

## Rethinking Industrial Hardware

Defining a new global standard for machine design, increasing the efficiency, reliability, and sustainability in all automated industries.

## Business Summary

Actuation Lab has developed a unique origami-inspired engineering methodology, a tool which is applied to distil mechanical components to be their simplest and most efficient forms. We are developing a series of industrial hardware products for the flow control industry which eliminate downtime and prevent catastrophic emissions.

## The Problem Scale

8 billion tonnes of CO<sub>2</sub> are emitted and £2.4 Trillion spent every year overcoming friction in machines and remanufacturing worn out mechanisms. We are beginning to tackle this issue by rethinking the hardware that control the flow of hydrogen, fuel and water for increased industrial uptime, security of supply and reduced emissions.

## Our Solutions

The **Callimorph** actuator which is designed to be the simplest and most reliable way of creating mechanical movement to eliminate industrial downtime. The **Dragonfly** valve which is designed to prevent millions of tonnes of hydrogen and natural gas leaking across the globe, enabling a truly sustainable energy transition.

## Target Markets

We are targeting an addressable valve market of £9.3B and an addressable valve actuator market of £4.4B with our 2 products. Our valves and actuators will serve the hydrogen, renewable energy, food, pharmaceutical and marine markets.

## Competition

Our competitors are the large industrial hardware manufacturers such as Emerson, Bosch, Parker Hannifin, Festo and IMI. We have ambitions to grow Actuation Lab to a £100m valuation by 2028, beyond which point we would consider a commercial sale of the company or its IP to one of these companies to provide an exit to our investors.

## Development plan

We are developing a series of mechanical hardware products in 5 year cycles. Validate > R&D > Trial > Pilot Product > Product Sales & Licence. We are raising funds to get to trials with the Dragonfly Valve and to reach pilot sales of the Callimorph Actuator.

## Revenue Model

Actuation Lab will assemble valves and actuators in house up to 10,000 units each year and sell 50% of this through distributors. In order to reach a global market, we will license our manufacturing and IP to large hardware manufactures once our technology is proven through customer trials.

## IP development

The plan to develop an extensive IP portfolio will allow us to rapidly add value to the business, with the knowledge that innovative component manufacturers with strong IP, are regularly acquired by multinational actuator manufacturers. The Callimorph® and the Dragonfly are both patent pending with priority dates in 2019 and 2022 respectively. Our manufacturing is protected by extensive manufacturing knowhow.

## Funding

Actuation Lab is seeking £2m equity investment by September 2022 for an 18 month runway. The company has raised over £1m funding since inception. One subsequent funding round is anticipated before the company is self sustaining. Investment will enable us to develop our first product and get our hydrogen valve to trials. We will hire 10 staff over the next 18 months and we are seeking a commercial Non-Exec director to join our board. The company will be based in Bristol, UK with strong ties to Aberdeen and its rapidly growing hydrogen sector.

## Company Profile

**Industries:** Hydrogen, Industrial, Marine  
**Technology type:** Mechanical Hardware  
**Employees:** 6  
**Founded:** June 2018  
**Origin:** University of Bristol spin-out

## Directors

**CEO:** [Dr Simon Bates](#)  
**CTO:** [Dr Michael Dicker](#)  
**Head of R&D:** [Dr Tom Llewellyn-Jones](#)  
**Chair:** [Dr Steve Kitson](#)

## Advisors

**Business Dev:** [Jonathan White](#), [Apollo OE](#)  
**Financial:** [Andrew Tapson](#), [Perle](#)  
**Commercial:** [Rob Boycott](#), [WedgeRock](#)  
**Technical:** [Score](#), [NZTC](#), [NCC](#), [NMIS](#), [DNV](#)

## Metrics

**Registered IP:** 2x Patent pending  
**IP ownership:** Actuation Lab owns all IP  
**Technology readiness:** TRL3–5  
**Shareholders:** Founders, UoB, Deepbridge, Angels x4

## Notable Funding and Awards:

**Investment to date:** £245k  
**Non-dilutive funding to date:** £838k

## Fundraising goals in 2022

**Seeking:** £2m  
**Purpose:** Develop first product for industrial use and develop trial hydrogen valve units.

## Contact

**Web:** [www.actuationlab.com](http://www.actuationlab.com)  
**Phone:** +44(0)77 86512791  
**Email:** [simon@actuationlab.com](mailto:simon@actuationlab.com)  
**LinkedIn:** [actuation-lab](https://www.linkedin.com/company/actuation-lab)