

PRESS RELEASE

## **SOLIDWORLD GROUP BRINGS PROPRIETARY AI TO BIOMEDICAL 3D PRINTING: PRESENTING ELECTROSPIDER 2.0**

*Only 6 months after the last update, thanks to artificial intelligence, Electros spider (the first 3D bioprinter for the creation of implantable human tissue) can now optimise the creation of the 3D digital model of the human tissue to be reproduced by eliminating all imperfections in the bioprinting process, thus ensuring perfect reproduction from the patient's original cells and propelling regenerative medicine into the future*

**Barberino Tavarnelle (FI) / Treviso, 28 November 2023** – SolidWorld Group S.p.A. (ticker S3D), the parent company of a Group that leads the market for digital technologies, industrial 3D printing, renewables and biofabrication, announces the **technological upgrade of Electros spider**, the first three-dimensional bioprinter capable of replicating human cell tissue. Thanks to the incorporation of state-of-the-art **proprietary Artificial Intelligence**, the machine now represents a significant step into the future of biomedical engineering.

Electros spider thus becomes an **innovative tool for precision regenerative medicine**, as it integrates **sophisticated algorithms allowing artificial intelligence to optimise the creation of the 3D digital model of the human tissue to be reproduced**, thus eliminating all imperfections in the bioprinting process and ensuring perfect reproduction from the patient's original cells. The goal of Electros spider is to **create complex structures of entire human organs** and therefore to completely change patients' quality of life by shortening research times (suffice it to say that the testing of a cure is now possible directly in the patient's in vitro cells thanks to Electros spider) and by improving the way hospitals and healthcare facilities work.

**Roberto Rizzo, Chairperson of SolidWorld Group S.p.A.:** *«In the field of regenerative medicine, the integration of new and sophisticated proprietary AI models into Electros spider is an evolution made possible by the mutual contamination of aerospace, biomedical, biological, computer and mechatronic technology. Thanks to our expertise and know-how, we are now able to manage the entire biofabrication design and production chain in-house, from software and related applied technology up to the final product. This further demonstrates the Company's ongoing commitment to the control and optimisation of each phase of the process, for a vertical integration that not only positions us as a leader in the sector, but also allows us to guarantee maximum quality and safety in each and every aspect of our work.*

**The AI embedded in Electros spider** - Thanks to the naturally arachnid-shaped extrusion system after which it is named, Electros spider can release organic material onto the print bed while reproducing the same workflow as a common 3D printer. Layer after layer, **the bioprinter reproduces portions of "live" human tissue** developed from cells cultured in vitro and extracted directly from the patient undergoing surgery or from donors. This operation drastically reduces the waiting time for implantable material, as well as the risks associated with rejection, thereby enabling the in-depth analysis of samples collected in this way for studies and research in various fields.

The new version "**Electros spider 2.0**" uses AI technology both for the construction of the 3D model of the organ concerned and for the printing process. In detail, in the version 2.0 the segmentation process allowing the 3D digital model of the organ or human tissue to be recreated from a computerised axial tomography (CT) scan or magnetic resonance imaging (MRI), uses absolute stabilisation of the different

grey tones, borrowing the **AI technologies used to recreate images of stars and galaxies** from photos taken by terrestrial or orbital telescopes. This proprietary technique, the result of development work at Solidworld Group, represents a fundamental step towards reducing the time required for **total organ reconstruction**, a process that requires nanometric precision of the internal structure that only specially developed AI algorithms can ensure.

In addition, a study is being finalised to use **AI algorithms to control the simultaneous printing process** of the support structure and the different cellular components of the tissue to be constructed or reconstructed. In this way, the final product will be totally error-free.

***The role of AI in healthcare***<sup>1</sup> - The choice to integrate artificial intelligence within Electrospider coincides with a favourable market context in which artificial intelligence will play a key role in healthcare processes, where innovation in the medical field is closely linked to innovative therapies and technologies. **In fact, the AI market in Italy is growing exponentially. According to some recent data, in 2021 it grew by more than 27% to EUR 380 million**, a value that has doubled in just two years, also thanks to the role that this technology can play in the renewal and enhancement of healthcare that the Italian Government is aiming at with Mission 6 of its national recovery and resilience plan. In addition, **investment in AI will increase by 21% over the next three years**, particularly to optimise operational efficiency and perform predictive analytics.

As far as the **Italian healthcare sector is concerned**, 25% of national healthcare leaders believe that data interoperability is one of the main technological challenges for the success of new models of care, requiring today more than ever a **closer collaboration with IT players, data providers and health technology to overcome technological barriers**. Three out of four Italian healthcare leaders (74%) are therefore currently investing in artificial intelligence, a figure well above the global average (59%), but in line with the European average (77%). Almost all (95%), however, plan to continue or start investing in artificial intelligence over the next three years, a figure substantially higher than the world average (83%), but in line with the European average (90%)<sup>2</sup>.

***The Electrospider story*** - The result of an excellent and all-Italian synergy, Electrospider combines an idea by Prof. Giovanni Vozzi and his team of bioengineers from the University of Pisa (E. Piaggio Research Centre) and the biomedical knowhow of Bio3DModel, a SolidWorld Group's company. The experiences of these two companies gave rise to **Bio3DPrinting**, a medical business unit controlled by SolidWorld Group S.p.A., dedicated to the development and marketing of Electrospider and holder of the **worldwide patent for the bioprinter**.

The machine, starting from the patient's own cells, is the only additive solution in the world capable of recreating tissue parts and cellular constructs underlying organic structures, thus representing the perfect innovation to support **cosmetic and pharmacological** research, research in the fields of oncology, vaccines and treatments for genetic diseases, as well as pre-operative practices in **reconstructive surgery and regenerative medicine**.

Electrospider was presented to the public for the first time in 2022 at the Biofabrication Congress in Montecatini, and again in 2022 at ExpoSanità, while the first delivery to a leading national clinical laboratory took place in October 2023.

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Please note that this press release is made available at [www.solidworld.it](http://www.solidworld.it) and at [www.1info.it](http://www.1info.it).

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<sup>1</sup> All data are contained in “*Future Health Index 2023*” by Philips.

<sup>2</sup> As also recently emerged during the Healthcare Summit of the Italian financial newspaper “Il Sole 24 Ore” (<https://www.sanita24.ilsole24ore.com/art/aziende-e-regioni/2023-11-09/12-healthcare-summit-2023-sole-24ore-091926.php?uuiid=AFRRyAZB>).

*SolidWorld Group S.p.A. is the parent of a group of 11 companies founded in the early 2000s by engineer Roberto Rizzo. Listed on the Euronext Growth Milan segment, the Group is a leading developer and integrator of the latest and most comprehensive digital 3D software and hardware for manufacturing companies, supporting and accelerating their journey to Industry 4.0. Thanks to SolidWorld, all stages of production - as far as sale and recycling - are integrated using technologies that make the production process faster and more sustainable and efficient. It operates through 14 offices and 3 technology hubs and has over 150 employees and more than 9,000 client enterprises. In 2023, the Group began mass production of Electrospider, a 3D bioprinter capable of reproducing human cell tissues and organs. The acquisition of Valore BF 3d S.r.l. was finalized in 2023, thanks to which SolidWorld acquired a new client portfolio. In 2023 it completed the transfer of a technology business unit from Formula E S.r.l., a company of the Vismunda S.r.l. Group, a world leader in automation for equipment focusing on the renewable energy sector. The SolidWorld Group reported revenues of Euro 33.1 million in the first half of 2023, with a value of production of Euro 35.2 million and EBITDA of Euro 2.8 million. The company has been listed on the Euronext Growth Milan segment of Borsa Italiana since July 6, 2022 (with ticker S3D). [www.solidworld.it](http://www.solidworld.it)*

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