



Dear Customer or Partner,

Before starting the newsletter, we have something important to say.\*

With this you receive the second EMG newsletter in a new design. Positive feedback has shown us that our newsletter is informative and the subjects are of great interest to our readers. Many thanks for your supportive feedback and we look forward to further suggestions. The first EMG newsletter was very popular and many readers forwarded it to their colleagues. As a result, we are proud to announce that our subscribing readership has significantly increased.

But enough with the polite conversation, let's get to the newest version of our newsletter in which you will find the following contributed articles:

- EMG-IMPOC® establishes itself on the market – four orders from ThyssenKrupp and ILVA/RIVA
- EMG-eMASS – a successful start into the future with homogenous zinc layers – installation of eMASS at the final galvanizing line #1 at ThyssenKrupp, Duisburg
- Automatic air knife wiping equipment – easy to use, efficient and robust technology
- EMG-strip width optimization, SWOp at ThyssenKrupp and ILVA Novi Ligure
- EMG Innovation Talks 2007 – October 10 and 11, 2007 – "Quality Assurance in Practice"
- EMG Quality Days in China and Russia
- EMG as exhibitor at the STAHL 2007, November 8 and 9, 2007

Should you, unfortunately, not have a chance to visit us at the EMG Innovation Talks 2007 or at Quality Days, please contact us personally. We look forward to speaking with you.

Yours sincerely,

Anno Jordan  
Sales Director  
Quality Assurance Systems

Heinz Dingerkus  
Sales Director  
Strip Guiding Systems

\* Modified from a quote by Groucho Marx "Before I speak, I have something important to say."  
Groucho Marx (1895-1977), alias Julius Marx, American comedian ("Marx Brothers")

- IMPOC® established as solution for process optimization and reduction of material reworking – four recent orders by ThyssenKrupp and ILVA/RIVA

Quality demands for flat steel products have increased dramatically over the last decade. Modern steel producers heavily depend on online quality data to maintain optimal process levels and to avoid costly reworking or downgrading of material. This strategy's success is emphasized by the recent orders for the IMPOC® system (Impulse Magnetic Process Online Controller). IMPOC® delivers reliable online results for tensile strengths and yield point. →





The system has been developed in close cooperation with ThyssenKrupp Steel in Germany. In 2007, the ThyssenKrupp Steel Group ordered three more systems – for their continuous annealing line in Dortmund, the hot dip galvanizing line #4 in Duisburg and for the chromating line VA12 at their tin plate subsidiary, Rasselstein GmbH. A fourth system was purchased by ILVA/RIVA in Italy for their hot dip galvanizing line in Novi Ligure.

The arguments for applying IMPOC® in high end production lines are evident.

Today, material destruction testing results are available typically 8-24 hours after production. If target values are not reached, the waiting period can cause severe problems with material routing and process stability.

Based on the immediate availability of values for tensile strength and yield point with IMPOC®, decisions for material reworking and increasing process stability can be made instantly. Furthermore, the utilization of IMPOC® for online control of skin pass mills has made a positive impact on quality costs and material yield.

IMPOC® is currently installed in 14 steel processing lines. The system can be applied to production speeds of up to 900 m/min. The material range covered by IMPOC starts at unalloyed steels, continues to IF steels and goes up to HSLA steels. Recent measurements were made for dual phase steels and TRIP steels. The spectrum is continuously extended and IMPOC becomes an more and more important tool especially in the development of new steel grades. ■

■ Automatic air knife wiping equipment – easy to use, efficient and secure technology

With the launch of the automatic air knife wiping equipment, EMG Automation GmbH presents an innovative, high-tech cleaning system used in the process of continuous hot-dip galvanizing. Compared with conventional manual cleaning of the air knife, the new system offers greater quality and financial savings and improves safety at work.



An important quality criterion of galvanized steel strip is a homogenous zinc layer thickness. This depends on a perfect working air knife. Thus the cleaning of the air knife plays an integral part in the quality management of the production process. Using EMG's automatic air knife wiping equipment, the cleanliness of the air knife during operation can be 100 percent maintained.

Being an add-on system, the automatic air knife wiping equipment can be easily installed at most of the current hot-dip galvanizing lines. It is mounted directly on the air knife in an air-cooled housing. Depending upon the requirements of the specific galvanizing line, cleaning intervals can be customized. The system's automatic mode enables the number of movements of the pneumatic cylinder to be set as well as cleaning at each welding seam. The air is fed by a compressed-air connection with a pressure of 6 bar (per 600 l/min), its temperature has an upper limit of 40 °C. The cleaning tool itself is a flat scraper with wear-resistant and changeable blades pressed to the air knife system with a spring. Due to the pneumatic approach the risk of blocking the knives is very much limited. Hard blockings can be loosened by multiple for and backward movements of the scraper. Different to integrated e.g. wire based systems, the EMG system is accessible and visible from the outside and therefore easy to maintain.

One of the first systems has been installed at ThyssenKrupp's HDG #1 and is in continuous use since August 2007 (see picture). →



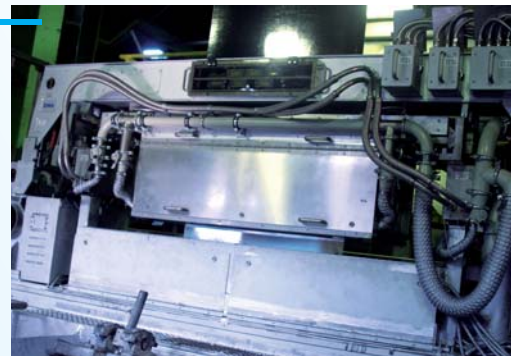


Since the process of hot-dip galvanizing involves liquid zinc whose temperature averages 450 °C, manual cleaning of the air knife needs to be carried out as safely as possible. EMG's automatic system for cleaning the zinc-soiled air knife reduces risk to a minimum.

Whereas the conventional cleaning method requires human intervention and can lead to injury, the automatic cleaning of the air knife guarantees the maximum security of the worker and much more flexibility with respect to cleaning intervals and procedures. ■

### ■ EMG-eMASS – a successful start to the future of homogenous zinc layers

Installation of the EMG strip stabilization system in the continuous galvanizing line (CGL) #1 at ThyssenKrupp Steel AG in Duisburg, Germany



After three years of conjoint development the first eMASS (electro Magnetic Strip Stabilization) system from EMG was put on the line at ThyssenKrupp Steel's CGL #1 in Duisburg in August 2007. The fully automated strip stabilization system ensures a homogenous zinc layer on the steel strip. Preparation for the installation of eMASS took only two weeks. First initiation of the complex system took place in just 30 minutes. Initial production results show the zinc layer thickness is more homogenous, meeting all expectations.

Three years ago, the challenge to develop a fully automated electro magnetic strip stabilization system began for EMG. The development contract with ThyssenKrupp Steel AG was signed in July 2004. At first, the basic development of singular components, for example electro magnetic actuators and an adequate power amplifier to activate the magnets was carried out.

After various successful field tests in multiple continuous galvanizing lines at ThyssenKrupp Steel AG, EMG developed a fully automated strip stabilization system that completely fulfils industry requirements.

The heart of the system consists of an actuator-sensor-unit that is installed directly on the air knife. Combining the EMG strip stabilization, eMASS, with an automated air knife wiping and contact-free edge mask controlling system is optional.

After extensive tests at the EMG laboratory, preparation of the infrastructure necessary for installing the eMASS system in CGL #1 was executed during normal operation of the line. Within two weeks, switchboards were installed, new fans for air cooling were implemented and tested, the user interface to operate the system was assembled and eventually the cabling for the system components was added.

Within a pot roll change, the system is integrated onto the air knife. After installation of EMG's automatic air knife wiping and contact-free edge mask control systems, initial installation of the eMASS system, including all necessary work, takes less than 30 minutes. The extremely short installation period could only be achieved with the extensive preparation carried out parallel to normal operation.

The exciting moment when the EMG eMASS was first activated – as expected – went without problems. The fully automated operation system functions as follows: first, an actuator-sensor-unit approaches the strip and →



identifies the current strip position. Then, the second unit approaches the strip on the back side and activates the stabilization. In this so called pre-position, the gap between the two actor-sensor-units is 80 mm. Once stabilization is achieved the working gap is automatically reduced to 40 mm. Following these steps, eMASS can self-adjust during strip oscillation. Should the distance between the strip and an actuator-sensor-unit go below a client-defined limit, the system will automatically create a gap of 150 mm to avoid strip contact.

To date, the gap widening safety feature has not been used because the eMASS system securely stabilizes the strip in the gap. After the first day the advantages of the EMG eMASS became clear to the line steering personnel. They were able to adjust the zinc layer more homogenously across the strip when eMASS stabilization was activated. Thus, the future of more homogenous zinc layers inside the continuous galvanizing line #1 has begun.

The answer to the thrilling question – what are the quantitative values regarding zinc layer thickness – will follow in the next newsletter. ■

### ■ EMG-strip width optimization, SWOp at ThyssenKrupp

Increasing resource costs demand efficient steel production and processing. Material yield enhancement is one possibility to achieve this goal, leading EMG to provide steel producers with the SWOp system (Strip Width Optimization). The basic idea of the EMG strip width optimization system is simple: the system allows reducing the strip to the optimum width before processing, allowing the predefined target strip width to be achieved accurately. This reduces cut-off waste so material is saved, reducing costs.



ThyssenKrupp Steel AG utilizes EMG's strip width optimization system on two production lines: the continuous galvanizing line FBA8 and the CAL (continuous annealing line). The system identifies the strip width with high accuracy ( $\pm 0.5$  mm) at two width measurement points – at the entry point (before the furnace) and at the exit (before the trimmer). The user pre-defines the production parameters, such as type of steel, width class or band thickness. A high-performance server (PC) identifies, on the bases of the entered data, the specific lateral strip contraction of the particular material and calculates the ideal target width (with minimal trimming) for all processing steps. SWOp keeps this data in clearly arranged tables and stores the information for up to one year. The width curve can also be visualised in different representations.

SWOp has proved itself successfully after a comparatively short data collection trial of 12 weeks. ThyssenKrupp was able to reduce the width of the operation coils by three millimetres. A further reduction of three millimetres is projected.

Other steel producers are convinced of the benefits of using EMG SWOp as well. In July 2007, EMG delivered a strip width optimization system to ILVA Novi Ligure in Italy. The main purpose for installing SWOp at ILVA was also to reduce trimming waste and increase material yield. Different from ThyssenKrupp, the system here is used in two measurement stages – measuring width before entry of the pickling line and then again before the side trimmer.

The data collected are also available for use during other processing steps. For example, minimum and maximum data as well as tolerance deviations are transferred to the tandem mill to optimize the processing there as well.

Using SWOp in applications such as mentioned above, leads to return on investment (ROI) in less than one year. Depending on the specific usage scenario, a return on investment of six months is possible. Increasing steel prices makes SWOp from EMG a worthwhile investment. ■





## ■ EMG Innovation Talks 2007 – October 10 and 11, 2007 – “Quality Assurance in Practice”

With the introduction of the EMG Innovation Talks 2007 under the theme, “Quality Assurance in Practice,” EMG offers guests the unique opportunity to meet colleagues from the steel industry and to get an exclusive insight into EMG’s production and quality processes. Informative lectures, held by experienced EMG clients, partners and experts will demonstrate the many advantages offered by EMG quality assurance systems and will open the discussion about actual and future requirements.

Following the lectures will be a twilight event, held on the first evening, in the “Wendener Hütte,” a furnace and forge from the 18th century.

On the second day guests will have the exclusive opportunity to see a live demonstration of the production of EMG components and quality assurance systems including handling the raw materials and final approval in EMG’s test center.

Participation in the 2007 EMG Innovation Talks is limited. Please contact Mrs. Nicol Hoffmann from EMG to get further information: [nicol.hoffmann@emg-automation.com](mailto:nicol.hoffmann@emg-automation.com), Phone: +49-2762-612-126.

More information about the EMG Innovation Talks is available at:

<http://www.emg-automation.com/en/news/2007/emg-newsletter-200709.html#innovation-talks>.

Some facts about the Wendener Hütte: The Wendener Hütte as historical ironworks and hammer mill is today a technical cultural monument. Founded in 1728 the Wendener Hütte produced crude steel by using charcoal. Due to the modern competitive ironworks in the Ruhr area, which produced with anthracite, it finally had to be closed down in 1866. It is located near the EMG headquarters and production facilities. More information is available at: <http://museum-wendener-huette.de> (website only available in German). ■



## ■ EMG Quality Days Meetings in China and Russia

EMG will present the latest quality assurance systems at its “Quality Days” networking meetings held in China and Russia. The joint event will be organized by EMG Automation, Mesacon Messelektronik, Shapeline, Vatron and LDV-Systeme.

The meetings will provide ample networking opportunities; enabling Chinese and Russian customers to meet and interact directly with EMG and partners, quality and line management professionals as well as other top decision makers are invited to participate. A short seminar will also be part of the Quality Days meeting program, where the latest technologies will be presented giving participants the chance to discuss their needs with the companies. The events will conclude with dinner and a local works visit (i.e. to the EMG office in Beijing and the Baosteel plant). The meetings will be held in the local languages.

Quality Days will take place in:

Peking, China – October 29, 2007

Shanghai, China – October 31, 2007

Moscow, Russia – November 13, 2007 (as part of the [Metal Expo](#), November 13 – 16, 2007, Moscow, Russia)

Please contact Mrs. Nicol Hoffmann for further information:

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## ■ EMG at STAHL 2007, November 8 and 9, 2007

The STAHL 2007, with the theme, "Competition for the future," is one of the most important conferences in the steel industry. Organised by the Steel Institute VDEh, the exciting event will take place at CCD-Congress Center South Düsseldorf in Germany on November 8<sup>th</sup> and 9<sup>th</sup>. EMG's exhibition at the conference will present innovations and trends focusing on the topic, "Quality during continuous strip processing".



EMG will have a focus on its state-of-the-art system eMASS (electro-Magnetic Strip Stabilization), which enables the continuous galvanising steel industry to ensure a homogeneously thick zinc layer. Already four leading international steel producers (ThyssenKrupp Steel, ArcelorMittal in Europe and the United States, Dongbu Steel and Baoshan Iron and Steel) have ordered so far six of these innovative systems this year.

ThyssenKrupp ordered the eMASS system for its plants in Duisburg (CGL #1) and in Dortmund (CGL#8). In Duisburg the system was installed directly on the air knife where the zinc layer is controlled. EMG is proud to report about the first results from the production line.

Also on display will be the IMPOC system for online measurement of mechanical properties and the SORM 3plus system for online roughness measurement.

EMG looks forward to seeing you at their booth at the Stahl 2007 in Düsseldorf on November 8<sup>th</sup> and 9<sup>th</sup> in the pavilion of the Congress Center South Düsseldorf.

Further information about STAHL 2007 is available at:  
<http://www.stahl-online.de/english/stahl2007/stahl2007english.asp> ■

## Contact

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