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IN-LINE PLASMA COATINGS FOR EFFICIENT CORROSION PROTECTION: COSI INNOVATION AWARD 2011 FOR CHRISTOPH REGULA

In July 2011 physicist Christoph Regula was presented with the Innovation Award 2011 at the 7th Coating Science International Conference (CoSi) in Nordwijk (Netherlands) for his talk on the development of in-line atmospheric pressure (AP) plasma processes for depositing corrosion protection layers on metal substrates. More than 110 delegates from R&D organizations and industry from 23 countries attended the conference.

The use of AP plasma technology for the low-cost and environmentally friendly pre-treatment and coating of copper and aluminum surfaces was developed by the experts of Plasma Technology and Surfaces – PLATO – at Fraunhofer IFAM. The talk by Christoph Regula was deemed to be most innovative at the conference, from over 70 talks and posters, due to its linking of fundamental research results with industrial applications.

A particular feature of the technology is its suitability for in-line integration and its compactness. This allows the use in existing process lines. This means that there is no need for energy-intensive and space-consuming baths or lacquering processes, thus reducing production costs and solvent emissions.

Corrosion protection at the nano-level

The protection of metal surfaces is essential for, in particular, the long life service of electronic components because corrosion can quickly lead to total failure, e. g. in automobiles. The plasma-polymer layers that have been developed are an efficient and eco-friendly protective system that can be applied at high processing rates and by automated technology, without baths and drying ovens. The layer thickness is less than a micron, meaning there is better heat dissipation from the components than when using protective lacquers. The result is a longer service life. The additional incorporation of corrosion inhibitors into the plasma-polymer layers also provides active corrosion protection, intending that the component surface is protected against corrosion even in the event of damage to the layer.

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- 1 *The CoSi Innovation Award 2011.*
- 2 *Christoph Regula (left) receives the CoSi Innovation Award from Prof. Dr. Gijsberthus de With, professor at the Technical University of Eindhoven and co-organizer of the 7th Coating Science International Conference.*