



Oxford Catalysts

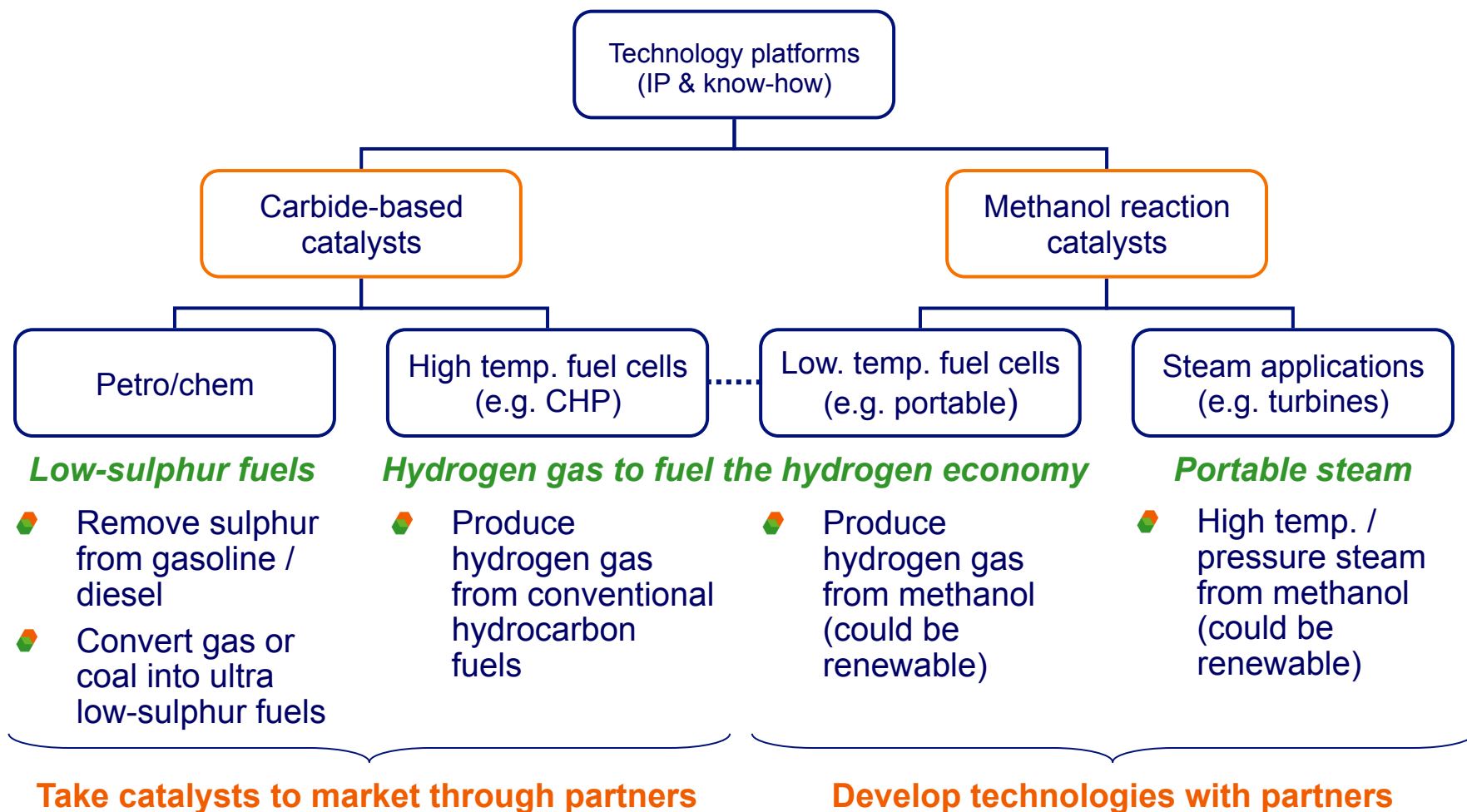
The Journey So Far

**10th Anniversary High Value
Manufacturing Conference 2012
Cambridge www.hvm-uk.com**

Introduction – Back to 2005

- ❖ Oxford Catalysts designs and develops specialty catalysts for the generation of **clean fuels**
- ❖ Based on over **19 years** research by Professor Malcolm Green and his team at University of Oxford
- ❖ Proprietary know-how and intellectual property (5 patent filings)
- ❖ 2 technology platforms address both **conventional and alternative energy**
- ❖ Low capital business model: license to leading companies in target markets
- ❖ Spun out of University of Oxford in December 2005 with £0.75M

Platforms, Products and Markets



Floated on AIM in April 2006

Raised £15m to exploit “multiple revenue streams over next 5 years”

- Recruitment of around 25 employees:
 - Expansion business development team
 - Strengthening of R&D team
- Development of existing catalysts for specific client needs
- Development of new catalysts and catalyst-powered applications
- Equip and fit-out of new laboratory and offices
- Enhancement and expansion of IP portfolio

Raised further £4M in summer 2007

UK Facilities after Expansion



Business Development took us to Velocys

- ◆ Velocys, Spun out of Battelle Memorial Institute, commercialising 15 yrs' research originating in PNNL
- ◆ **Over \$160m** invested in technology at the time, primarily by commercial partners
- ◆ **Global leader** – largest microchannel process technology IP portfolio in world
- ◆ Relationship turned from business partnership to merger as a result of clearly identified synergies

Oxford Catalysts Acquired Velocys Inc. in November 2008

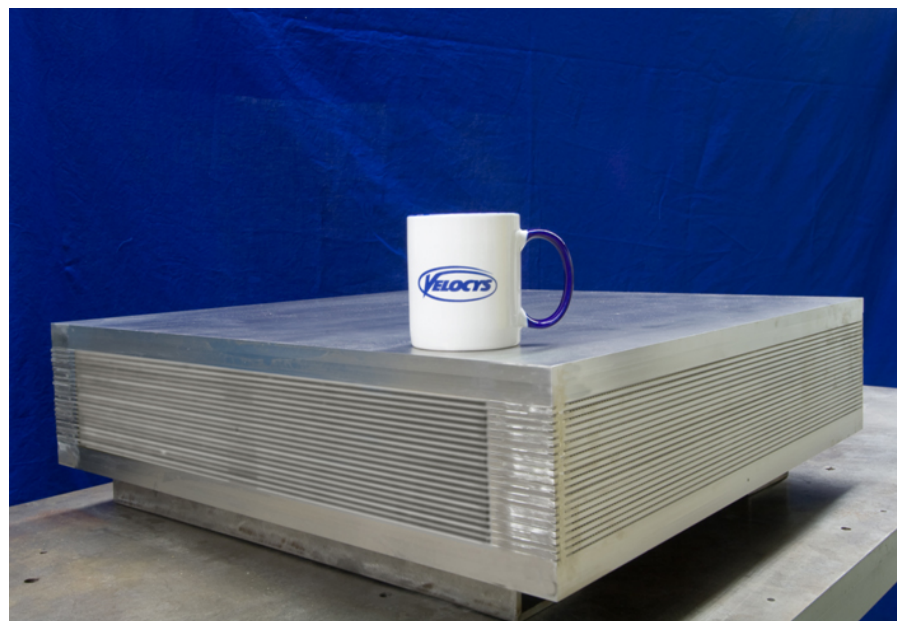
US Facilities



Microchannel Reactors



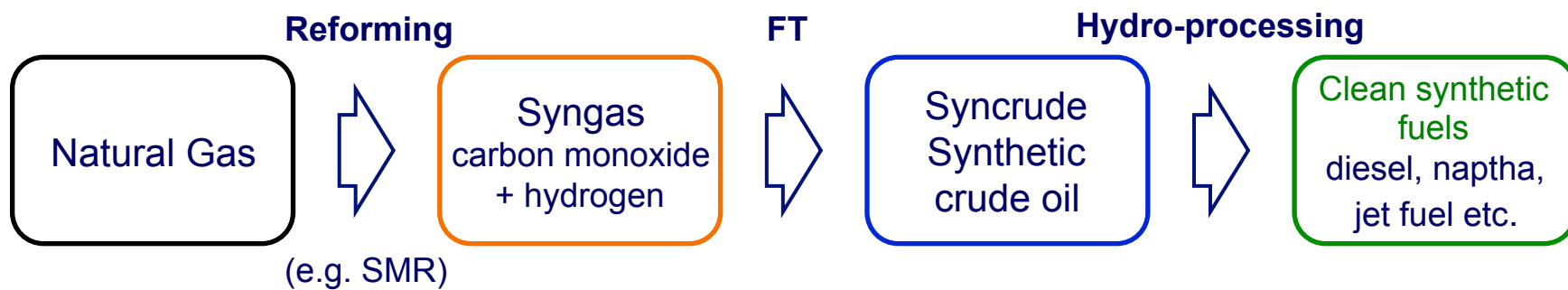
1/3 scale SMR reactor
Device: 550mm x 300mm x 600mm
Capacity if operated: 9,350 m³/day H₂



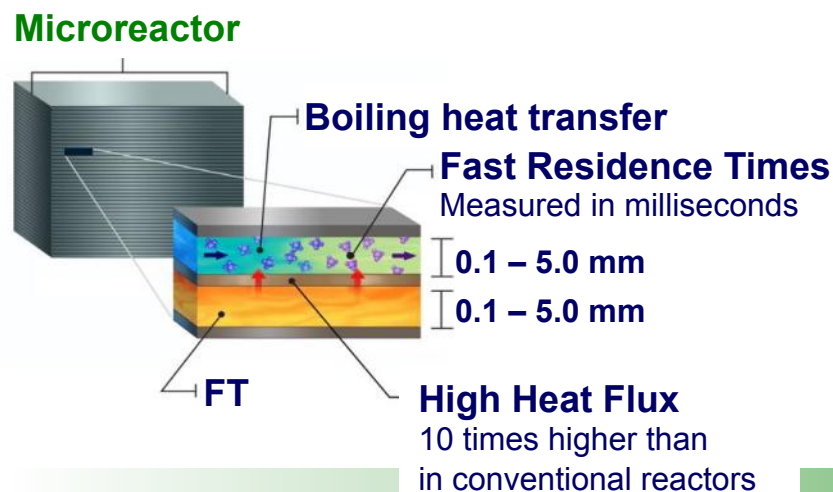
1/4 scale FT reactor
Device: 600mm x 600mm x 150mm
Capacity if operated: ~7 barrels/day

Focus Sharpened to XTL Processes

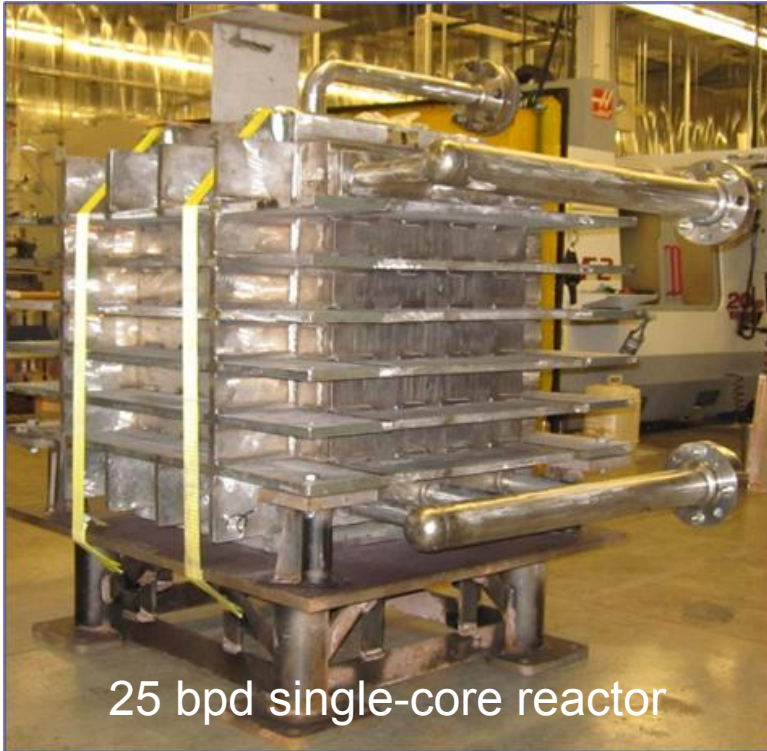
Super active catalyst 



Microchannel reactor 



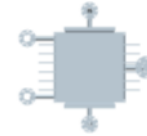
Modular FT Reactor Design



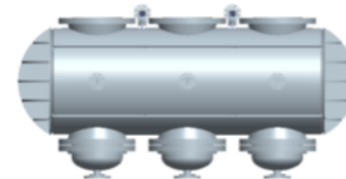
25 bpd single-core reactor

5 Sold

Single-core reactor

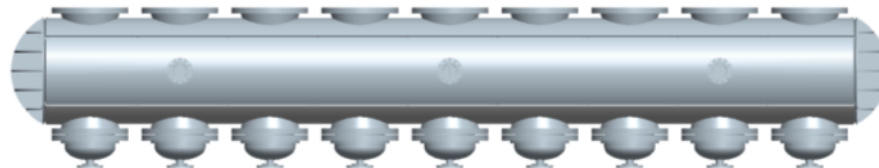


25 bpd



150 bpd

Multi-core reactors



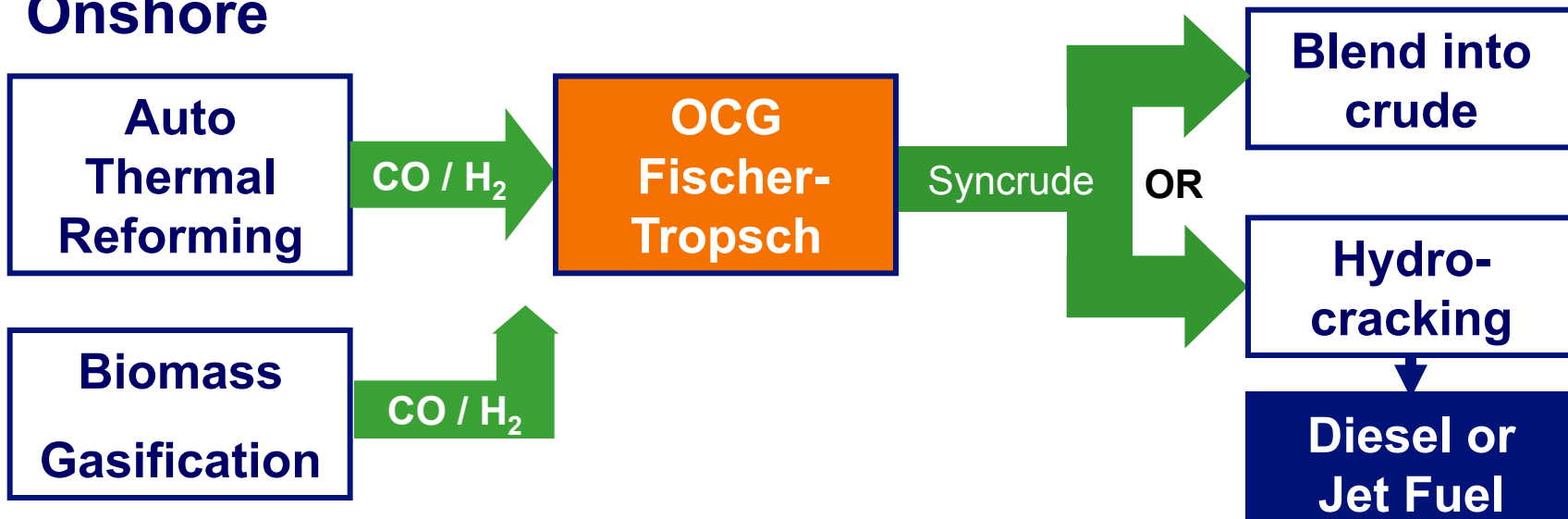
500 bpd

Three Distinct Markets

Offshore

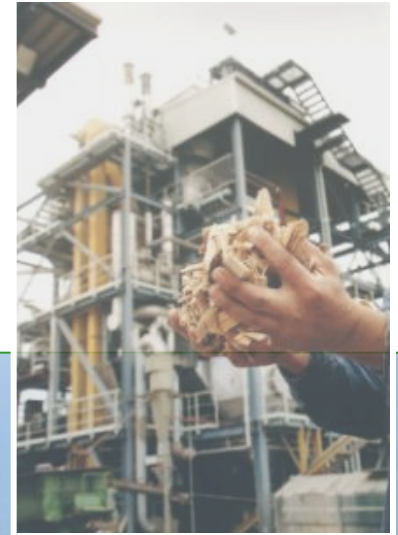


Onshore



Full Scale Layer Reactor Demo'

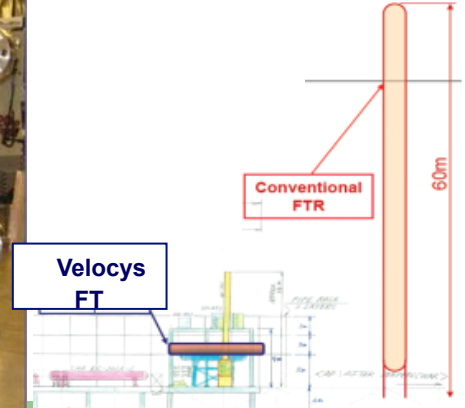
- FT reactor **successfully demonstrated** in Güssing, Austria on gasified wood chip
- Operated summer 2010 to autumn 2011
- Fully funded by BTL partner SGCE



FT demo reactor

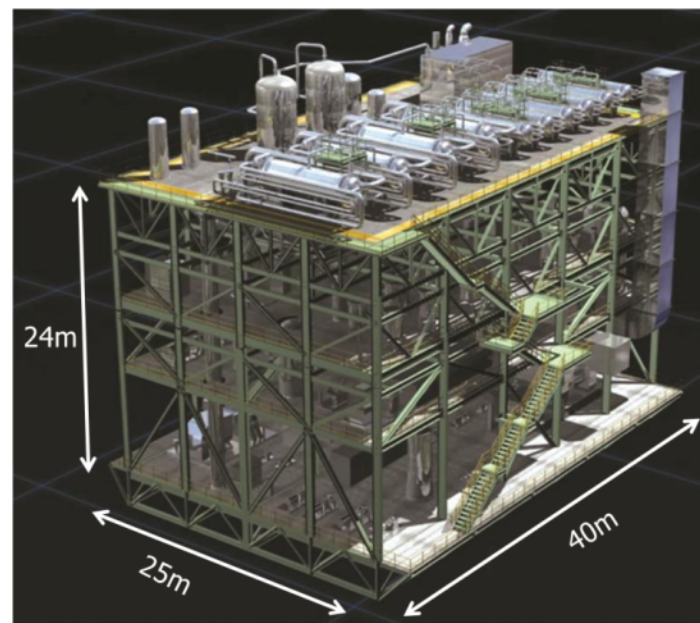
Field Demo' of FT Technology

- Existing facility with FT capabilities
- 25 bpd commercial-scale reactor started in May 2012
- Met performance** criteria
- Results supporting design of **5,000 bpd** commercial facility
- Showcase** for customer visits



Half-core Reactor Demo'

- Hosted by Petrobras at facility in Fortaleza, Brazil
- Full cost covered by Toyo Engineering & MODEC
- 6 bpd demonstration mimics complete FPSO mounted GTL facility
- First milestone** payment received
- Targeting qualification 2H13

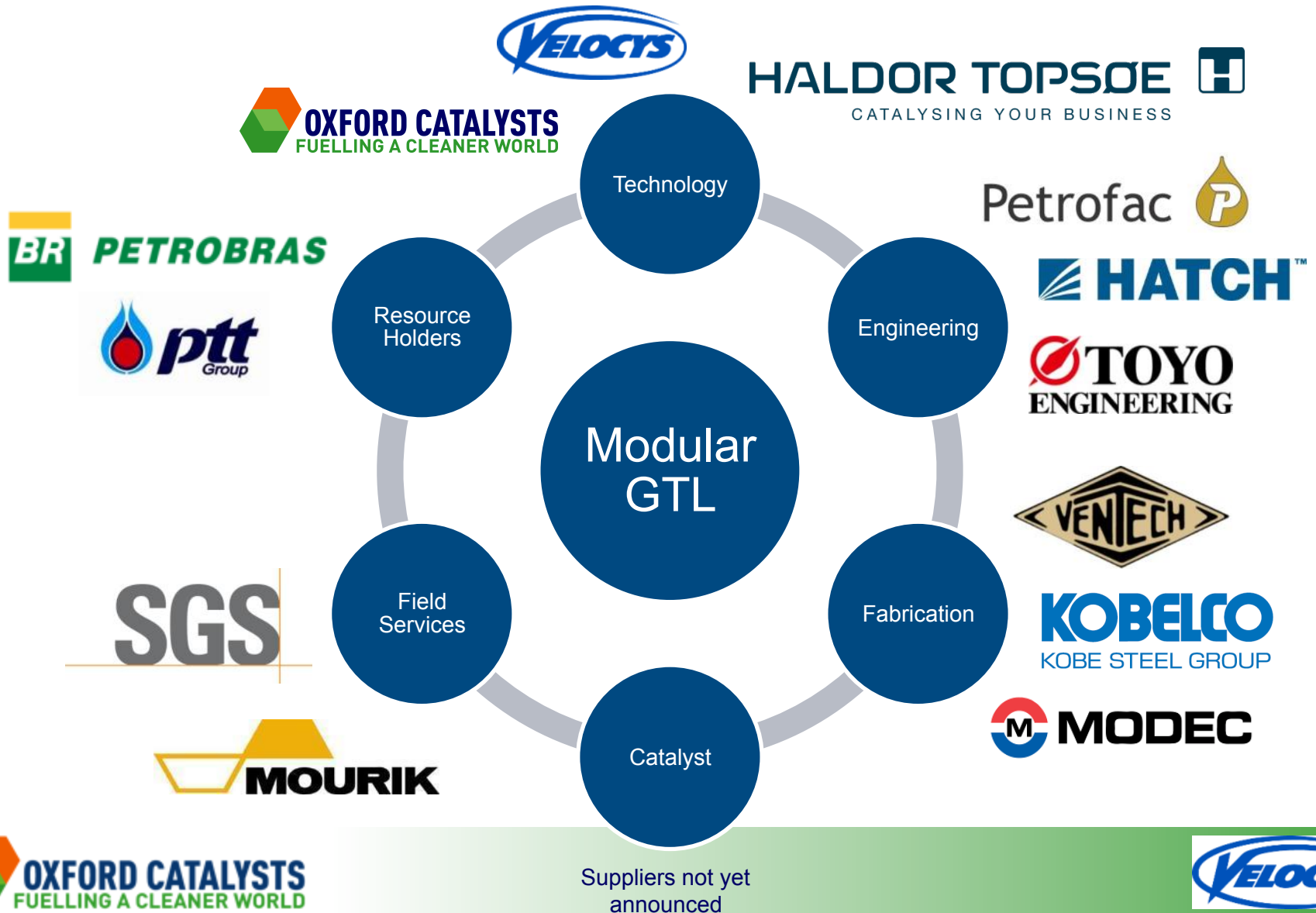


OCG Pilot Plant & Training Facility

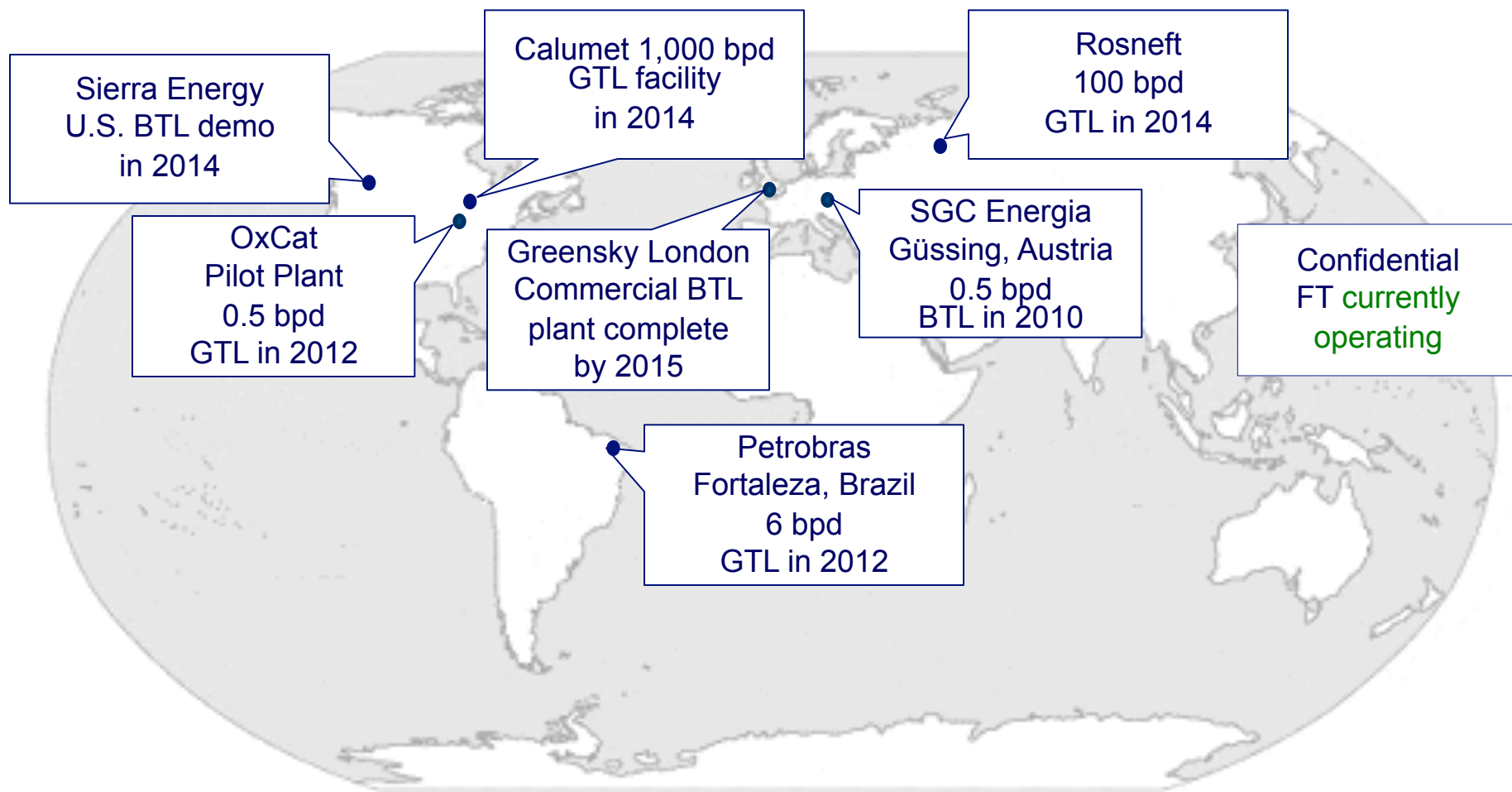
- ◆ **Fully integrated** microchannel SMR, FT & hydro-cracking pilot plant and operator training facility (0.5 bbl/day)
- ◆ Stage I **complete**: SMR operational
 - Stable and robust operation
 - Numerous runs 1-4,000 hrs
- ◆ Stage II SMR & FT: operational YE
- ◆ Will provide integrated performance data to support differing client design needs
- ◆ Will provide permanent training facility for plant operators



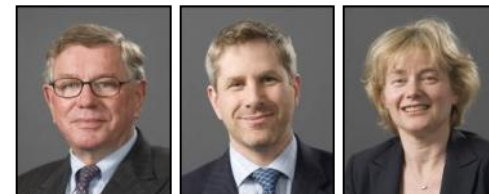
Complete GTL Solution



Facilities with OCG Reactors



Board of Directors



Pierre Jungels, PhD, CBE – Chairman

- 30+ yrs in oil industry: was CEO Enterprise Oil; ED PetroFina; MD British Gas
- Dir.: Woodside Petroleum; Baker Hughes; Rockhopper Exploration

Roy Lipski – Chief Executive Officer

- Founded, managed, grew and later sold technology business to listed company
- Previously at Goldman Sachs

Susan Robertson, FCA – Chief Financial Officer

- 17 yrs with BOC: was CFO and VP of JAG, the £700m Japanese JV with Air Liquide
- Extensive industry experience in commercial, business development & finance roles

Andrew Jamieson, PhD, OBE – Non-executive Director

- 30+ yrs with Shell: was Executive VP; member of Gas & Power Executive Committee
- Leading GTL figure: directed \$ multi-billion p.a. spend, including Shell's Pearl plant in Qatar

Sandy Shaw – Non-executive Director

- 30+ yrs in oil & gas industry including as Group legal counsel and/or commercial director
- Worked for Consort Resources, LASMO, Esso, Marathon and Mobil; founder of Valiant Petroleum

Jan Verloop, PhD – Non-executive Director

- 30+ yrs with Shell in the Netherlands, UK and Singapore
- Was responsible for Shell's strategic innovation and technology vision



Major Shareholders (approx.)

- 📊 Lansdowne Partners: 19.5%
- 📊 Henderson Global Investors: 14.7%
- 📊 Battelle Memorial Institute: 11.6%
- 📊 Ruffer: 8.7%
- 📊 IP2IPO: 5.3%
- 📊 JP Morgan Asset Management: 3.6%
- 📊 Pioneer Investments: 3.5%
- 📊 Directors: 3.5%
- 📊 Professor Malcolm Green: 3.1%
- 📊 University of Oxford: 2.6%

Market Capitalisation: approx £85M

Thank You