

Scaling industrial biotechnology

From proven technology to commercial-scale deployment

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Turning natural gas into protein at industrial scale

Our U-Loop® gas fermentation technology converts natural gas into Uniprotein®, a high-quality single-cell protein for animal nutrition.



Natural gas



U-Loop® bioreactor



Uniprotein®



Feed

Up to 70% protein

High-quality single-cell protein

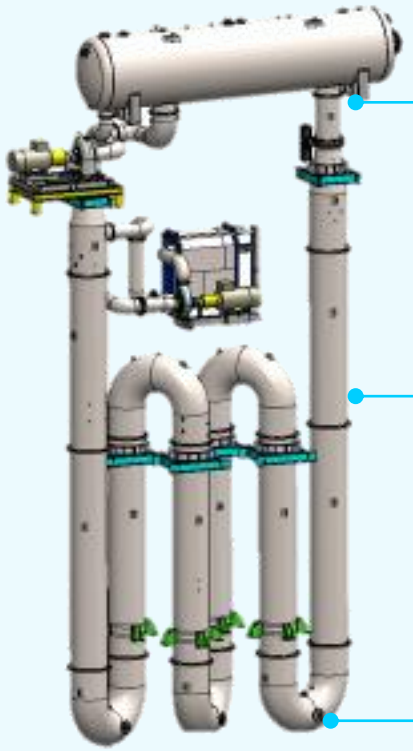
Industrially validated

6,250 TPA first industrial-scale U-Loop® facility

Designed for scale

Modular vertical-loop bioreactor technology

Technology designed for scale



UNIBIO U-LOOP®

Improved mass transfer

Longer gas-liquid contact time and increased reactor pressure improve mass transfer.

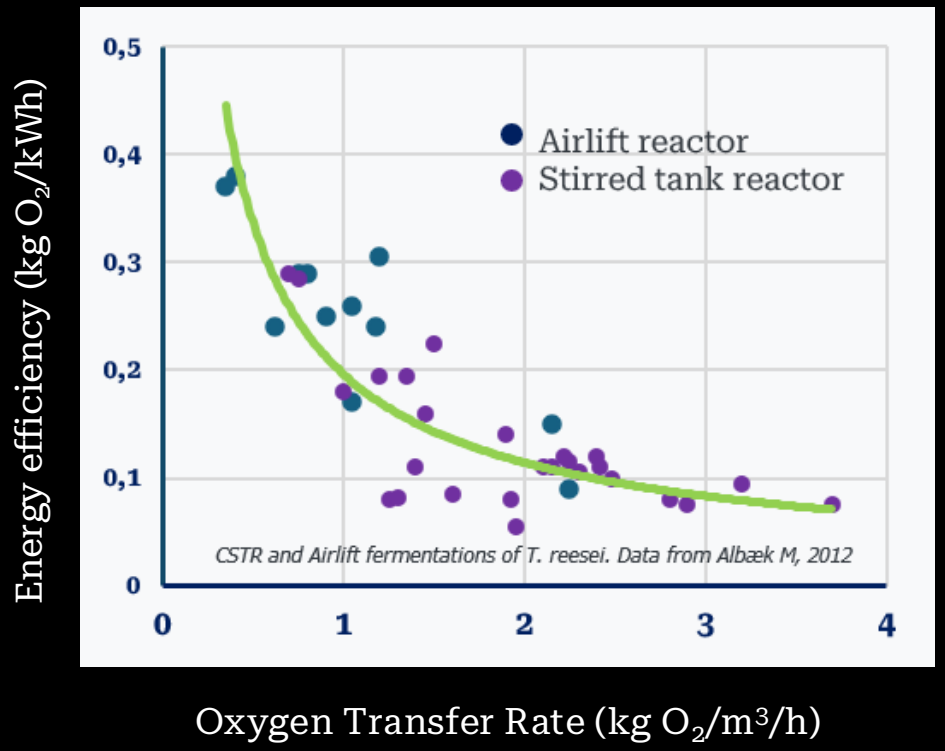
Energy-efficient design

Reactor volume can increase while tubular-section diameter and pump energy for the desired flow rate remain unchanged, reducing energy per volume.

Capital-efficient scale-up

Additional bends increase reactor volume significantly for a relatively small increase in CAPEX.

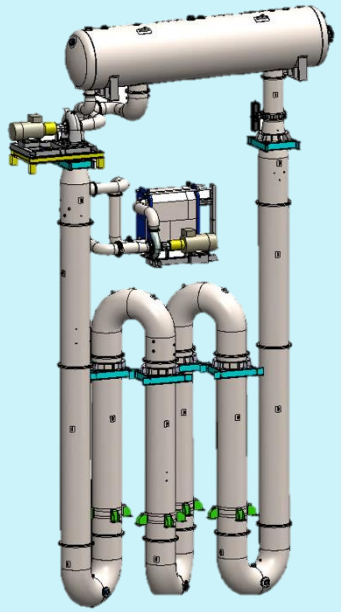
Performance metrics are redefined vs traditional solutions



In traditional technologies, increased gas transfer is obtained from increased energy input

U-Loop®: a gas fermentation platform beyond protein

One reactor platform. Multiple applications. Broader commercial potential.



Unibio U-Loop®

Gas-to-Biomass

PROVEN FOR PROTEIN

Gas-to-Chemicals

IN DEVELOPMENT

again — $CO_2 + H_2 \rightarrow$ acetate

BioVerde Sustainable Biomaterials — Methane → butadiene

Gas-to-Biochemicals

FUTURE POTENTIAL

Commercial scale requires more than proven technology

Successful deployment depends on multiple elements coming together at the right time.

Technology

Feedstock

Infrastructure

Financing

Partnerships

Regulation

Market

Operations



From industrial validation to commercial scale

The U-Loop® has progressed from industrial-scale validation to significantly larger commercial deployment.



INDUSTRIAL VALIDATION

6,250 TPA

First industrial-scale U-Loop® facility

8×

BioProtein

COMMERCIAL DEPLOYMENT

50,000 TPA

Saudi Arabia — Phase 1

Saudi Arabia: commercial scale in practice

A joint venture with SIIG bringing together U-Loop® technology and local capabilities for commercial-scale deployment.





PARTNER

Joint venture

SIIG
المجموعة السعودية

PHASE 1 PRODUCTION CAPACITY

50,000 TPA

- **Advancing towards FID**

Scaling through partnership

Combining proprietary technology and commercial capability with capital, feedstock, infrastructure and local market access.

Unibio

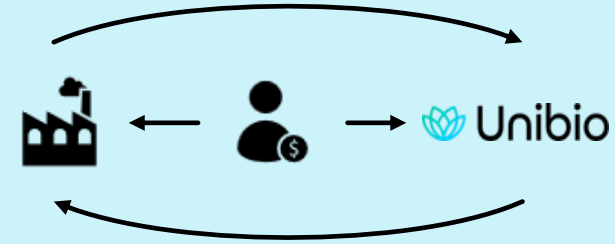
- U-Loop® technology 
- Engineering & technical expertise
- Commercial & market expertise

+

STRATEGIC / JV PARTNER

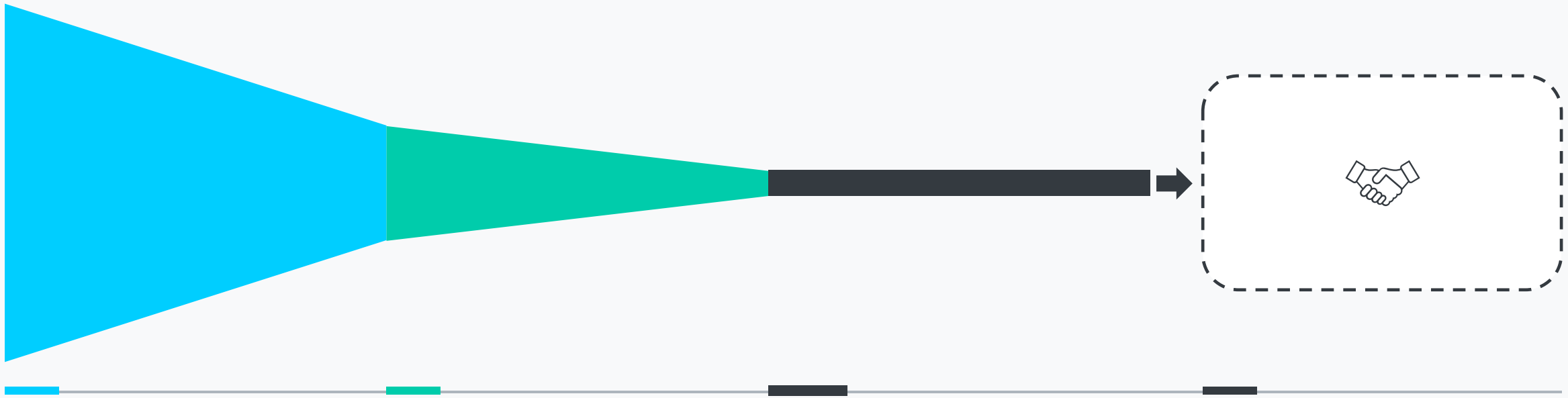
- Capital
- Feedstock access
- Infrastructure
- Local approvals & relationships

TOGETHER →



Commercial-scale project

Commercial demand is progressing towards firm offtake



01
Prospecting
674 ktpa
49 customers
~$1.2bn revenue potential

02
Sampling
215 ktpa
15 customers
~$376m indicative revenue

03
LOIs
~48 ktpa
8 customers
~$84m indicative revenue

04
Firm Offtake

Source: Company data

What it takes to scale

Key lessons to accelerate commercial deployment.

Repeatable commercial scale

01 INPUTS

Build around the right inputs and infrastructure

Feedstock, utilities and industrial infrastructure materially shape project economics and scalability.

02 PARTNERS

Choose partners that bring more than capital

The right partner brings capital, infrastructure, local access and execution capability.

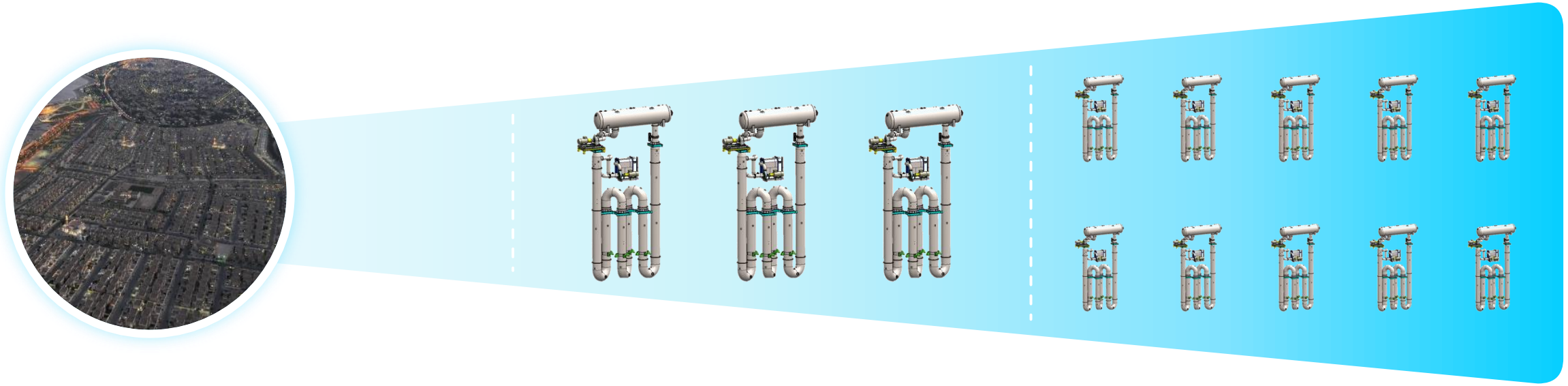
03 SCALING

Scale the whole system, not just the reactor

Technology, financing, engineering, approvals, commercial market development and operations must advance together.

From commercial scale to repeatable scale

Saudi Arabia is the next step towards a model for repeatable commercial deployment.



01 PLANNED COMMERCIAL SCALE

Saudi Arabia

50,000 TPA Phase 1

02 REPEATABLE DEPLOYMENT

U-Loop® platform

Modular technology + partnership-led deployment

03 PLATFORM SCALE

Multiple projects and markets

A scalable industrial protein platform

The next phase of scaling requires the right strategic partners and long-term capital.

Protein is a foundational building block for food security.

The opportunity is to produce it locally, predictably and at scale, independent of weather and global shipping constraints.

The U-Loop® makes that possible.

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