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Die 8. Internationale Isolierfachmesse erwies sich als blendende Gelegenheit für gute Geschäftskontakte und bescherte der Branche einen optimistischen Blick in die Zukunft.


Der ISO AWARD 2012 und die Produktauszeichnungen v.l.n.r: Michael Wiessner (St.-Gobain ISOVER), Frank Baur (L’ISOLANTE K-FLEX), “Chefjuror” Dr. Martin Zeitler (FIW) überreichte die Auszeichnungen, AWARD-Gewinner und somit 1. Sieger wurde Georg J. Kaimann (Kaimann), Markus Biland (MABI), Wolfram Adam (G+H Isolierung)

Mittwoch 9. Mai 21:15 Uhr
ISO Award 2012

K-FLEX IN CLAD SYSTEM


L’ISOLANTE K-FLEX, 88287 Grünkraut
www.k-flex.de
Climate protection with rapid payback
Ecofys study identifies a large energy efficiency potential of industrial insulations in EU27

Geneva/Utrecht, 19 June 2012 – The today published report “Climate protection with rapid payback” by Ecofys and EiiF identifies a large energy and CO₂ savings potential of industrial insulation. In addition it demonstrates that this potential is currently untapped despite being cost-effective to implement. In fact, European industry is losing energy and money every day, emitting tonnes of avoidable CO₂ emissions. “With just better maintenance and consistent insulating of industrial applications, about two thirds of the energy and emission saving potential could be tapped,” says Kornelis Blok, director of Science at Ecofys. “And since insulation investments will usually be paid back in less than one year, this is a great business opportunity.”

The EU Directive on Energy Efficiency aims at reducing the EU’s energy consumption by 20% by 2020. With current progress EU will achieve only half of these savings. Any Best Available Technique that can contribute to reduce EU’s energy consumption is therefore needed more than ever.

Industrial insulation is such a Best Available Technique. It can help European industry to reduce its total fuel consumption by 620 PJ and emissions by 49 Million tonnes of CO₂. The report analyses that the saving potential exists across all regions, sectors, equipment and operating temperatures.

This total annual energy savings potential of 620 PJ is equivalent to the energy consumption of 10 million households;

The annual CO₂ reductions potential of 49 Mt is equivalent to the CO₂ emissions of 18 million cars.

But why is the potential of industrial insulation in European industry so large?
According to the study 10% or more of all equipment in industrial plants is not insulated or is covered with damaged insulation. Furthermore, the level of insulation applied is typically based on a minimum investment decision. These decisions have been based on requirements regarding the maximum surface temperature. This to avoid personal injuries, minimum process needs or based on generic maximum heat loss rates. Requirements like cost-effectiveness or maximum energy efficiency of the insulation system are often just not considered.

“In the past, when fuel prices were lower, energy efficient insulation would not have led to a large difference”, explains EiiF Foundation Director Andreas Gürtler. “But nowadays, besides the need to achieve the EU 20-20-20 goals, the price of energy is higher and is expected to grow even further. As a result we found an increasing gap between current and cost-effective insulation levels.”

If industry takes the opportunity and starts to tap the insulation potential this trend could be stopped. The first step would be to consequently insulate all not insulated parts and to repair damaged insulation. If however industry continues to ignore the large savings potential of industrial insulation, the gap between “current” and cost-effective insulation will further increase. Additional costs for CO₂ emission allowances will even accelerate this trend.
EXTREME PRODUCTION EFFICIENCY AND MINIMAL ENVIRONMENTAL IMPACT IN THE COATING OF ELASTOMERIC INSULATORS

Estrema efficienza produttiva e impatto ambientale minimo nella verniciatura di isolanti elastomerici

Alessia Venturi

Preliminary remarks
Coatings are able to express their functions at best even with the most unexpected products. Aesthetics and functionality of the finish, perfectly combined with each other, allows to preserve the characteristic of the coated object, thus creating a "symbiosis" with it and offering new opportunities in terms of look and functions to its end use. And if the application of the finish is performed with latest generation technology that allow to achieve a higher productivity, minimize the environmental impact, save coating product by reducing overspray and obtain perfect quality and uniformity of the film, operational excellence can be said to have been achieved.

The field of elastomeric insulation is not one of those sectors that traditionally combine with the concept of coating; it is unlikely to find a coloured insulation system.

Introduzione
La verniciatura è in grado di esprimere al meglio tutte le proprie funzioni anche nei materiali più inaspettati. Estetica e funzionalità della finitura, perfettamente combinate tra loro, consentono di preservare le peculiarità dell’oggetto che la verniciatura riveste, creando una "symbiosis" con esso, e offrono nuove opportunità estetiche e formali all’utilizzo finale del manufatto. Se poi l’applicazione della finitura è eseguita con tecnologie di ultima generazione che consentono di raggiungere una produttività superiore, minimizzare l’impatto ambientale, risparmiare vernice riducendo l’overspray e ottenere qualità e omogeneità del film perfetta, si può dire di aver raggiunto l’eccellenza operativa.

Il settore degli isolanti elastomerici non è uno di quei settori che tradizionalmente nel concetto di verniciatura difficilmente si pensa a un sistema isolante colorato.
because the performance characteristics required to the object are far greater than the expectations of the consumer in favor of aesthetic. However, the Italian company L’isolante K-FLEX, world leader in the production of these systems, made an inspired guess a few years ago, giving a colored functional finish to the insulation system. This has given rise to a new way of enameling insulation: not only a thermal protection system, but also an element that can be integrated in the building, providing designers and architects with new aesthetic opportunities (ref. opening photo).

The water-based coloured finish integrated in the K-FLEX insulation system — unless additional interventions are implemented — reduces the installation costs by up to 30% and simplifies the task of the insulation system, matching it with the environment while maintaining the essential form of the pipeline.

L’isolante K-FLEX, the only company in the world to boast this type of product, maintains its position of global leadership thanks to its ability to constantly introduce innovations: one of its most recent investments has been the installation of a new electrostatic application system for water-based coatings designed and supplied by Vered S.p.A. of Padova (MI, Italy), which ensures minimal environmental impact, considerable savings of paint thanks to a high transfer and coating efficiency of the elastic tubes, quality of the film with excellent functional and mechanical characteristics, and increased productivity.

History
L’isolante K-FLEX is a world leader in the production of elastic thermal insulation materials, which contribute to save energy and reduce the greenhouse effect. The multinational company, in quanto le caratteristiche prestazionali richieste all’oggetto superano di gran lunga le aspettative del consumatore fine in termini di estetica. Tuttavia, l’intuizione di attribuire una finitura colorata funzionale al sistema isolante che l’azienda italiana L’isolante K-FLEX Srl, leader mondiale nella produzione di questi sistemi, ebbe alcuni anni fa, ha dato vita a un nuovo modo di concepire l’isolamento non più solo apparato di protezione termica ma anche elemento che può integrarsi nell’edificio offrendo opportunità estetiche a progettisti ed architetti.

La finitura colorata base acqua, integrata nel sistema isolante K-FLEX, escludendo interventi aggiuntivi, riduce fino al 30% i costi di installazione e semplifica l’aspetto dell’isolamento, armonizzandolo con l’ambiente circostante pur mantenendo inalterata la forma essenziale della tubazione o della conduttura realizzata (rif. foto d’apertura).

L’isolante K-FLEX, unica azienda al mondo a verniciare questo tipo di prodotto, mantiene la propria posizione di leadership a livello mondiale grazie alla costante capacità di introdurre innovazioni tecnologiche: uno dei più recenti investimenti è stato l’installazione di un nuovo sistema di applicazione elettrostatica della vernice all’acqua progettato e fornito da Vered S.p.A. di Rodano (MI), che garantisce un minimo impatto ambientale, un notevole risparmio di vernice grazie ad un’efficienza di trasferimento e di avvolgimento dei tubi elastomerici pressoché totale, una qualità con proprie caratteristiche funzionali del film eccellenti, nonché un incremento della produttività.

Un po’ di storia
L’isolante K-FLEX è leader mondiale nella produzione di isolanti elastomerici termici che contribuiscono al risparmio energetico e all’ riduzione dell’effetto serra. La multinazionale, con sede centrale a Roncello (MI), è nata nel
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After having determined the distance between the two cylinders in order to obtain the desired thickness, the rubber is spread between them until a smooth and compact sheet has been formed.

Dopo aver stabilito la differenza tra il diametro dei cerniere e la spessore del nastro di elastomero, la gomma è interposta fra le due cerniere e la spessa massa di materiale viene sofflata e sovrapposta sulle due cerniere formando un foglio liscio e compatto.

The compound is granulated at an extruder to create the tubes.

La miscela è granulata all'interno di un espressa per creare i tubi.

Headquartered in Monza (MI), Italy, was started in 1968. The Italian plant is now the largest in the world for the production of elastomeric insulators, as well as the international coordination centre for the R&D, production facilities re-engineering, and marketing & communication departments.

La fabbrica si trova a Monza (MI), Italia, ed è stata fondata nel 1968. L'azienda è ora la più grande al mondo in termini di produzione di isolanti elastomeric, nonché centro coordinativo internazionale per le funzioni di R&D, re-engineering degli impianti produttivi, marketing & comunicazione.

In 2005, in the midst of the global economic crisis, the company boldly invested in a new facility to double its production and warehouse area – from 55,000 to 100,000 square meters. At maximum capacity, this plant can produce about 80 tons of rubber per day, equal to 150 million meters of insulating tubes and 10 million square meters of insulation panels per year.

In 2005, all'apice della crisi economica globale, l'azienda ha investito in una nuova struttura per il doppio del prodotto e della superficie del magazzino – da 55,000 a 100,000 metri quadrati. All'apice della capacità produttiva, questa fabbrica può produrre circa 80 tonnellate di gomma al giorno, pari a 150 milioni di metri di tubi isolanti e 10 milioni di metri quadrati di pannelli isolanti all'anno.

Extreme production efficiency and minimal environmental impact in the coating of elastomeric insulators.

Efficienza produttiva estrema e minimizzazione dell'impatto ambientale nel rivestimento degli isolanti elastomeric.
The production cycle

The production process is a "continuous" calendering process using a Banbury mixer, two open mixers and an internal calender. The end product has a smooth and compact surface, because the compound is subjected to an effective mixing action before being calendered.

The first stage of the fully automated process is precisely the mixing one, during which fillers, plasticisers and vulcanising agents are incorporated in the synthetic rubbers. The mixing operation occurs in a 420 litres Banbury (Fig. 1) closed mixer with a cycle time of approximately seven minutes, heating the content up to 170°C. Afterwards, the rubber is discharged in an open mixer that blends the compound (Figs. 2-3).

"70% of the compound produced is used in Italy, while the rest is sent to our plants abroad lacking this production stage. This is possible because the rubber, in this first step, is inert: until it is vulcanised, it can be stored for about one year", Roberto Maneglia, Corporate Office Technical Director of L’Isolante K-FLEX, explains while accompanying us on the tour of the plant.

In the next production stage, two smaller Banbury mixers catalyse the material through chemical and vulcanisation accelerators and, after a cooling period, transfer the material...
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The elastomer tubes enter the machine along two parallel tracks. Once they reach the extruder, they are passed through a heating chamber where they are heated to a specific temperature. The extruder, thanks to a new vacuum technology, draws the gases produced in the process, giving shape and diameter to the tube through a matrix and a blade (Fig. 1). The panels, on the other hand, are produced using the doctor blade technology, Monaggi says.

The extruder then enters a 65-meter oven where it is vulcanized and expanded (Figs. 3A and 3B). The length of the oven is determined by the speed of the vulcanization process. Since our production rate is high, we have determined the temperature and speed suitable to ensure that the rubber expands according to the specifications without slowing down the production cycle, as we are able to simultaneously subject a large number of tubes to this process, Monaggi says.

The tubes leaving the oven are cooled with a cold water spray while moving through the tanks used for their transport (Fig. 6), cut to the desired length, and packed with automatic machines. The same operation occurs for the panels, which are wound on themselves before being boxed or bagged.

The coating system
The tubes that will form the K-FLEX Color system are placed on an automatic plant initially designed by Roberto Maneglia and his team. “Given the specific size of our insulation pipes, the loading system of the booth was created ad hoc,” Maneglia explains. “The tubes are inserted in bearings attached to the conveyors that goes to the extruder.” This plant has two production lines with four extruders, two for each line.

The extruder enters a new vacuum technology that allows to draw the gases produced in the process, giving shape and diameter to the tube through a matrix and a blade (Fig. 4). The panels, on the other hand, are produced with the doctor blade technology, Monaggi states.

Then, the rubber enters a 65-meter oven where it is vulcanized and expanded (Figs. 5A and 5B). The length of the oven is determined by the speed of vulcanization and the vulcanization process. Since our production rate is high, we have determined the temperature and speed suitable to ensure that the rubber expands according to the specifications without slowing down the production cycle, as we are able to simultaneously subject a large number of tubes to this process,” Maneglia says.

Ciclo di verniciatura
The tubes that enter the K-FLEX Color system are painted on an automatic plant initially designed by Roberto Maneglia and his team. “Given the specific size of our insulation pipes, the loading system of the booth was created ad hoc,” Maneglia explains. “The tubes are inserted in bearings attached to the conveyors that goes to the extruder.” This plant has two production lines with four extruders, two for each line.

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through the automatic application booth. These bearings allow a rotation of the tube on itself so that it can be coated in a uniform manner. The line performs six treatments per hour; 212 tubes are finished with each treatment, with a 100% yield. "Our coated tubes and panels have been designed to meet functional, aesthetic and protective needs," Marinella states. "First of all, the coating protects the rubber against ultraviolet light, since UV radiation reduces the performance of our elastomers. The coating allows it to be used both indoors, even in places with temporary exposure to light, and outdoors. The wide range of colours allows us to meet not only security needs, e.g. correct identification of the various functions of the insulated pipes, but also corporate identity and design needs. Finally, the coating film gives great strength to the tube: the adhesion of the coating is such that withstands tension and bending without cracking" (Fig. 2) Marinella continues. "In order to obtain these qualitative results, we have worked for four years together with our paint supplier to obtain such a resistant coating, with excellent adhesion properties, extreme flexibility and high UV resistance (2,000 hours). The paint protects the product better than other coating systems and increases the service life of the insulator up to 5 years. The quality of the coating product also forced us to equip ourselves with an equal quality application plant. We have chosen a system derived from the automotive industry and developed by Verlind on the basis of the characteristics of our product."
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The coating system was born as a prototype in 1999. In 2003, it underwent several changes in order to improve the process. The isolante K-FLEX has always focused on the quality of finish, neglecting the control of the costs related to it.

“In 2010, we decided to tackle the serious efficiency problems of the plant, which resulted in paint wastage and a high environmental impact. The increased efficiency, however, had not to affect our quality level”, Maneggia says.

“The first problem was the excessive overspray: while, in theory, 20 g of paint were enough to cover a square metre of elastomeric surface, in practice we used 65 g of it. Only 30% of the paint was deposited on the surface, while the rest was lost in the water curtain of the booth, with consequent high consumption of materials and prohibitive costs of water treatment and sludge disposal” Maneggia says.

L’impianto di verniciatura è nato come prototipo nel 1999, e ha continuato a evolversi fino al 2003, quando ha subito diverse modifiche al fine di migliorare il processo. L’isolante K-FLEX si è sempre concentrato sulla qualità di finitura, tralasciando il controllo dei costi ad esso collegati.

“Nei 2010 abbiamo deciso di affrontare i notevoli problemi di efficienza dell’impianto che comportavano sprechi di vernice e un impatto ambientale elevato. La politica di aumento dell’efficienza però non avrebbe dovuto influire sul livello qualitativo”, afferma Maneggia.

“Il primo problema da risolvere era l’eccesso di overspray: se in teoria dovevano bastare 20 g di vernice per coprire un metro quadrato di superficie elastomerica, in pratica consumavamo 65g. Solo il 30% circa della vernice si depositava sulla superficie, il resto andava a perdere nel velo d’acqua della cabina, con conseguenti consumi elevati di materiali, nonché costi proibitivi di trattamento acqua e smaltimento delle macchie” dichiara Maneggia.
Innovative solution in the coating process

The electrostatic coating of tubes made of elastomeric insulating material was a challenge that Verind, a company of the Dürr group, decided to take on. The firm has solved the problems associated with the coating process using an Ecobell 2 SL electrostatic bell (Fig. 8), with two independent double air curtain systems (patented by Dürr), a 500 microamp high voltage generator with controlled current adjustment and an automatic colour change system with paint flow control and idrover insulation technology.

"In a high productivity automatic line such as that of K-FLEX, the Ecobell electrostatic rotating bell ensures high results in terms of transfer efficiency, finish quality, lower consumption of air and materials, as well as better control of the application process. - Alessandro Soba, New Business & Plants Sales Manager of Verind, states. – The application of coating products with electrostatic systems is a proven technology with an efficiency (under optimal conditions) up to 90-95% (Fig. 9)."

FOCUS ON TECHNOLOGY

The electrostatic application of water-resistant coatings makes it possible to use well insulated and safe electricity supply and colour change systems: the idrover system is equipped with inspection windows with solvent-proof glass and a continuous discharge resistance safety system to avoid the capacitive effect.

The laboratory of the electrostatic application of steel products is perfectly insulated, with a rotating bell equipped with an electrostatic system, for optimal efficiency. The bell is a solution designed to meet the needs of various electrical applications, ensuring the highest efficiency and the best results.
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The idraVek system, built in dielectric material, is complemented by a grounding system integrated with a grounding resistor, which, once the coating of the insulator is complete, is responsible for diverting surplus energy from the coating material. The device is intended for operating with constant current, generating a strong and uniform electrostatic field.

Conclusions

"Now we have definitely solved our problems of efficiency, thus dramatically improving every aspect of the coating process. With the electrostatic coating heads (Fig. 11), the tube is fully covered and the overspray is minimised. Compared to 2003, we have decreased our paint consumption by 70%, while maintaining a high quality level and a perfect adhesion and flexibility of the coating", Roberto Maneglia explains. "Thanks to the reduced overspray, we could replace the wet filters with dry filters that we can dispose of as urban waste, and no longer as special waste, not to mention the huge volumes of water saved. Another limiting factor was the downtime required (at a rate of one shift every six operating days) for cleaning the booth and changing the filters. Now we only need twenty minutes per shift (4 hours) for the filter change."

"During 2012, we achieved an average consumption close to our goal – Roberto Maneglia concludes – with savings estimated at 250,000 euros/year. It is evident that the quality of our products is always maximum."

A flow process takes place before the tubes are removed from the bearings. The tubes are then packed and transferred to a completely automated and scripting edge warehouse, able to manage the complex logistics of a plant with a huge manufacturing capability supplying 45 branches worldwide.
Da Simest finanziamenti alle imprese esportatrici

I progetti di partecipazione approvati dall’ultimo Cda sono in numero del 2,7% rispetto al 2012, con un impiego cresciuto del 33%