

PRESS RELEASE

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NANOSTRUCTURED ZINC NICKEL COATING SYSTEM FOR OIL AND GAS INDUSTRIES

Designed to replace cadmium, PTFE & ceramic-metallic coatings

June 21, 2022, Houston, Texas — ZNnGard™ \`zen-gärd\` is considered part of an overall strategy to replace cadmium, PTFE, ceramic metallic, and fluoropolymer processes, eliminate environmental and worker safety issues while significantly improving performance and reducing life-cycle costs.

Integran Technologies, Inc., Dipsol of America, Inc, and Sigma Fasteners, Inc. are excited to announce their agreements to expand access to Nanostructured Zinc-Nickel fastener and bolting products for the oil and gas industries worldwide.

Steve Cabral, Sigma Fasteners, VP of Business Development

"We are excited to bring this technology to our customers, solving long-standing issues and meeting demands."

ZNnGard™ replaces toxic plating in addition to other organic coatings that easily chip and flake under torque and require oversized nuts with a sustainable alloy coating that gives a superior performance during installation and long-term corrosion protection. Integran originally developed the pulse-electrodeposition process in 2011 with support from the Department of Defense Strategic Environmental Research and Development Program (SERDP) as an environmentally friendly cadmium-replacement coating for high-strength steel.

Sigma Fasteners, Dipsol, and Integran have worked together to bring the **Nanostructured Zinc Nickel** coating system to the Oil and Gas Industries. ZNnGard™ meets the requirements of the ASTM B841 Class 2 as an electrodeposited zinc-nickel alloy coating on fasteners. Integran Technologies is the master licensor for its Nanovate™ Zn-Ni Technology and intellectual property owner in waveform pulse plating technologies. Dipsol America is the master distributor for the expressly branded ZNnGard™ and ZNnCoat™ chemistry and components for plating and chromate finish. Sigma Fasteners, a leader in Energy bolting, will utilize this expertise in converting our current Zn-Ni line to meet Integran standards and Dipsol chemistries to ramp up advanced field testing and production in Houston.

Using technology pioneered in the automotive, electronics, and aerospace industries, the ZNnGard™ system provides the following:

- Refined grain size – Improved hardness, corrosion resistance, friction coefficient, and appearance.
- Low porosity – An alloy coating with a uniform coating composition, leading to excellent corrosion resistance.
- No Hydrogen Embrittlement – Consistently passes ASTM F519 Hydrogen Embrittlement Testing & re-embrittlement (a.k.a., in-service embrittlement) testing (a critical requirement for general implementation), whereas conventional DC plating (DC-Zn-Ni) falls short.
- ASTM B117 – Salt spray resistance exceeding 3000-5000 hours depending on thickness requirements.
- Temperature Range – Intermittent to 200 °C (392 °F).

ZNnGard™ - Corrosion control for Energy Transition Bolting requirements and a sustainable future - Corrosion Protection You Can Count On.

To get More Information on ZNnGard™ – Please contact Steve Cabral
(281) 214-8851 stevec@sigmafasteners.com

About Integran Technologies, Inc.

Integran is a world leader in advanced metallurgical nano-technologies, providing a broad international base of customers with advanced process & product design solutions through R&D, material sales, contract manufacturing, and technology licensing. Integran has been at the forefront of metallurgical nano-technology development for over twenty years and has established an international reputation for excellence in materials technology development and commercialization. Integran owns the intellectual property rights for the cost-effective production of metallurgical nano-structures with over 250 patent filings dealing with the structure, composition, processing, and application of its revolutionary materials.

About Dipsol America, Inc.

Dipsol was founded in 1953 with the aim and focus of establishing a "comprehensive" manufacturer of metal surface finishing products. In November of 1965, the Dipsol technical research team launched a non-cyanide zinc plating brightener technology which was the FIRST in the world to introduce the commercial application. Dipsol also successfully developed and introduced commercially neutral Tin, Tin/Zinc and pioneered the Zinc-Nickel alloy plating processes.

Since 1989, Dipsol of America has manufactured and serviced many metal finishing products, including zinc, zinc alloys, topcoats, passivation, and other surface finishing chemicals. Headquartered in Livonia, Michigan, Dipsol of America operates from a state-of-the-art facility that includes a variety of testing, failure analysis, and analytical equipment as well as highly trained and educated technical and support staff.

About Sigma Fasteners, Inc.

Sigma Fasteners, Inc. provides industry-leading knowledge in manufacturing, corrosion control, and distributing critical engineered high-pressure bolting, supporting the world's energy transition while striving to achieve operational excellence, helping our employees and their communities while protecting the planet. Sigma holds an American Petroleum Institute API 20E-0017 Monogram to manufacture API 20E bolting, API 20F-0007 Monogram, and is certified API Spec Q1, 9th edition. Sigma distributes standard bolting and manufactures critical bolts meeting industry specifications, customer specifications to current revisions, and per print. Sigma is ISO 9001:2015 certified and is on the approved vendor list of major wellhead manufacturers, energy OEMs, and petrochemical companies worldwide.