



Le Créneau Industriel is developing new precision machining robot solutions Its Acrobot project has received support from national and local authorities in France

Certified by the Mont Blanc Industries Competitiveness Cluster and managed by Le Créneau Industriel (Annecy-le-Vieux, Haute-Savoie, France), the Acrobot project was recently granted funding of €1.16 million from the French Single Inter-Ministry Fund (FUI). This support endorses the quality of this R&D program, working on a major innovation: precision machining robot for the aerospace industry.

A BROAD PARTNERSHIP TO MEET THE CHALLENGES OF THE AEROSPACE INDUSTRY

The aerospace industry imposes extremely high technical requirements for precision machining. This is why machining operations in this industry are generally completed on CNC machine tools, capable of meeting the required accuracy levels. To innovate in this area, Le Créneau Industriel has launched the Acrobot project, aiming to transfer a number of complex machining operations to robots, which are by definition lighter and more cost effective than traditional milling systems. Expected benefits include a 30% reduction in costs, a 50% decrease in required floor space and an increase in flexibility. To meet the challenges of this ambitious project, Le Créneau Industriel is collaborating with global technology leaders such as SIEMENS and STÄUBLI, as well as working with several SMEs in its region and Lille University (ENSAM).

A CNC-CONTROLLED ROBOT

Acrobot's first technological breakthrough is to enable the robot to be fully controlled and programmed by a CNC. The goal is to allow operators using the robot to remain in a familiar machining environment. This is why the man/machine interface remains unchanged, with traditional machine tool Cartesian X-Y-Z programming and ISO coding. This first phase has resulted in the coupling of a STÄUBLI robot and a SIEMENS CNC, now fully operational in Annecy and being deployed for the next stages of the R&D.

THE CHALLENGE OF ACCURACY

Another challenge to be met is that of accuracy. The robot must be three times more accurate than most of those used in the automotive industry, for example. To achieve this goal, the R&D team at Le Créneau Industriel is working with various partners on the robot/process couple:

- **Increase of the "absolute accuracy" of the robot:** partnership with Stäubli and Siemens, with scientific support from the robotics team at ENSAM-Lille University, experts in the modeling and correction of inaccuracies in robots.
- **Optimization of the machining process** to reduce the mechanical stress on the robot: partnership with Precise France for the development of new tools and effectors and Carbilly for cutting tools.

A FIRST INDUSTRIAL DEMONSTRATOR

The R&D program is planned over a three-year period, but a first industrial demonstrator for cutting honeycomb parts has already been installed on-site at Le Créneau Industriel in Annecy. It will enable tests and pre-series to be carried out and will produce samples at the request of customers. Several of these industrial partners are



currently involved in the Acrobot project, particularly in the test and qualification phases. The next steps in the R&D program will focus on the machining of composites to be commercialized before the end of 2017 and then the processing of hard materials (steel, titanium, etc.).

GROWTH MOMENTUM FOR LE CRENEAU INDUSTRIEL AND ITS PARTNERS

For Laurent Combaz, president of Le Créneau Industriel, *"The Acrobot project is a key element in the growth strategy of our business, particularly for the aerospace industry. It is based on the development of innovative solutions, combining machines and robotics in processes adapted to the specifications of each customer. Our goal is to consolidate our position in niches in which we are a recognized player and to enter new markets through our robotics. This strategy should allow us to double our sales within the next 5 years. Beyond, Le Créneau Industriel and Acrobot will generate positive economic impact for our project partners and for employment in the Haute-Savoie area at large."*

FUI funding:

The Acrobot project was selected as part of the 22nd call for projects of the Single Inter-Ministry Fund (FUI - Fonds Unique Interministériel). The €1.16 million grant is awarded by national and local authorities, with the Auvergne-Rhône-Alpes Region in the lead. It involves a three-year R&D program including the funding of a PhD at the ENSAM-Lille University and involves the following partners:

- Industrial partners: Precise France (tools and effectors), Carbilly (cutting tools), Stäubli (robots) and Duqueine ("pilot" end-user),
- University: ENSAM Lille campus – LSIS laboratory.
- Technical Centers: CETIM – CTDEC

About Le Créneau Industriel:

Le Créneau Industriel develops innovative and differentiating machining solutions for leading players in the global aerospace industry. Exports account for 90% of its sales and it invests over 5% of its revenues in technological innovation. Its technical and commercial teams are based in France, North America and China.

For more information on Le Créneau Industriel solutions or to request a demonstration, contact us at

LE CRENEAU INDUSTRIEL

10, rue du Pré Paillard – 74940 Annecy-le-Vieux – France

Tel: +33 (0)4 50 64 03 85 – Fax: +33 (0)4 50 64 02 28

www.creneau.fr – creneau@creneau.fr

