



Signo Motus, in the name of movement

SIGNO MOTUS is a research-intensive Italian SME established in 1994 with Headquarters in Messina, (IT) and a Technical Unit in Pisa, (IT). The core business is represented by research and development (R&D) and industrial applications in: robotics, ICT and e-Health, smart materials and additive manufacturing. The R&D team has relevant experience in the development and management of European and National R&D projects, related to both civilian and defence sectors. Moreover, Signo Motus offers innovative technological services related to the core business areas and has a software product portfolio composed by: *Nutrimenta Veterinaria*, *AgeWell*, *Bocconi Avvelenati* and *Habilis*.

Mission: The mission of the company is aimed at covering the gap, in "signo motus", between the most recent technologies and their industrial application, through R&D activities and integration of advanced technological solutions.

Company dimension: SME; > 10 people; > 1 M€ turnover

Main facilities: dedicated software and hardware tools for 3D modeling, simulation and numerical analysis (as member of the Autodesk® Developer Network); control software development kit; general-purpose and vendor-specific robotic simulation tools; 3D printers and related software tools; server room; laboratories for the development of electronic systems, the production and testing of mechanical prototypes, equipped with tools for the design, analysis and SW development of control systems; electromechanical characterization tools for smart materials (ER fluids) and testing tools for prototypes and devices.

Certification: ISO 9001:2015

Core business: research and development and industrial services in the following main domains:

- ✓ **Robotics and Automation** – Signo Motus provides application-oriented robotic platforms as turnkey solutions (e.g. process automation and optimization). The development process includes: design, programming, system integration and installation, testing and validation. Moreover, the company provides maintenance and technical assistance services for industrial robotics stations.
- ✓ **Smart Materials (SM)** – The company develops innovative devices and subsystems based on SM, in particular on Electro Rheological Fluids (ERF). Advanced testing methods and equipments for the electromechanical characterization of ERF have been developed. The Company has also international partnerships with Research Centres having top-level experience on synthesis, functionalization and physical-chemical characterization of both inorganic and organic particles. Such activities feed consistently the development of robotic devices for R&D and industrial applications based on ERF (e.g. exoskeletons, dampers).
- ✓ **ICT and e-Health** – The company provides complete ICT solutions and services to end-users, with particular reference to the e-Health field. The development process includes: analysis of the requirements, identification of system specifications, design, development, testing and implementation. The whole development process is managed in compliance with the applicable ISO standards for medical devices (ISO 27000 series, ISO 13485, ISO/IEC 62304, ISO 14791). Moreover, the company provides maintenance and technical assistance services for ICT and e-health solutions.
- ✓ **Additive Manufacturing (AM)** – Signo Motus develops advanced manufacturing systems employing 3D printing techniques and produces application-oriented composite components. The AM process employed enables the utilization of different matrices and short, or continuous, fibres through a flexible production process, offering possibilities for high performances at low weights and costs. Ad-hoc 3D modeling and numerical simulations techniques are used to optimally design the component to be manufactured, and proper experimental tests are conducted, if necessary, to validate the design.

Signo Motus has a consolidated experience in research and development, being involved in several **European and National projects since 1994**. Among these, the most recent, led by Signo Motus as coordinating partner, are:

- ✓ **"ADHERE"** 2010-2016 (IT – Programme P.N.R.M. - Piano Nazionale di Ricerca Militare) – A National project co-funded by the Italian Ministry of Defence to design, prototype, test and validate innovative electromechanical devices driven by smart materials (ERFs).
- ✓ **"DI-ASD"** 2015-2018 (IT – Programme POR FESR 2014-2020) – An Italian Research project (POR FESR 2014-2020 Tuscany Region) for the design and development of a support system for the assessment and monitoring of autism in the diagnostic phase.
- ✓ **"VITA NOVA"** 2016-2018 (IT – Programme FAR FAS 2014) – An Italian Research project (FAR-FAS 2014 Tuscany Region) aimed at developing an adaptive ICT service for cardiovascular and metabolic risks reduction in premenopausal and menopausal women.
- ✓ **"ERXOS"** April 2016 - September 2016 A H2020 - SME-Instrument Phase I project aimed at assess the complete viability of innovative semi-active exoskeleton devices based on ERFs.
- ✓ **"VERSUS"** 2017-2020 (IT – Programme POR FESR 2014-2020) – Virtual-Reality Enhanced Rehabilitation for Sustainable and Usable Services. The project aims at developing an advanced virtual reality platform for the rehabilitation of the arms.
- ✓ **"SMART REHAB"** 2019-2023 (IT – Programme PO FESR 2014-2020) – Innovative Devices based on Advanced Materials. The project aims at developing an advanced virtual reality platform for the rehabilitation of the lower limbs.
- ✓ **"DETONPROOF"** 2021-2023 (IT – Programme P.N.R.M. - Piano Nazionale di Ricerca Militare) A National project co-funded by the Italian Ministry of defence centred on the development of a tele-operated robotic platform for safe ammunition Demil procedures.
- ✓ **"PCP-AUTISMO"** 2022-2022 [Phase I] 2025-2025 [Phase II] (IT – PCP-MUR) – Development of innovative applications of Virtual and Augmented Reality for people with an autism spectrum condition (ASC).
- ✓ **"COMMON LINK"** 2022-2025 (EU – European Defence Agency (EDA) Category B ad hoc projects) – Research and development of computational modelling tools for long term inter-sectoral advanced knowledge on Non-Newtonian fluids (NNF).
- ✓ **"ERXOS"** 2024-2025 (IT – Programme PNRR M4 C2 I1.5 - Cascade Call "THE" Spoke 9) – Research and development of a semi-active exoskeleton prototype based on Advanced Materials to support upper limb rehabilitation treatment.
- ✓ **"CORERAM"** 2024-2025 (IT – Programme PNRR M4 C2 I1.3 - Cascade Call "MICS" Spoke 6) – Design and numerical simulation techniques for the development of innovative and sustainable structural cores through Robotic Additive Manufacturing.
- ✓ **"EXOSOL I"** 2025-2027 (EU – European Defence Agency (EDA) Category B ad hoc projects) – Exoskeletons for Soldiers.
- ✓ **"IMPACT I"** 2025-2027 (EU – European Defence Agency (EDA) Category B ad hoc projects) – Improved impact resistance of lightweight defence structures.

Know more at: www.signomotus.it - Contact us at:

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