

Press release – Paris, June 17, 2019

Fives: The new benchmark as an Aerospace supplier

From 17 to 23 June 2019, Fives will be present at the 53rd Paris Air Show in Le Bourget in Hall 2B – booth C186.

The Group will showcase its solutions – including machines, systems and services – dedicated to the Aero sector serving industrial performance in terms of speed, precision and flexibility, using technologies such as robotics and data processing. Also, Fives will sponsor three start-ups and be present through CampusFab, a training platform aimed at meeting recruitment needs in the industrial sector.

Solutions that bring added value to the highly-demanding aerospace players, to be presented during the show

For the aerospace sector, Fives designs and supplies metal cutting and machining solutions for large complex part, and composite processing machine-tools. The Group also provides corrective, preventive and upgrade maintenance solutions for production means such as emergency repairs, suggestion of machine enhancements, spare parts and on site spare parts stock management. Those are associated with maintenance contracts and essential for our customers.

At this years' Paris Air show, Fives will showcase unique technologies that support the growth and advancement of the aerospace industry, bringing productivity, quality and safety.

- **In-Process Inspection (IPI)**, a unique inspection technology developed by Fives and the National Research Council of Canada; This next-generation profilometer positioned directly in the production chain, will allow quicker and more accurate inspection during the production of aircraft composite parts, therefore limiting shutdowns.
- **Supercharger**
Fives is now offering its new and high speed, compact, and commercially positioned flat charge laminator. It aims a new level of productivity in its class and a new level of accessibility for those in the market considering to enter or upgrade their automated composite layup activity.
It combines mechanical engineering, an understanding of various materials, and the application of laser technology as means of validation.
- **Robotic Viper – Robotic Automated Fiber Placement**
Fives takes automated fiber placement to the next level with a completely new head design and delivery means. Smaller, previously not considered parts, inside or outside, highly radial and complex parts can now be considered. The new robotic platform also complements the needs of today by being increasingly flexible, smaller, and less monumental. The advance accuracy and positioning technology Fives is offering in combination with their new AFP head technology, is what is making the Robotic Viper a game changer.

Providing solutions, machine-tools and maintenance services for the aerospace sector

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— **A cobot to improve fluid filling machine reliability**

Fives has joined forces with the company E-Cobot to experiment a collaborative robot equipped with Fives' latest Twin adaptor, which can be used to fill refrigerants. By reproducing the action of a human wrist and simulating coupling / recoupling actions, this application improves the reliability of the fluid filling machine, at a higher speed. This application will be showcased in Hall 4 – Booth F37 (Région Pays de la Loire).

Presentations are scheduled at Fives booth about IPI on Tuesday 18th at 11.30 am and on Thursday 20th at 3.00 pm, about Supercharger on Wednesday 19th at 11.30 am and Robotic Automated Fiber Placement on Thursday 20th at 11.30 am.

Fives creates a Center of Excellence in 5 axis hard metal milling heads manufacturing and repair

Accuracy and stiffness as keywords

Based on the multi-decades expertise in milling head design and manufacturing of Forest Liné in Albert, Fives Machining is launching a Center of Excellence in design, manufacturing and repair of heavy duty milling heads.

This dedicated team is focused on the design and supply of best in class, high accuracy and high stiffness heads, for Fives machines as well as for other machine-tool builders. Fives is also setting up a dedicated team of experts able to address quickly, cost efficiently and with the highest level of reliability any request for repair or overhaul of mechanical heads, of any brand.

A full and integrated service in industrial maintenance

Service throughout the equipment's lifecycle

Besides machines and systems, Fives offers maintenance services that aim to optimize productivity throughout the equipment's lifecycle, with the intervention of skilled technical staff. This includes:

- Lump sum and results-based maintenance contracts
- Maintenance methods and operational excellence supporting equipment performance
- Artificial intelligence – based predictive maintenance: Fives combines technical expertise and data science to develop predictive maintenance for machine tools, allowing the reduction of scrapped parts, improving availability and controlling the consumption of spare parts.

Fives welcoming three start-ups as a pooling of expertise and resources

In terms of Research & Development, Fives has adopted a collaborative approach, built on partnerships and joint ventures with public and private players, to accelerate new product development.

In this spirit, within the Paris Air Show, Fives will sponsor three start-ups for the Paris Air Lab, an original exhibition space showcasing innovation and prospective in the aerospace industry. The Paris Air Lab is organized at the initiative of SIAE, a subsidiary of GIFAS, the French Aerospace Industries Association.

- **AddUp** – The Fives-Michelin joint-venture company, leader in metal additive manufacturing, brings experience and expertise in developing and integrating



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machines and industrial production lines using metal additive manufacturing technology. www.addupsolutions.com/en/

A collaborative R&D approach

- **Fives CortX** – The Fives internal start-up combines data expertise (IoT, machine learning, etc.) with solid industrial experience to bring Smart Devices and advanced analytics to Real-time processing. It aims to provide digital solutions that enhance process optimization and allow to take an actual step towards predictive.
- **I-MC** – Innovative Manufacturing & Controls, a spin-off of the CEA's Nuclear Energy Department and the 'Ecole Centrale of Nantes', offering innovative numerical flow and flexible hardware solution in the field of control correction loop. I-MC designs and manufactures a robotic optical sensor control-correction solution for machining centers. www.i-mc.fr/en/

CampusFab, the learning platform to train the future workers of the industry of tomorrow

Investing in training to build the plants of the future

Fives wants to share its passion for industry and the technological solutions of tomorrow and thinks it has to play a role in spreading and sharing its expertise in building the factories of the future. With this ambition, the Group is a founding member of CampusFab, a pole of excellence aiming to train young people and professionals, which is due to be opened in September 2019.

Apart from Fives, this initiative brings together other industrial companies, including Safran dans Dassault Systèmes), industry groupings, employment partners and training institutions.

About Fives

As an industrial engineering Group with a heritage of over 200 years, Fives designs and supplies machines, process equipment and production lines for the world's largest industrial players in various sectors such as steel, aerospace and special machining, aluminium, automotive and manufacturing industries, cement, energy, logistics and glass.

The effectiveness of its R&D programs enables Fives to design forward-thinking solutions that anticipate industrials' needs in terms of profitability, performance, quality, safety and respect for the environment.

In 2018, Fives achieved a turnover of €1.95 billion and employed close to 8,700 people in about thirty countries.

www.fivesgroup.com



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