



University gives access to pilot infrastructure: Swansea University case

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Pilots4U Workshop: Scale me up, Scotty

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Information:

- Located in Wales, UK
- > 20000 Students
- Two campuses
- 7 Colleges (Science, Engineering, Management, Law, Arts & Humanities, Human & Health Science, Medicine)
- Engagement and collaboration with > 200 companies
- Several EU & UK projects involvement



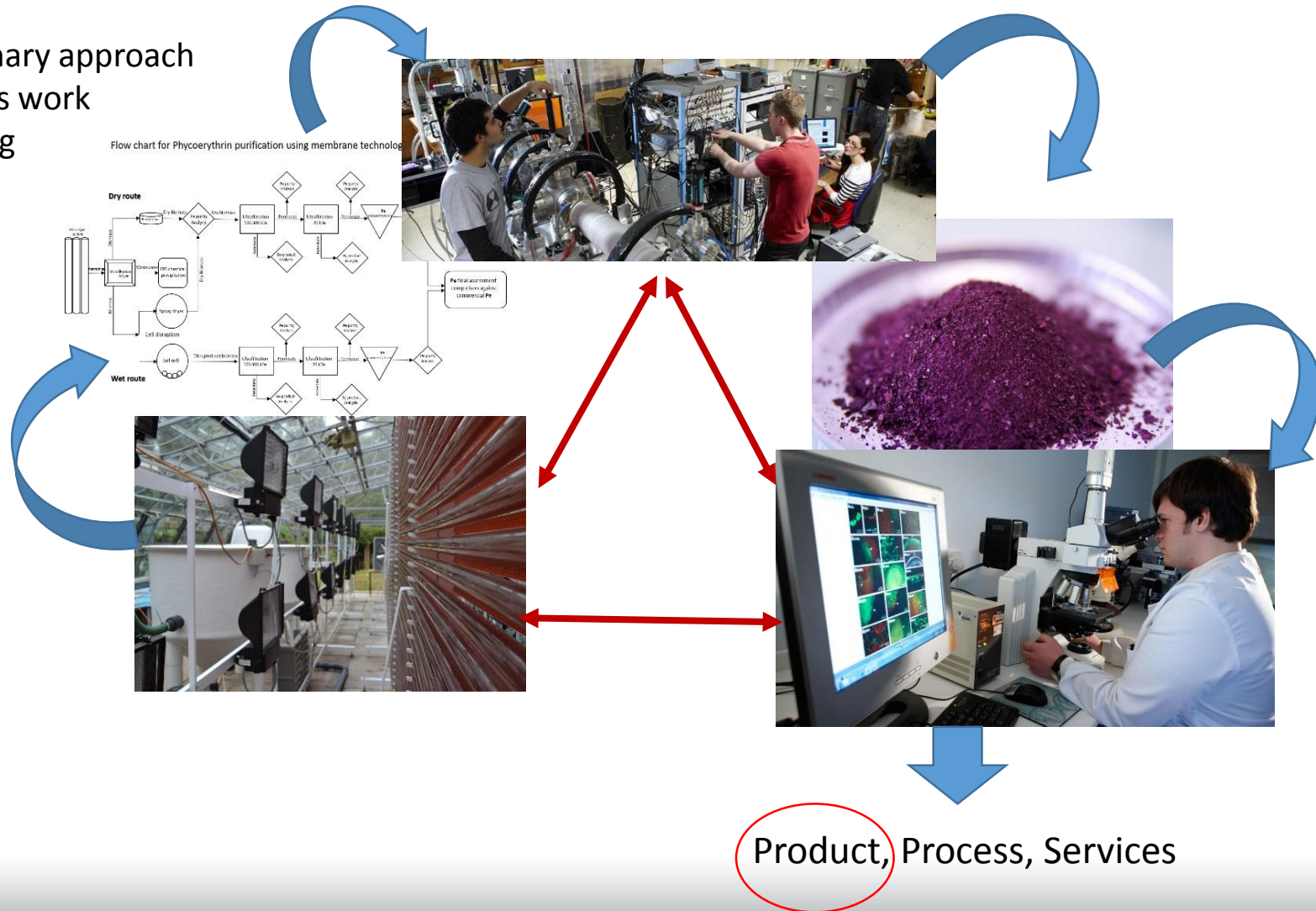
Bay campus



Singleton campus

Swansea University research approach

- Multidisciplinary approach
- Inter-Colleges work
- TRL advancing



College of Science microalgae projects

Transnational experience

Swansea University (SU) has been involved with 6 EU funded microalgae-related projects and several national and international microalgae projects, including projects in which algae formed the nutritional support for aquaculture, as well as where the algae themselves were the end product. E.g. SU led the €13M INTERREG IVB North West Europe programme “Enalgae” that brought together 19 partners and 14 observers across 7 EU Member States.

- ✓ Enalgae
- ✓ Macrobiocrude
- ✓ A4B
- ✓ Maribe
- ✓ Accomplish
- ✓ Phycopigment
- ✓ Enhance microalgae
- ✓ P4U
- ✓ Alg-AD
- ✓



ENHANCE
MICROALGAE



Company engagement scheme

Company-Industry contact (what are their needs: Product?, Process?, Services?)



Company-University project proposal (National?, EU?, International?, Consultancy?)



Company-University project implementation and development



Company-University project results delivery



Company-University future project engagement

Access to pilot infrastructure

- Companies are allowed to use SU facilities through different schemes
- Access to all the facilities (Science, Engineering, Medicine.....)

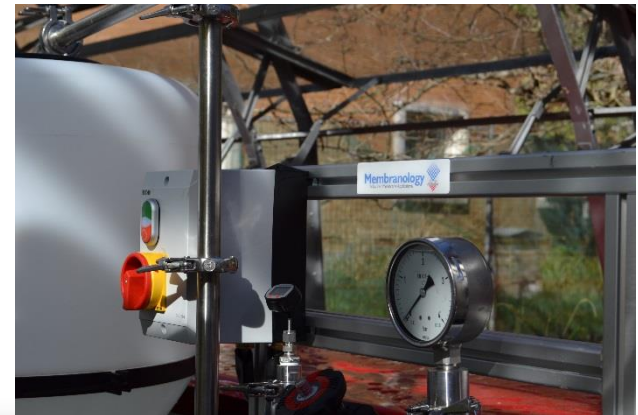
Example:

Up-scale

- Master temperate culture room (Indoor conditions): + 25 microalgae species.
- Medium scale temperate room (Indoor conditions): To scale-up from 250 ml flask culture, 1L flask, 20L carboys, and 80 L bags (x 20 bag in total)
- Pilot scale greenhouse (Outdoor conditions): 140 m² controlled temperature greenhouse. 2x800L Biofence, 1x400 L Biofence, 1x2000L Vertical PBR, 1x1000L Internal LED reactor.

Down-scale

- 200L Membrane (0.2 micron)
- 20L Membrane rig (0.2 micron)
- 20L Membrane rig (500, 300, 100 Kda & 10 Kda)
- Freeze Dryer
- Spray Dryer
- Bead mill
- High pressure homogenization.....



Successful company-academy interaction: TATA – SU example

✓ Accomplish (2015)

Tata Steel Europe Limited [GB] | <https://www.tatasteleurope.com/ri/uitiset/uitiset/2015/port-talbot-hosts-project-to-test-how-steelworks-algae-can-combat-climate-change>

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Port Talbot hosts project to test how steelworks algae can combat climate change

5 Jun 2015 | Corporate News

A partnership project is showing how Tata Steel and Swansea University are developing technology to manage carbon dioxide produced as a by-product of steelmaking operations.

The collaboration known as ACCMPLUSH (Algal Carbon Capture and BioMass-Linked Supply chain) is a unique pilot which is part of a wider Swansea University project, EnAlgae. Based at the Port Talbot steelworks, the project is analysing the capacity for natural algae to use carbon dioxide as a nutrient for growth. The project contributes to Tata Steel's commitment to reducing unavoidable carbon dioxide emissions from manufacturing operations.

'Bio-reactors' similar to the research units at Port Talbot were on display at the recent Hay Festival as part of Tata Sons' sponsorship of the event. The display's purpose was to inform and educate festival-goers about the potential of algae as a sustainable resource.

Tata Steel's Technical Director, Martin Brunnock, said: "We are committed to further improving the sustainability of our processes. It is projects like this, with leading academic partners, such as Swansea University here in Wales, which are making us leaders in the field of sustainable steelmaking."

✓ RICE (2018) £9M

Tata Steel Europe Limited [GB] | <https://www.tatasteleurope.com/en/news/news/tata-steel-and-swansea-university-open-new-research-institute>

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Tata Steel and Swansea University open new research institute

8 Feb 2018 | Corporate News

First Minister of Wales Carwyn Jones today opened the **Steel & Metals Institute, a long-term research and innovation collaboration between Tata Steel and Swansea University.**

The opening marks a new approach to Tata Steel's UK R&D, with facilities now based at Swansea University and the University of Warwick. Engineers and researchers at the Institute will be working on a range of new materials to meet the emerging need for next-generation steels for hybrid and electric cars, energy-efficient homes and buildings and innovative food packaging.

The Steel & Metals Institute is the forerunner to the UK National Steel Innovation Centre, which will be funded through the Swansea Bay City deal and is due to be operational by 2020.

Today's event was attended by Bimendra Jha, Tata Steel UK's CEO, and Professor Richard B. Davies, Swansea University's Vice-Chancellor.

Bimendra Jha said: "Swansea University, together with the University of Warwick, is part of our two hub strategy for collaborative research and development with universities. Integrating this new facility at Swansea with our existing network of researchers at different universities in UK is a stepping stone to our win-win approach to innovation.

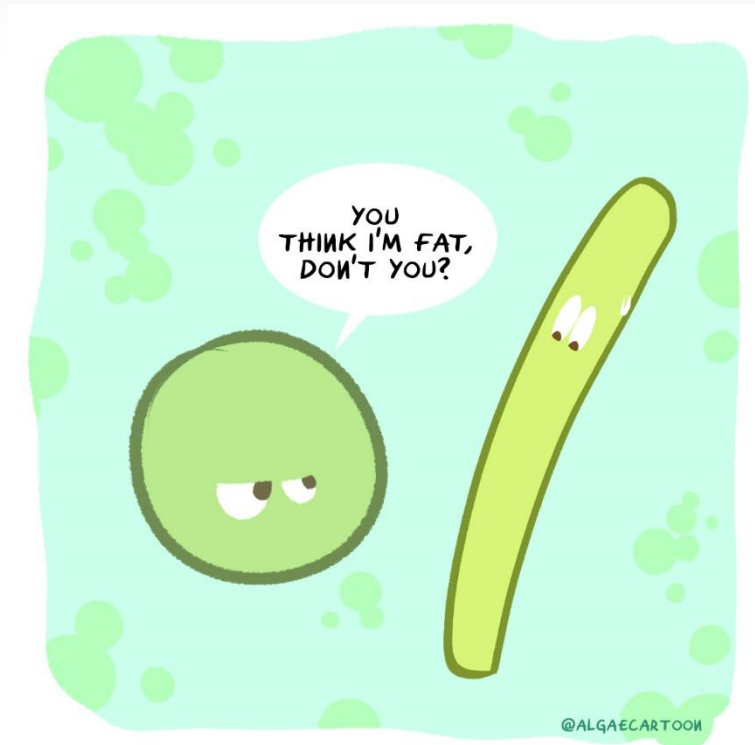
"Researchers get real world problems to solve and Tata Steel brings its expertise and resources to give wings to innovative ideas."

Tata Steel's ties with UK academia are already well rooted funding six professorial chairs at the universities of Warwick, Oxford Brookes, Cambridge, Cardiff and South Wales, and Imperial College London while more than 80 researchers work directly for Tata Steel.

Professor Davies said: "We are delighted to be collaborating with Tata Steel. Advanced steels research is crucial for the nation, and for manufacturing. This move shows Tata Steel's long-term commitment to research and development within the UK."

Ernst Hoogenes, Tata Steel Europe's head of R&D, said: "Opening this new R&D centre at Swansea University is a major step towards consolidating and strengthening our R&D in the UK. This will help us accelerate our open innovation activities and will lead to exciting new steels to give our customers a competitive edge."

Many Thanks!!



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