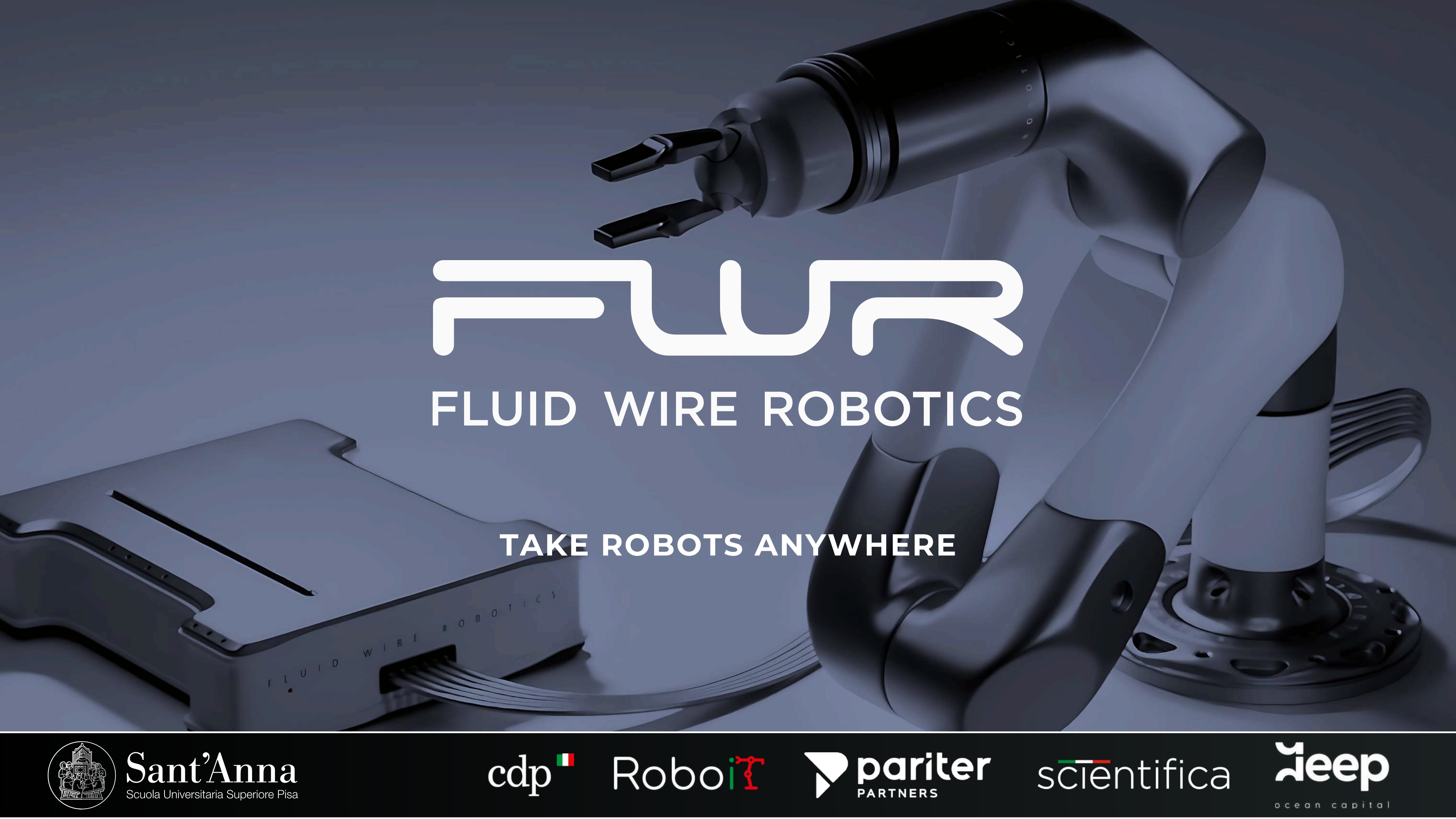




FLWR

FLUID WIRE ROBOTICS

TAKE ROBOTS ANYWHERE



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cdp 

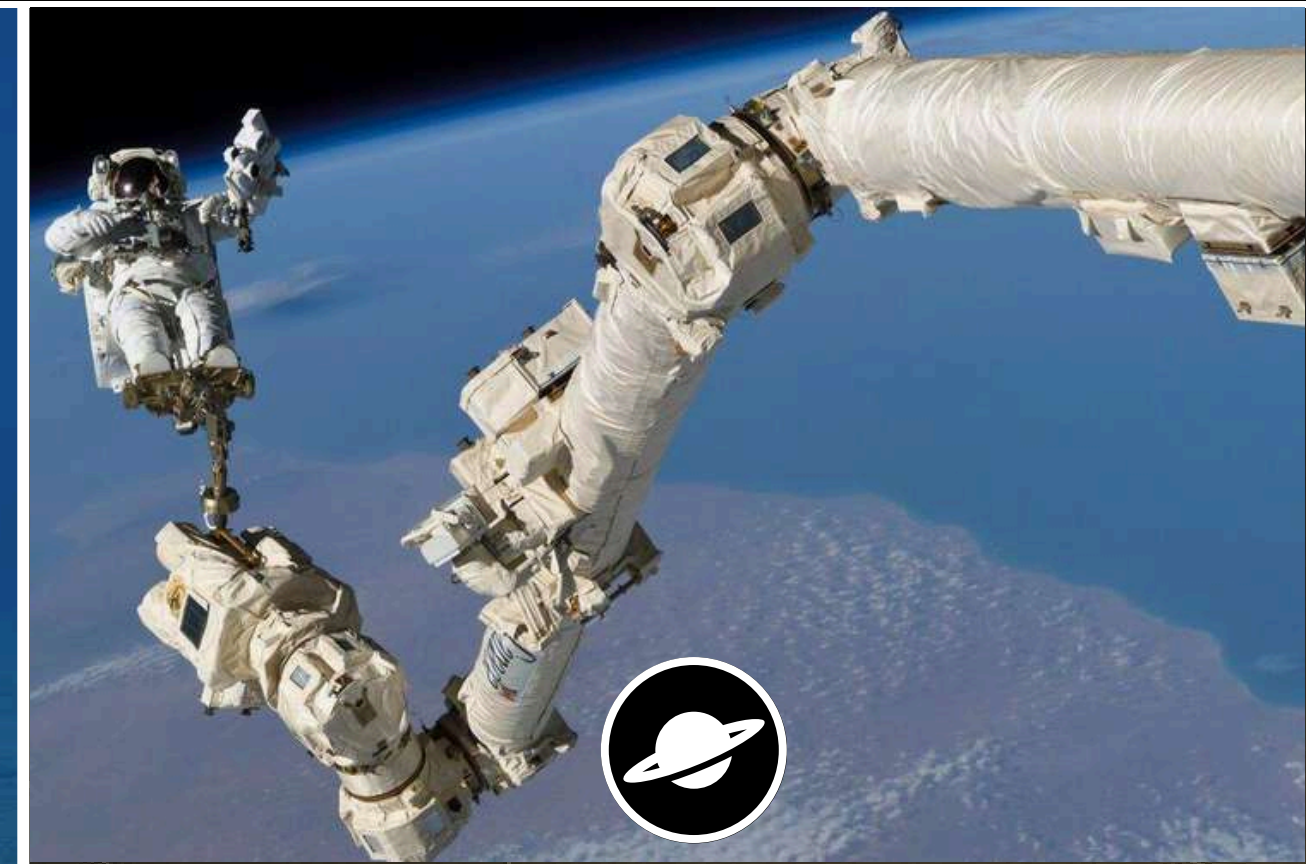
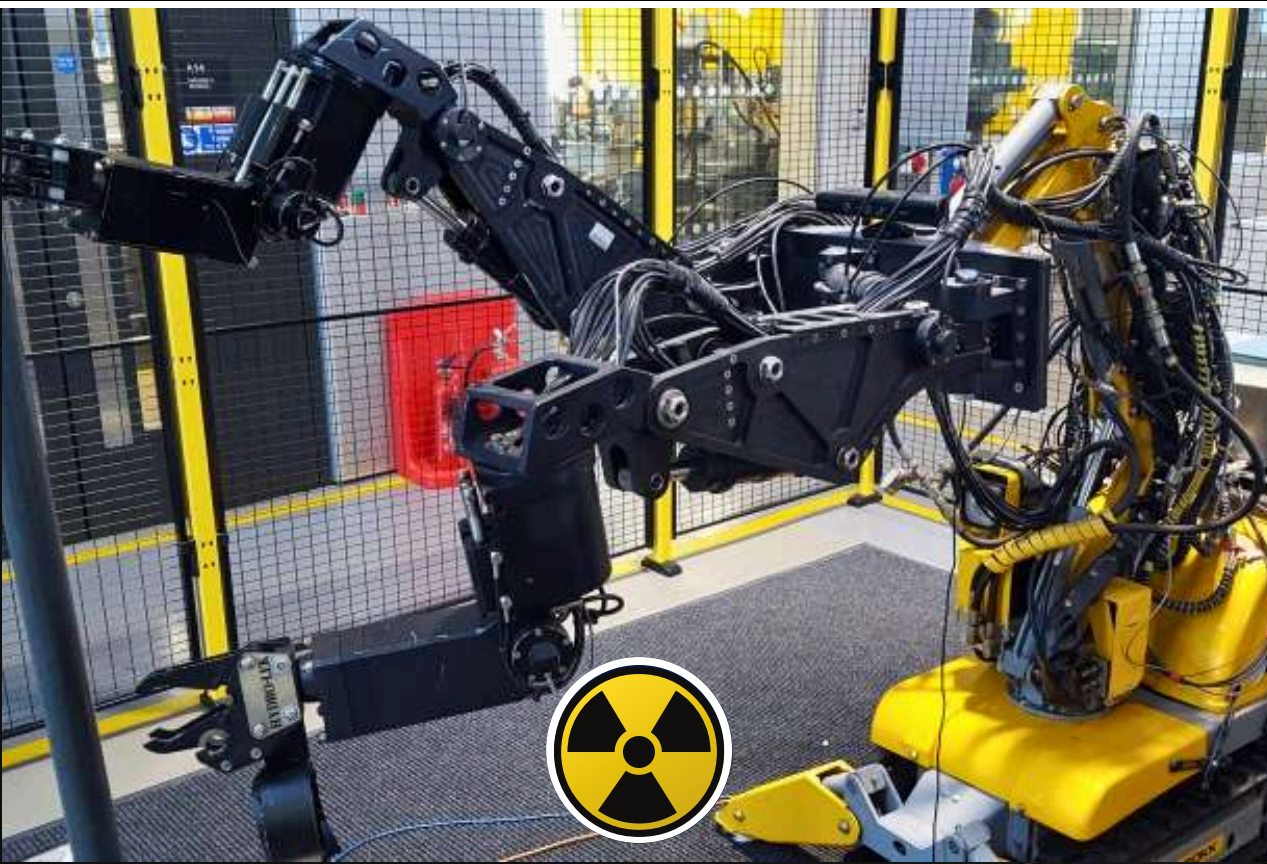
Robo 

 **pariter**
PARTNERS

 **scientifica**

Jeep
ocean capital

PROBLEM



TRADITIONAL APPROACHES TO ROBOT
DESIGN FOR HARSH ENVIRONMENTS
DO NOT SCALE



Complexity



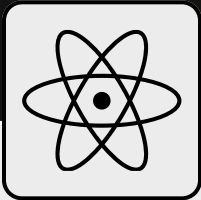
High cost



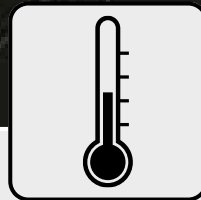
Specialization

MISSION

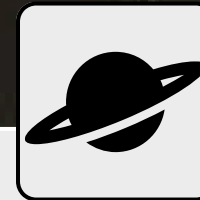
DEVELOP A VERSATILE ROBOT DESIGN THAT
CAN OPERATE **IN ANY HARSH CONDITION**



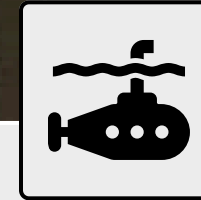
Radiation



Extreme Heat



Vacuum



Underwater

SOLUTION



SOLUTION

SHIELDED ACTUATION BOX

Electronics, sensors and electric motors are housed in the box

PASSIVE
ROBOTIC ARM

FLUID WIRES

SOLUTION

**SHIELDED
ACTUATION BOX**

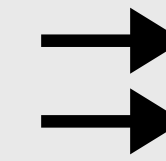
**PASSIVE
ROBOTIC ARM**

Passive structure, inherently compatible
with any harsh environment

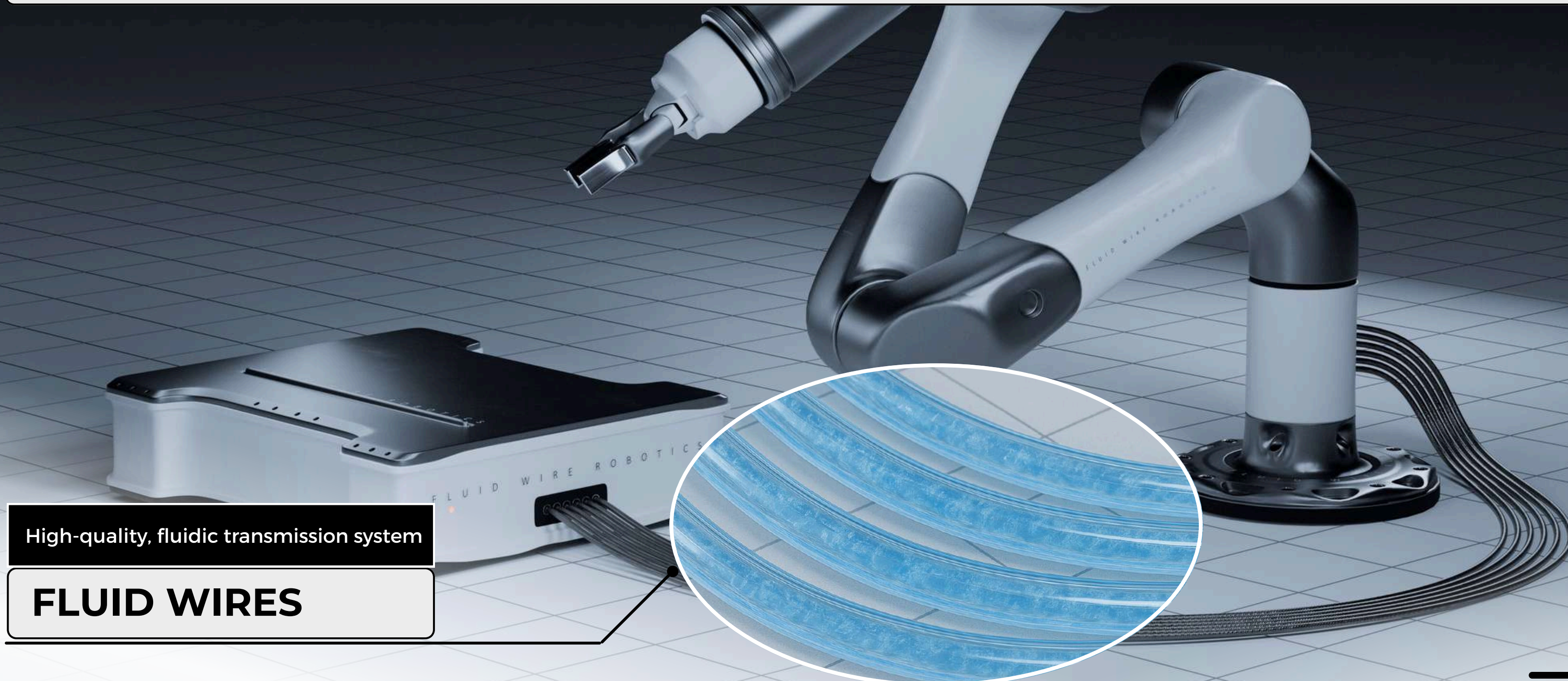
FLUID WIRES

SOLUTION

The Fluid Wires are the **only transmission system** capable of transparently transferring forces and torques across large distances with extreme accuracy and without using any additional sensor



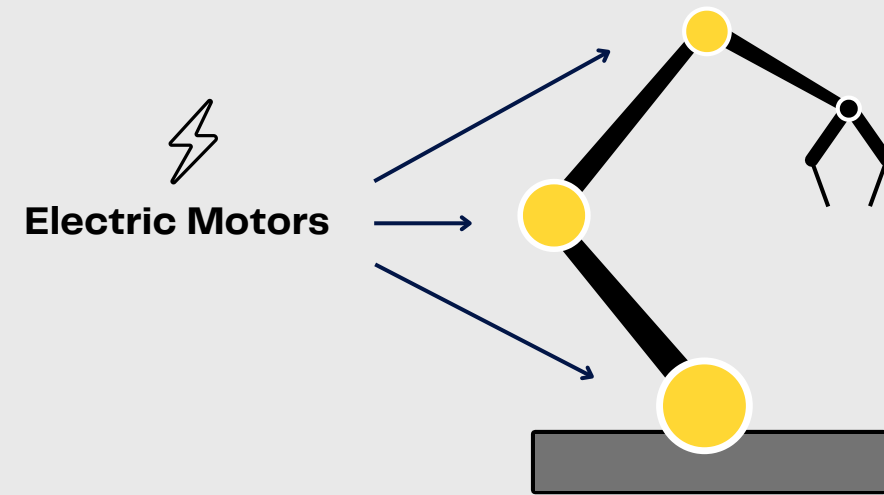
Inherently
force controllable,
rugged and safe!



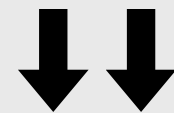
High-quality, fluidic transmission system

FLUID WIRES

Traditional Approach

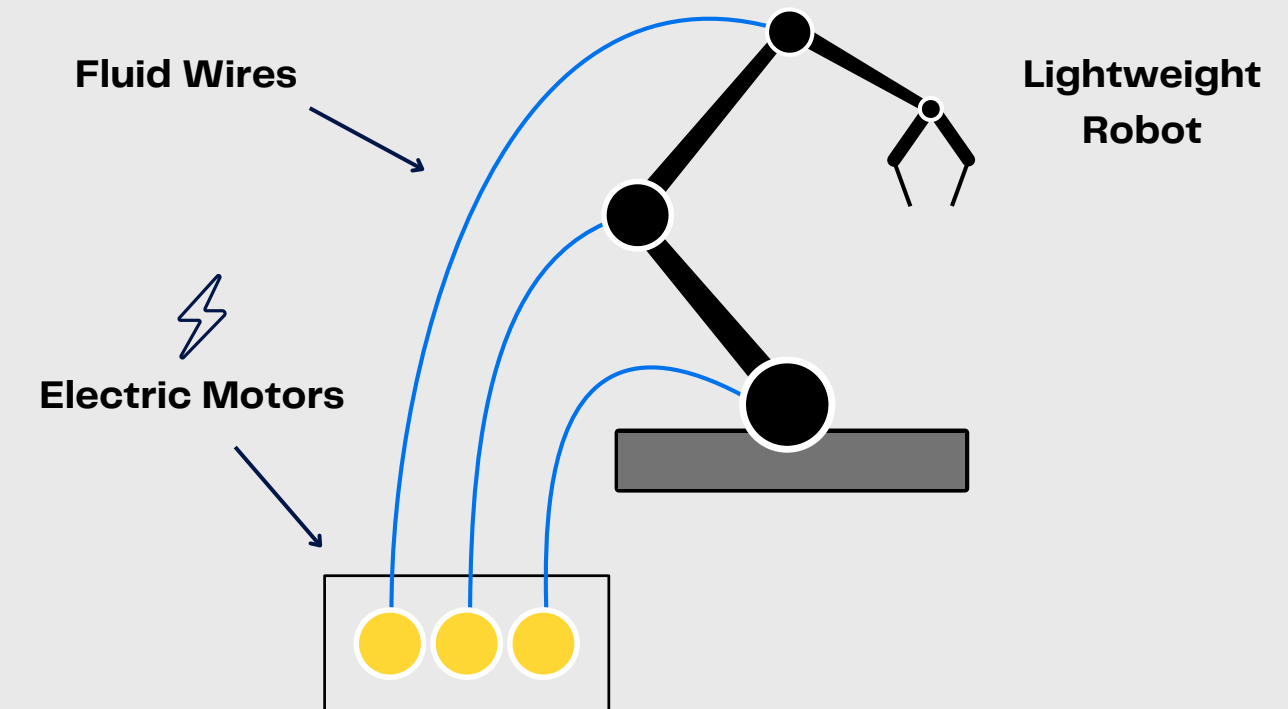


- Motors, sensors and electronics are spread **inside the arm structure**
- The arm must be protected with specific **modifications** to withstand harsh environments



The arm becomes inherently **heavy, fragile, less reliable, task specific** and **not modular**

“Fluid Wires” Approach



- Motors, sensors and electronics are located **inside the external actuation box**
- The arm is an empty structure so it is **inherently able** to withstand harsh environments

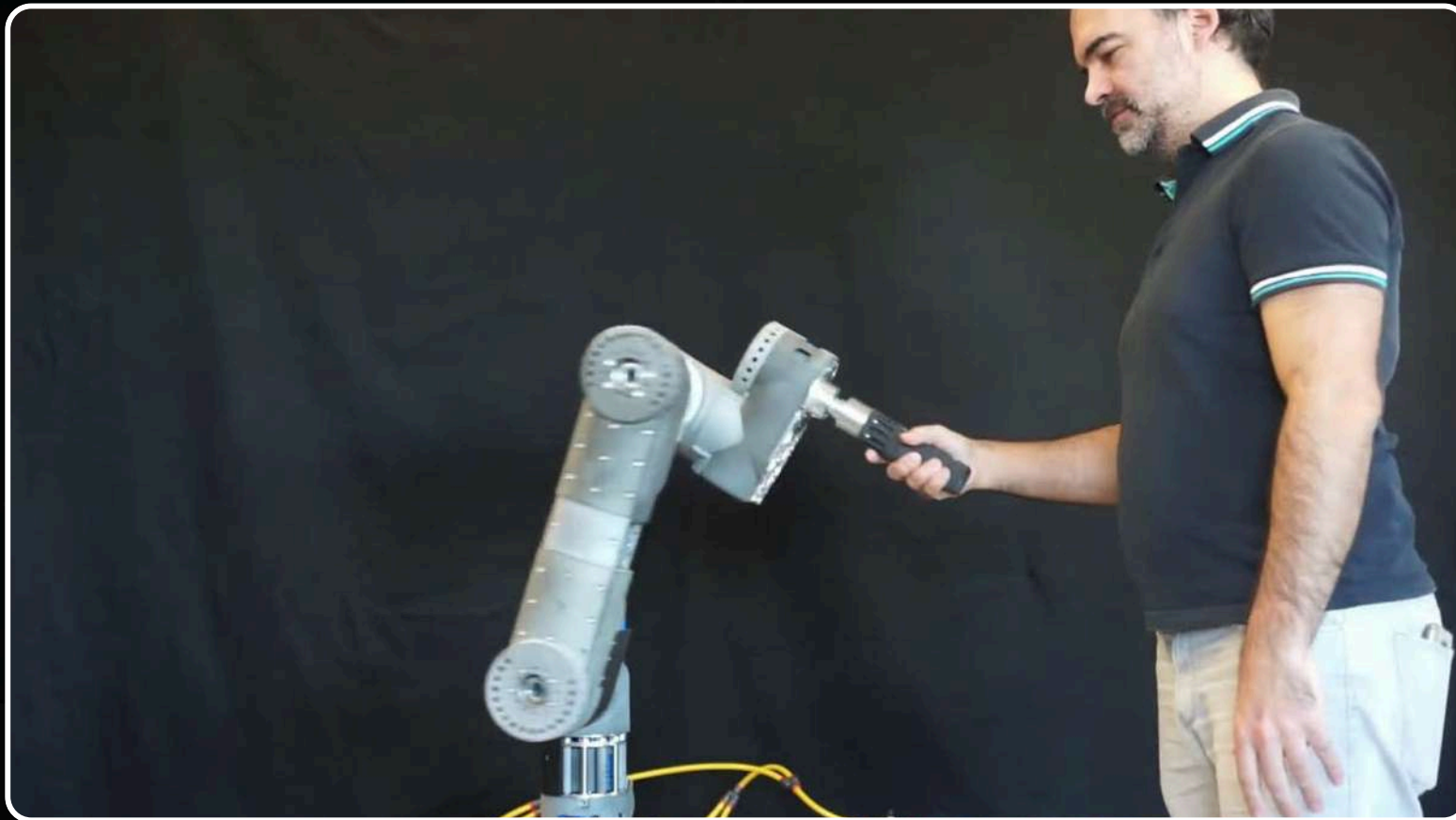


The arm is **lightweight, rugged, reliable, versatile** and **modular**

LAB DEMONSTRATION

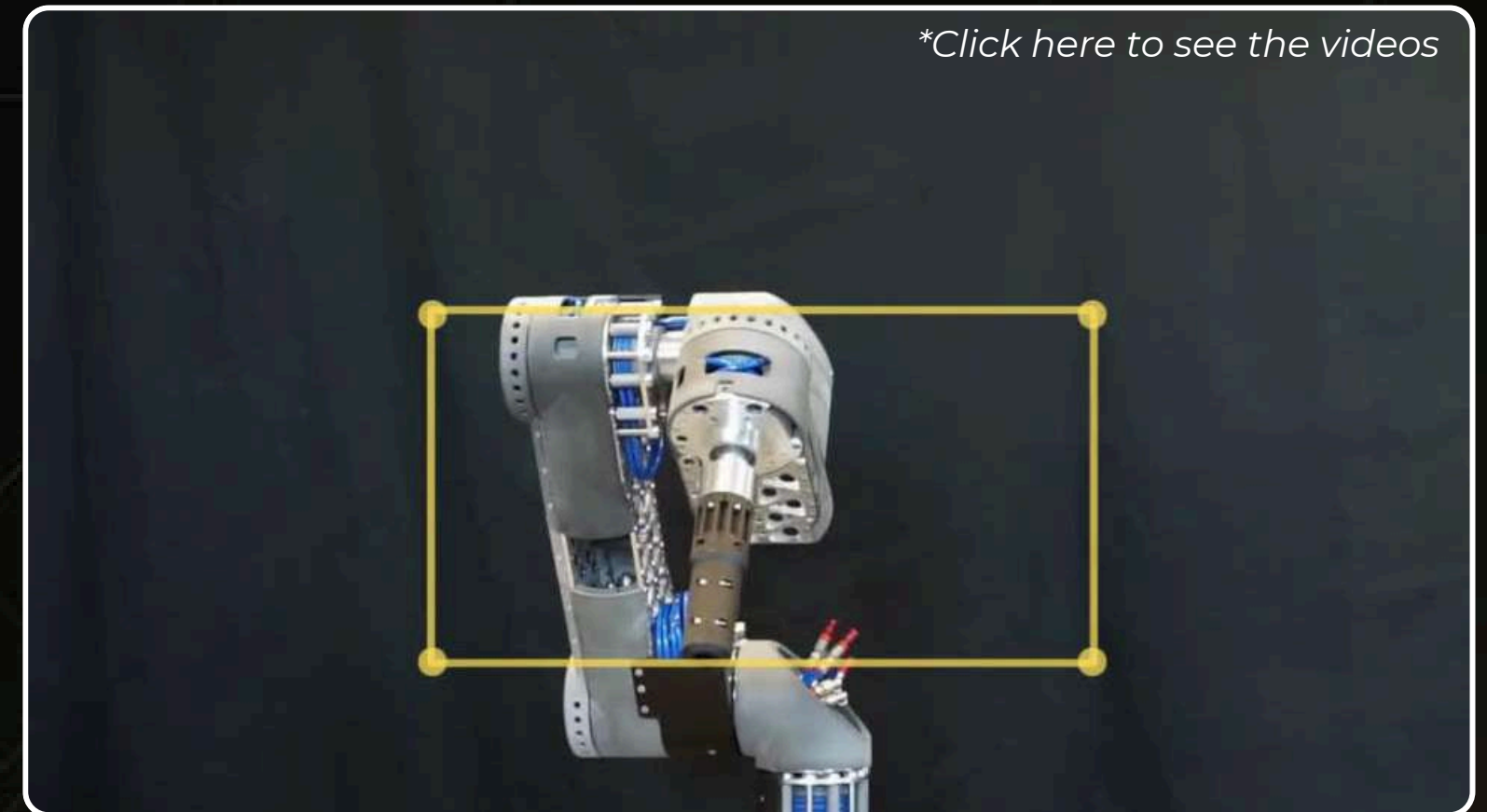
Based on Fluid Wire technology, a wide set of performances can be achieved

Interactive capabilities



extremely accurate interactive capabilities when force/impedance controlled or teleoperated

Autonomous execution



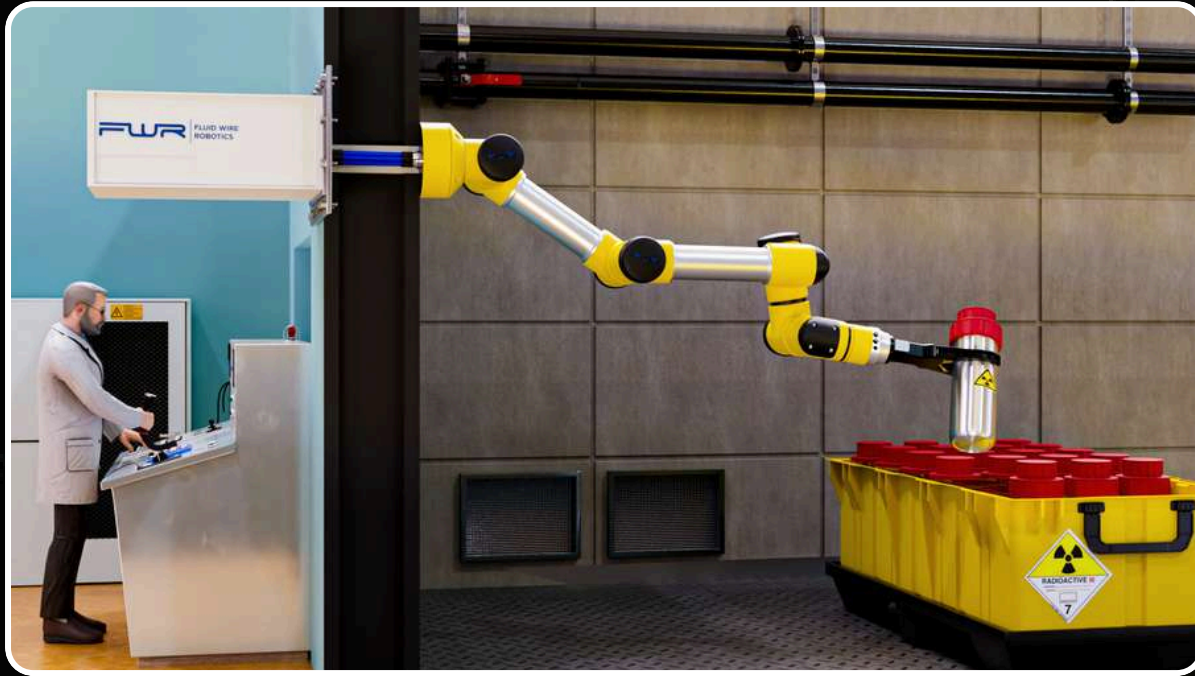
precise and highly repeatable motion during the execution of autonomous tasks



The robotic arm is completely **SENSORLESS**. No sensors nor actuators onboard!
FWR sets the ideal tech paradigm to bring advanced manipulation in extreme environments

MARKETS

NUCLEAR



Applications

Inspection & Maintenance
Radiative material handling

Benefits

Endurance to radiations & high temp.
Advanced dexterity and force feedback
Modular and reconfigurable structure

SPACE



Applications

In-orbit servicing
Active debris removal

Benefits

Superior thermal dissipation
Delicate in interactive tasks
Optimal mass distribution

UNDERWATER

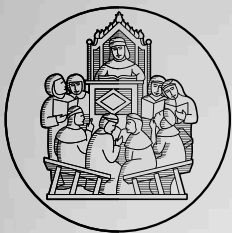


Applications

Inspection & Maintenance
Delicate and precise interactive tasks

Benefits

Impact-tolerant mechanics
Reliable sealing for resident applications
Accurate force control and interaction



Sant'Anna

Scuola Universitaria Superiore Pisa



Spin-off of Scuola Superiore Sant'Anna



Pisa, Italy



Founded in 06/2024



FTE: 7,5



TEAM

- 5 co-founders:
 - Marco Bolignari - CEO
 - Marco Fontana - CTO
 - Francesco Damiani - Head of Electronics
 - Gianluigi Grandesso - COO
 - Ivan De Leonardis - CMO
- 2 employees:
 - Senior mechanical engineer
 - Junior mechanical engineer
 - Automation engineer

3
Patents
filed

TRL 4

Foundation
&
1.2 M€ Seed

DIANA®

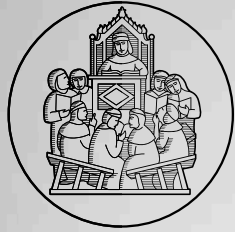
TRL 5

2024

2025

2026

COMPANY OVERVIEW



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- 2 employees:
 - Senior mechanical engineer
 - Junior mechanical engineer
 - Automation engineer

VC



INSTITUTIONS



SPACE
INCUBATION

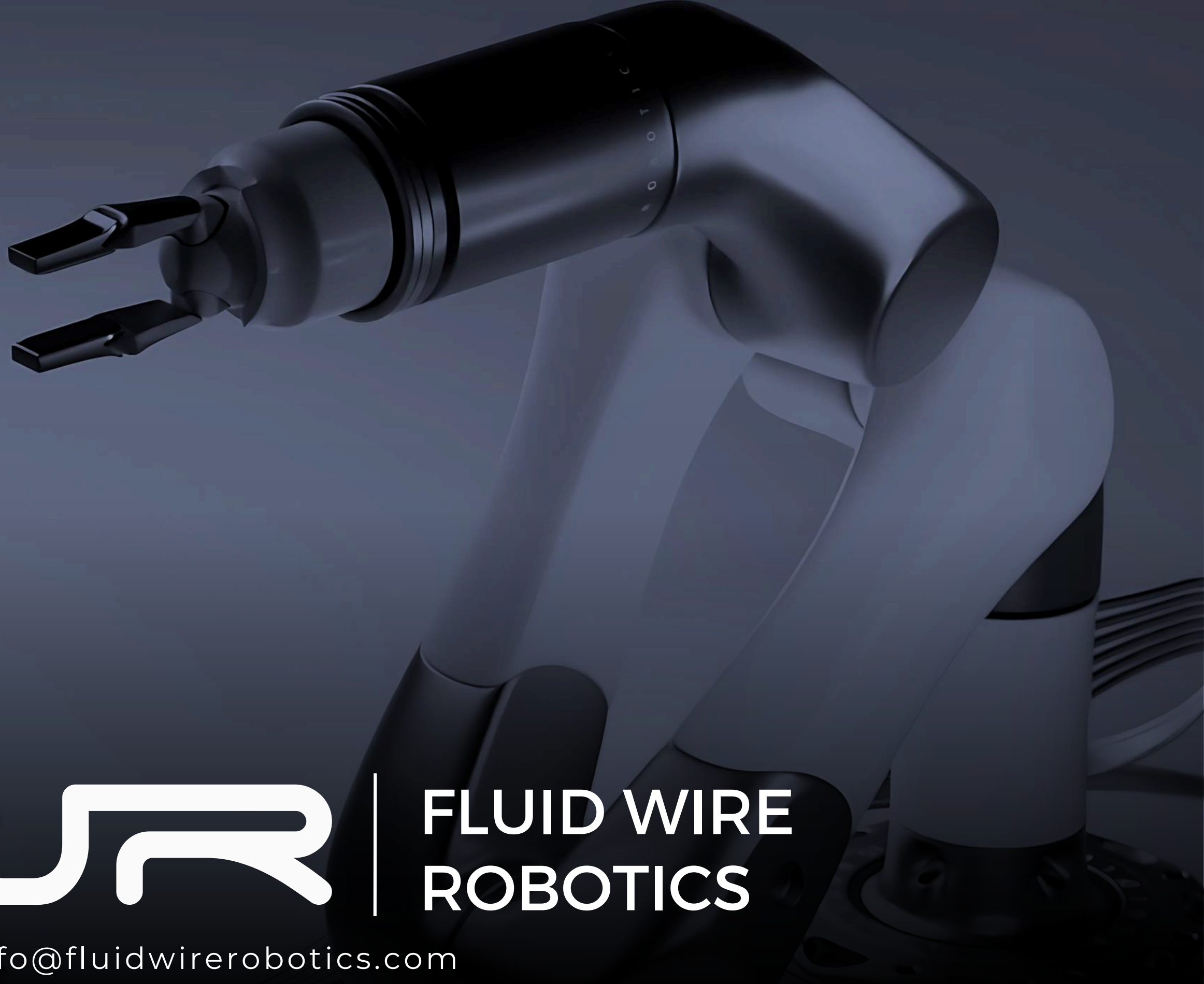


DUAL USE
ACCELERATION

ACCADEMIC



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FLUID WIRE
ROBOTICS

info@fluidwirerobotics.com



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