

## Expanite goes to space

***Expanite — the Danish pioneer specializing in surface hardening of stainless steel & titanium and ENPULSION the world leading manufacturer of electric propulsion systems for nano- and microsattellites collaborates successfully in solving wear and galling challenges in the production line at ENPULSION.***

The Enpulsion Field-emission Electric Propulsion (FEEP) technology is an advanced electrostatic propulsion concept of an ion engine that uses liquid metal – indium - as a propellant. A FEEP drive system consists of an emitter and an accelerator electrode. A potential difference in the order of kV is applied between the two, creating a strong electric field at the top of the metal surface which extracts ions from the apex of the cone and accelerates them to high speeds.

The IFM Nano Thruster is used as a compact pre-qualified building block in order to provide customized propulsion solutions for nano- and microsattellites. By clustering the proprietary indium ion emitters, a scaled-up thruster – the IFM Micro Thruster – is created to target the even larger market of small and medium size space crafts.

Before Enpulsion started using the Expanite hardening process they were challenged by galling of threads on the housing which caused serious issues in the production line. Enpulsion contacted Expanite in order to find a better solution. “We contacted Expanite since their anti-galling SuperExpanite treatment seemed convincing in combination with the flexible production lines. We were very excited to work with the highly motivated expert team at Expanite, who supported us throughout our testing of the Expanite hardening process”, says Mr. **Roman Hörbe**, Supply Chain Manager at Enpulsion.

“Our target was to use a treatment that prevents galling and retains corrosion properties of the austenitic stainless steel part, while maintaining the manufacturing tolerances and guarantee good weldability of the final part. Thus, a conventional coating or surface treatment was simply not an option”, says Expanite Area Sales Manager, Dr. Holger Selg.

The result already after first test trail proved overwhelmingly convincing on all parameters, and most importantly, the galling phenomenon disappeared completely. “There has been no records of damaged parts ever since”, says Mr. **Roman Hörbe**, Supply Chain Manager at Enpulsion.

### **About Enpulsion:**

The company is based in Wiener Neustadt, Austria and has a business development office in Silicon Valley, CA. In its own semi-automated production facility ENPULSION is manufacturing the IFM Thruster family, including the IFM Nano Thruster – the only compact, scalable, and modular electric propulsion system worldwide. With today ENPULSION is producing and delivering nine IFM Nano Thrusters per month to its international B2B customers. <https://www.enpulsion.com/>

### **About Expanite:**

Expanite is based on research since 2000 and was founded in 2010 by leading experts in materials and surface hardening. The company is headquartered in Hillerød near Copenhagen and treatment centers in the USA, Germany and China. Expanite's solutions are flexible and can be tailored into a customer's own product line as part of a licensing agreement



**ENPULSION**

