



ATENA: THE INNOVATIVE ARGOTEC-COMAU SYSTEM FOR THE FUNCTIONAL TESTING OF NANOSATELLITES

Turin, June 5, 2018 – **Argotec** and **Comau** are working together to create an innovative system aimed at testing and validating the functionality of nanosatellites.

The verification of a satellite's hardware, software and its navigation and control algorithms is generally carried out through simulation and complex numerical analysis, but the results are often hard to interpret. To overcome these difficulties, Argotec has developed ATENA (Advanced Testing Emulator for Nanosatellite Arm), a system which provides immediate verification and constant monitoring of satellite parameters by means of a robotic arm.

The project began with an intuition by **Argotec** – an Italian aerospace company that is also involved in the implementation of small satellites – for which they started collaborating with Comau, a local company that is also a global leader in the supply of advanced industrial automation solutions.

The system, for which Argotec has registered a **patent** for the technological innovations they developed, consists of a satellite – or part of it – an electronic control unit and a Comau Racer7 1.4 robot. With a payload of 7 kg and a reach of 1,400 mm, Racer7 is the fastest robot in its category and guarantees reliability and precision in a compact design.

The nanosatellite – or part of it – is first fastened to the wrist of the Comau robot. Using a closed loop configuration, the system tests the communication protocols that connect the different subsystems, verifies their interaction and obtains mechanical responses that are comparable to in-orbit satellite movements during the different phases of a mission.

These features prove to be particularly useful for validating the functionality and performance of a satellite and its subsystems. Moreover, the use of robotics enables visual feedback regarding the behavior of the satellite. This guarantees a simpler and more immediate visualization of the test results, as well as the possibility to carry out functionality and performance demos of the flight hardware. This is a real breakthrough in the aerospace sector, as two or more robots can now faithfully reproduce in-orbit satellite docking.

David Avino, Managing Director of Argotec, said: *“Argotec is constantly looking for reliable technological solutions which can improve the quality of space systems and also allow possible Earth-related effects. In fact, according to our company vision, everything that is designed for space activities can have an immediate return on Earth, resulting in benefits in our daily life and meeting needs which haven't been met yet. The ATENA project, for which a patent application has been filed, represents our dynamic vision, our desire to innovate and, above all, the ability to collaborate with multinational companies like Comau, pursuing a common goal: obtaining outstanding results of international relevance by exporting the excellence of Made-in-Italy technology in the world.”*

Massimo Calvetto, Sales Manager GI Italy of Comau, observed: *“We are proud to have contributed to the implementation of the innovative project developed by Argotec, in an extremely technological sector such as aerospace, where precision and reliability are essential components. Our robots have proved to be the right choice to guarantee the achievement of excellent results. Comau is renewed as a leader in the automotive sector, but the company has always been ready to open up and extend its areas of application to all the other sectors as well: our advanced skills, the levels of technological excellence we achieved and our flexible, modular and high-performance solutions are now also available to the SMEs operating in the General Industry.”*



Argotec

Argotec is an Italian aerospace engineering company established in 2008, whose research, innovation and development activities concern the creation of products and services intended for various sectors, such as engineering, information technology, system integration, Human Space Flight and Operation, the development of solutions in the field of renewable energy and the design and manufacturing of small satellites. The Argotec unit dedicated to nanosatellites deals with all the phases that lead to the development of these systems: from design to assembly, to the integration and testing of each component. Among the company's ongoing projects in this sector, we can mention ArgoMoon, the only European satellite selected by NASA and coordinated by the Italian Space Agency to participate in the Exploration Mission-1, that will test Space Launch System (SLS), the new American launcher. Argotec's research and development activity has always been focused on the creation of innovative systems and services able to obtain applications which enhance space systems but also result in an improvement of life on Earth.

Comau

Comau, a member of the FCA Group, is a worldwide leader in delivering advanced industrial automation products and systems. Combining innovative engineering solutions with enabling technologies, Comau helps companies leverage the full potential of digital manufacturing. In addition to a vast range of modular, flexible and highly-configurable products, Comau offers interconnected digital service solutions able to transmit, elaborate and analyze important machine and process data, thereby increasing efficiency for smart manufacturing. The full portfolio includes: joining, assembly and machining solutions for traditional and electric vehicles, robotized manufacturing systems, a complete family of robots with extensive range and payload configurations, autonomous logistics, and asset optimization services with real-time monitoring and control capabilities. The offering also extends to project management and consultancy, IoT services, and maintenance and training for a wide range of industrial segments.

Headquartered in Turin, Italy, Comau has over 45 years of factory-proven experience and an international network of 36 locations, 15 manufacturing plants and 5 innovation centers that span 17 countries and employ more than 9,000 people. A global network of distributors and partners allows the company to respond quickly to the needs of customers of all sizes, no matter where they are located throughout the world. Comau is also committed to improving human-machine collaboration by developing competencies through the formation of individuals and groups as part of its open automation approach. This includes hands-on training programs by Comau Academy that develop the technical and managerial competencies necessary to face the challenges and opportunities of Industry 4.0.

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