

ELASTIA

ELASTIA // BIOMETHANE UPGRADING

Improving biomethane upgrading economics using next generation gas separating material technologies

OVERVIEW

CO_2 / CH_4

BIOMETHANE

We turn materials science innovation into industrial gas separation solutions

Elastia combines materials science, product engineering and manufacturing capabilities.

01 UK company based at UCL, London

We hold IP for gas-separation solutions developed by our UK-based materials science team at our UCL laboratory and workshop.

02 Product engineering and manufacturing

From membrane material to hollow fibre, cartridge, testing and qualification at our production site in Hangzhou, China.

03 Built for industrial collaboration

We specify and design products to evaluate around partner systems, with engineering and digital twin support.

RESEARCH SUPPORTED & FUNDED BY:

THE
ROYAL
SOCIETY



Engineering and
Physical Sciences
Research Council

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ROYCE
INSTITUTE



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INSTITUTION

COMMERCIAL FOCUS

Membrane modules for upgrading OEMs, engineering partners and plant operators

We improve gas separation performance and economics by designing and developing the separation material, fibre and cartridge

FROM MATERIAL DESIGN TO MODULE DELIVERY

01 Proprietary membrane material IP

We design the material itself, not just the module, around the required gas separation.

02 Hollow-fibre and module engineering

Module design addresses system interfaces and engineering requirements, including recyclability goals.

03 Product ready for performance evaluation

Membrane fibres and cartridges are available for evaluation and interface adaptation.

MATERIALS SCIENCE AND ENGINEERING

Membrane modules

- Proprietary polymeric materials, hollow fibres and cartridges.
- Producing 4", 6", 8" cartridges*

*Custom diameters also available (12"-16")

Engineering requirements

Design towards recyclability and agreed operating requirements.

Gas specification

Stage-by-stage modelling includes O₂ limits. Our R&D can develop variants for demanding gases.

PARTNER FIT

For plant operators: evaluate capacity and energy in your installed upgrader. For engineering partners: design and evaluate against gas specifications and system requirements.

Our membrane modules offer three performance routes to improve biomethane upgrading economics

Higher CO₂ separation capacity can give operators a choice: increase biomethane output or maintain output at lower compressor pressure and energy demand.

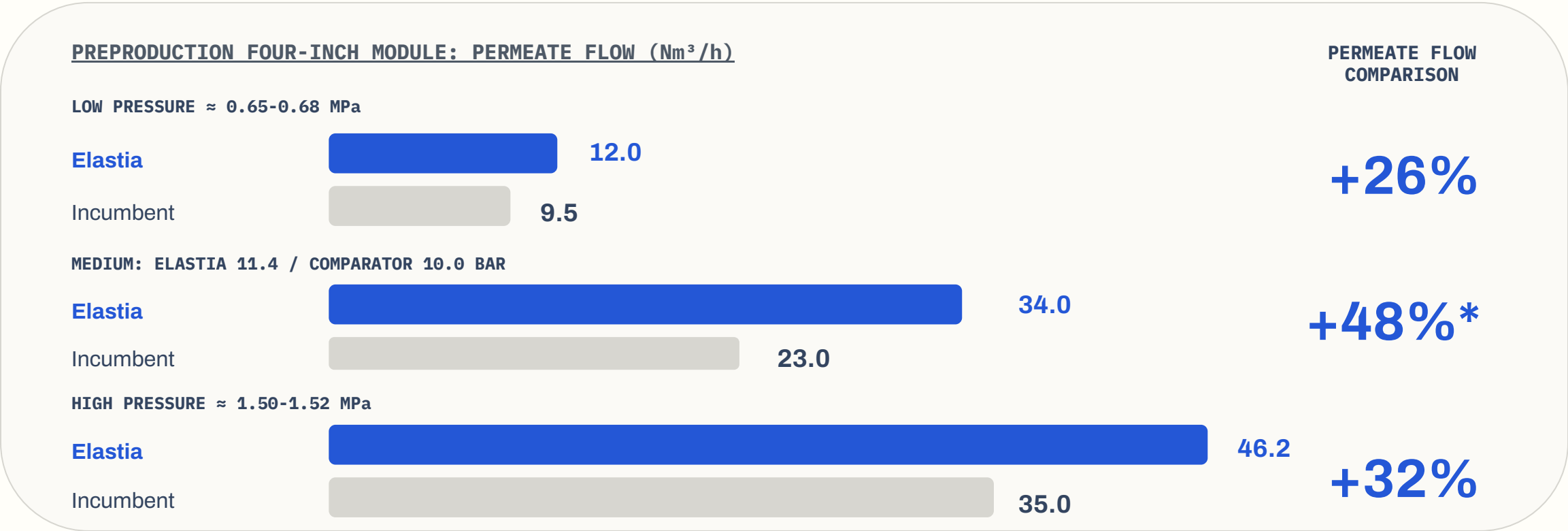
01	Improved CO₂ separation capacity	PERFORMANCE GAIN More CO ₂ removed per cartridge at lower or comparable operating pressure.	CUSTOMER VALUE Two operating choices: > HIGHER OUTPUT Increase feed throughput. > LOWER ENERGY Same output; lower pressure.
02	Durability evaluation	MODULE EFFECT Ongoing lab durability evaluation exceeds 3,000 hours, alongside four competitor modules.	CUSTOMER VALUE Potentially lower maintenance, replacement cost and unplanned downtime.
03	Regeneration capability	MODULE EFFECT Potential to restore performance after ageing, plasticisation or contaminant exposure.	CUSTOMER VALUE Longer usable life and less membrane waste.

The performance of our preproduction modules has been compared with commercial membranes at an operating biomethane site



Performance evaluation at a customer site shows higher permeate flow at three operating points

We propose replicating the comparison on a target biomethane stream to measure product purity, methane recovery, energy demand and stability.



*Medium point: 11.4 vs 10.0 bar feed pressure; unequal-pressure observation. Preproduction module; short, sequential evaluation; membrane areas unknown.

From first conversation to a commercial decision grounded in evidence

A joint programme with plant operators and engineering partners, built around one representative site.



Introduce and identify

Introductory call to identify a site and where we could add value.

Simulate your site

Share feed and operating data. We model the potential against your current system.

Design the evaluation

Jointly agree lab and/or site experiments, success metrics and responsibilities.

Evaluate and refine

Run the experiments and refine the simulation using measured performance.

Discuss commercial terms

Review the evidence and business case, then agree a commercial route if justified.

OUR APPROACH

Simulation first. Lab and/or site experiments build a more accurate picture before commercial agreement.

CUSTOMER / PARTNER INPUTS

Resources for module deployment, site access for Elastia staff, and feed and site data including HSE and quality standards.

What could our membranes deliver for your plant or next design?

We propose a 30-minute technical discussion, followed by a review of one representative feed stream and the required biomethane specification.

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