

## Agade chooses tacterion's pylon® force sensors to integrate the patented hybrid motion AGADEXO exoskeleton



*Munich, May 25, 2023* – The AGADEXO Shoulder is a semi-active exoskeleton for workers, which improves ergonomics by reducing stress on the shoulders during picking tasks. Suitable for use cases such as end-of-line logistics, manufacturing processes, and retailing, it has integrated tacterion's pylon® force sensors to detect grasping motions during picking activities.

### **Agade and AGADEXO Shoulder**

The company Agade is a spin-off of the Politecnico di Milano, founded in 2020 out of a research project focused on the development of innovative wearable robotic devices. The mission has always been clear: to empower and preserve human capital and experience, enabling sustainable workplaces, and improving occupational safety through robotics. To accomplish that, Agade has developed AGADEXO Shoulder.

The exoskeleton is based on a patented hybrid motion technology, which is designed to provide a high level of muscular assistance, while reducing power consumption to improve weight. The ergonomic design allows a

fast and easy set-up of the device, without the need for special clothes or equipment. This avoids interruptions during work shifts and ensures the best human-machine interaction.

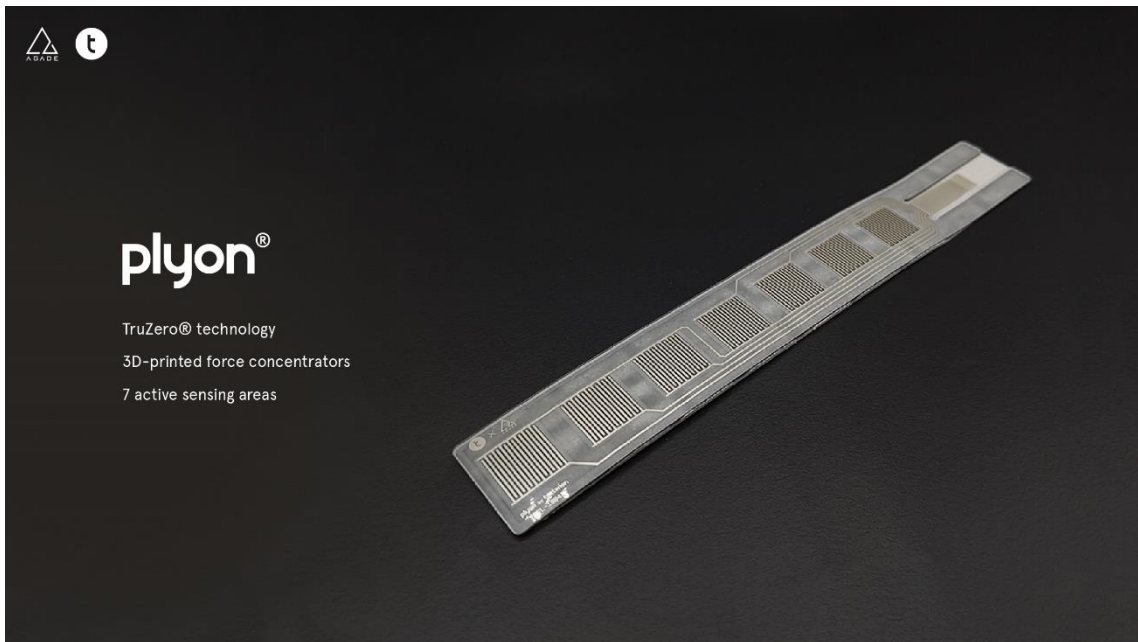
The exoskeleton fulfills the needs of manual material handling and picking tasks in different use-case scenarios. Thanks to a fusion system of embedded sensors and the implementation of Machine Learning algorithms, the AGADEXO Shoulder detects when the operator is carrying out manual picking operations which require support. It then automatically adjusts the assistance provided to the user, reducing muscular fatigue and disorders.

When the user is not performing picking tasks, AGADEXO goes into an *idle mode*, allowing the operator maximum freedom of movement. As a result, users can keep wearing AGADEXO as they wish without hindering their work.

### **The decision for pylon® force sensors**

With power consumption as a key requirement, the decision for pylon® force sensors made the most sense as they consume no power in an idle state and little power when actuated. The TrueZero™ technology enables zero battery consumption when the exoskeleton goes into the idle mode.

To meet Agade's requirements, tacterion not only custom designed pylon® with a multi-taxel approach comprising 7 active sensing areas, but also devised a new process to bond 3D-printed force concentrators to said sensors. Combined with motion sensors, they are integrated within the smart wireless armbands and provide information about the worker's movements by processing inputs from the muscle contraction and expansion.



### **The collaboration**

“We decided to start the collaboration with tacterion since we were looking for a reliable supplier of Force Sensing Resistor arrays to be integrated in our AGADEXO Shoulder exoskeleton. Right from the start, we realized we chose more than a simple production partner: tacterion assisted us throughout the whole design phase of the sensing technology to the actual production with sheer expertise. We are glad to have plyon® in our product.”, says Nicolò Bonacina, Lead Electronics Engineer at Agade.

“We are proud to have plyon® sensors integrated into a product such as AGADEXO, which focuses on empowering workers. The joint product development is a clear representation of the variety of use cases for plyon® and how well it can be adjusted to meet various customer needs” so Stefan Nester, Project Manager at tacterion.

### **About Agade**

Agade is a spin-off of Politecnico di Milano, born in 2020 from a research project focused on the development of innovative wearable robotic devices. With AGADEXO Shoulder, the aim is to empower and preserve human capital and experience, enabling sustainable workplaces and improving occupational safety. It focuses on use cases such as end-of-line logistics, manufacturing, and retailing. For more information, please visit: <https://agade-exoskeletons.com/>

### **About tacterion**

tacterion was founded in 2015 as a spin-off of the German Aerospace Center. The patented sensor technology pylon® enables connection of the physical and digital world and has won market-leading companies as customers, partners, and investors. For more information, please visit: <https://tacterion.com>

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