedemann, Primetals India; Harald Sprenger, Primetals Technologies; Anil Bafna, JSW Projects Ltd.

Abstract: In 1999, Saldanha Steel (now ArcelorMittal South Africa) began operation as the first MIDREX® plant to produce DRI by using offgas from a COREX® hot metal plant. The technology developed by Midrex and Primetals (formerly VAI) maximizes the usage of raw materials through utilizing COREX export fuel to create a reducing gas suitable for the MIDREX process. In 2010, JSW began construction of a COREX/MXCOL® DRI plant at their Toranagallu facility in India to take advantage of the offgas from its onsite COREX plants. This paper will discuss the MXCOL/COREX combination, experiences from Saldanha, and the commissioning, start-up and operation of the JSW Toranagallu facility.
ATI: The Most Powerful Hot Strip Mill in the World

3:30 pm / Room 306

Authors: Franz Schmoller, Primetals Technologies Austria GmbH; T. P. DeLuca, Allegheny Technologies Inc.

Abstract: With 14 different metallurgical process routes, ATI Allegheny Ludlum in Brackenridge, Pa., now operates the most flexible and powerful hot strip mill in the world. The new plant replaces the existing hot strip mill and increases the production capacity of ATI. It operates with the highest rolling forces ever applied in a hot strip mill to roll the highly diversified and sophisticated product mix. Primetals supplied the entire hot strip mill, including all equipment, electric and automation systems to cover the complex solutions and process logistics. Several specific solutions had to be applied to comply with the highly diversified and sophisticated steel grades. The plant is now in full industrial operation since 2015. Layout, equipment and automation and planning systems as well as first production results will be discussed in this paper.

Backup Roll Bearing Upgrades for Flat Mill Oil Film Bearings

3:30 pm / Room 310

Authors: Thomas C Wojtkowski, Primetals Technologies USA LLC; Peter Osgood, Primetals Technologies USA LLC; Ian Ward, Primetals Technologies USA LLC

Abstract: Oil film backup roll (BUR) bearings are common in flat mills worldwide and have been a mainstay of the industry since the 1930s. Current operational mills that are one or more generations old may need to increase total separating force to roll new materials. Upgrading the BUR bearings to increase load capacity may be a required step in these mill upgrades. This paper will specify upgrade paths for existing BUR bearings, describe common problems and impact on back up roll design, and define specific load capacity improvements for common sizes.

A New Method for Predictive Maintenance for Slow Rotating Equipment

3:30 pm / Room 316

Authors: Klaus Stohl, Primetals Technologies Austria GmbH; Oliver Lang, Primetals Technologies Austria GmbH

Abstract: During the lifetime of a ladle turret, the large swivel bearing has to be replaced at least one time in most cases. As this requires substantial lead time, knowledge about the condition of the bearing is essential for optimized planning. Regular grease analyses and displacement/tilt measurements are normal predictive maintenance practices, but deliver an incomplete picture of the condition of the bearing. Evaluation of shock pulse measurements allows for the first time a complete picture and delivers accurate information about the equipment. This method is especially suited for very slow rotating parts, but was never before applied at ladle turrets. This paper will explain the technique behind and show results from several installations. As there are many other critical and very slow rotating pieces of equipment in a metals plant, an outlook about further applications will conclude the paper.

Latest References of PC-Mill and High-Added-Value Technologies for Hot Finishing Mill

4:30 pm / Room 306

Authors: Hironori Abe, Primetals Technologies Japan Ltd.; Toru Takeguchi, Primetals Technologies Japan Ltd.; Hideaki Furumoto, Primetals Technologies Japan Ltd.; Kanji Hayashi, Primetals Technologies Japan Ltd.

Abstract: A “pair-cross type” rolling mill (PC-mill) has been developed as strip profile control actuator. Since the world’s first hot strip mill with PC-mills started operation in 1984, approximately 150 PC-mill stands have been supplied globally, contributing to high accuracy and quality of rolled strip. Features and the latest references of PC-mills will be introduced. In addition, high-added-value technologies related to hot finishing mill, mill stabilizing device (MSD) and on-line roll profiler (ORP), which will be applicable to all types of mills, will also be introduced.
Panel Discussion: EAF Off-gas Analysis Methods

8:00 am / Room 406

Panel Members: Sam Matson, CMC Americas; Kenneth Grieshaber, Zolo Technologies Inc.; Doug Zuliani, Tenova Goodfellow Inc.; Joerg Buttler, Primetals Technologies USA LLC; Simone Marcuzzi, MORE S.r.l.

This panel discussion consists of brief technical presentation from major OEM gas analysis vendors and from Dr. Sam Matson, who has developed an analysis technique that requires no direct gas analysis.

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