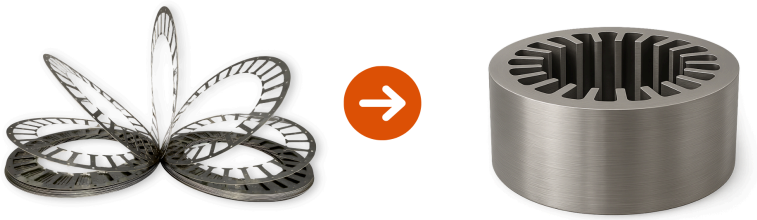
Aperam introduces innovative “slinky” solution – a new approach to iron-cobalt alloy components for high-performance electric motors

Luxembourg, 20 January, 2026 (10:00 CET) - Aperam, a global player in stainless, electrical, alloys and specialty steels as well as recycling and renewables, announces the launch of its innovative “slinky” production method - a new technology that enables the creation of slinky stators and rotors through an in-plane helical winding process.

While this process is already used in the electrical steel industry, Aperam’s breakthrough lies in adapting it to iron-cobalt (FeCo) alloys, which are known for their exceptional magnetic performance but challenging formability. This advancement unlocks new design possibilities and delivers significant material savings, making it a more sustainable and efficient solution for high-performance electric motor production.

The new “slinky” method marks a leap forward in how Aperam supports the future of carbon-neutral mobility, particularly in aviation, eVTOL (electric vertical take-off and landing aircraft), and hypercars. Rather than stamping components from sheet metal - a method known for its high material waste - “slinky” uses a unique combination of linear stamping and in-plane helical bending to form motor components from continuous strips. This innovation reduces metal scrap to just 10–30%, compared to conventional methods that can waste up to 70% of this high-cost material.

Frederic Mattei, CEO Alloys & Specialties, and CIO at Aperam commented: “FeCo alloys offer unparalleled magnetic performance, but their cost has historically limited their efficient use. With “slinky”, we drastically reduce waste and also enable the design of more efficient electric motors, helping our customers meet the growing demands of sustainable transportation. This innovation fully supports Aperam ’s commitment to be a leading value creator in the circular economy of infinite, world-changing materials.”



From stamped strip to motor stator: a slinky-formed lamination pack (left) is bonded/welded into a finished stator (right) for next-generation high-performance electric motors. A perfect match for aerospace applications and more.

Powered by Aperam’s AFK family of Alloys

At the core of the “slinky” innovation is Aperam’s AFK family of iron-cobalt alloys, including IMPHY® AFK1, AFK18, and AFK502R. These materials are already trusted in the aerospace industry for their exceptional magnetic properties, such as the highest saturation induction among all known magnetic materials.

Through continuous R&D, Aperam has further enhanced the mechanical properties of these grades - an achievement captured in a prior patent based on the AFK502R - making it possible to apply bending techniques previously thought impossible for these materials. This enables the scalable, precision forming of rotors and stators in any diameter and in one single piece, opening new frontiers in electric motor design and efficiency.

Performance gains driving sustainable innovation

When Aperam's AFK materials are combined with the "slinky" process, the performance gains are compelling:

- +35% Power density for eVTOL aircraft
- +25% Torque for hypercars
- –15% Motor size, essential for aviation weight constraints
- Stamped and scalable parts, with high yield and design freedom

These gains support critical performance targets in advanced electric propulsion, aligning closely with the aviation industry's goal to achieve net-zero carbon emissions by 2050. Combined with the higher efficiency of motors built using AFK grades, this innovation supports meaningful emissions reductions across the transportation sector - a key pillar of Aperam's long-term innovation strategy.

Scaled production in France and global growth of Aperam Alloys & Specialties

These developments are backed by Aperam Alloys & Specialties' advanced manufacturing capabilities in Imphy and Amilly, France. The Amilly site, in particular, is equipped to supply precision-formed electric motor components at industrial scale, positioning Aperam as a key enabler in the future of e-mobility.

This launch is part of a broader strategy to expand Aperam's leadership in high-value segments. The company recently invested in a state-of-the-art Hot Rolling Mill (HRM) and new straightening and cutting lines at its Imphy site, setting new benchmarks in productivity and innovation. These initiatives strengthen the company's ability to serve critical industries including aerospace, automotive, shipbuilding, and welding consumables.

Aperam Alloys' footprint also continues to grow globally. The company's recent acquisition of Universal Stainless & Alloy Products, Inc. in the United States, alongside expansion in India, and China, enhances operational efficiency and regional synergies by solidifying Aperam's position as a leading global supplier of high-performance materials.

About Aperam

Aperam is a global player in stainless, electrical, alloys and specialty steels as well as recycling & renewables, with customers in over 40 countries. Starting from 1 January 2022, the business is organized in four primary reportable segments: Stainless & Electrical Steel, Services & Solutions, Alloys & Specialties and Recycling & Renewables; committed to be the leading value creator in the circular economy of infinite, world-changing materials.

Aperam has a flat Stainless and Electrical steel capacity of 2.5 million tonnes in Brazil and Europe and is a leader in Alloys & high value specialty products with presence in France, China, India and United States. In addition to its industrial network, spread over sixteen production facilities in Brazil, Belgium, France, United States, India & China, Aperam has a highly integrated distribution, processing and services network and a unique capability to produce low carbon footprint stainless and special steels from biomass, stainless steel scrap and high performance alloys scrap. With BioEnergia and its unique capability to produce charcoal made from its own FSC®-certified forestry and with Aperam Recycling, a global leader in collecting, trading, processing and recycling of stainless steel scrap and high performance alloys, Aperam places sustainability at the heart of its business, helping customers worldwide to excel in the circular economy, as demonstrated by its ResponsibleSteel™ certification, which ensures high standards of environmental, social, and governance (ESG) performance.

In 2024, Aperam had sales of EUR 6,255 million and shipments of 2.29 million tonnes.

For further information, please refer to our website at www.aperam.com.

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