

Priority Topic Area: **Quality Education, including Lifelong Learning**

1. Aim & Purpose

Our aim is to inform, inspire and influence the next generation of engineers through a novel, engaging and accessible work experience programme, led by early careers.

Chemical Engineering is not a 'school-taught' subject and isn't as accessible as other STEM areas. **We are striving to fill essential skill gaps in chemical engineering;**

- Vacancies for roles in the UK have increased by 55% over the last 5 years^[1]
- Current projections show an annual shortfall of engineers of up to 59,000^[2].

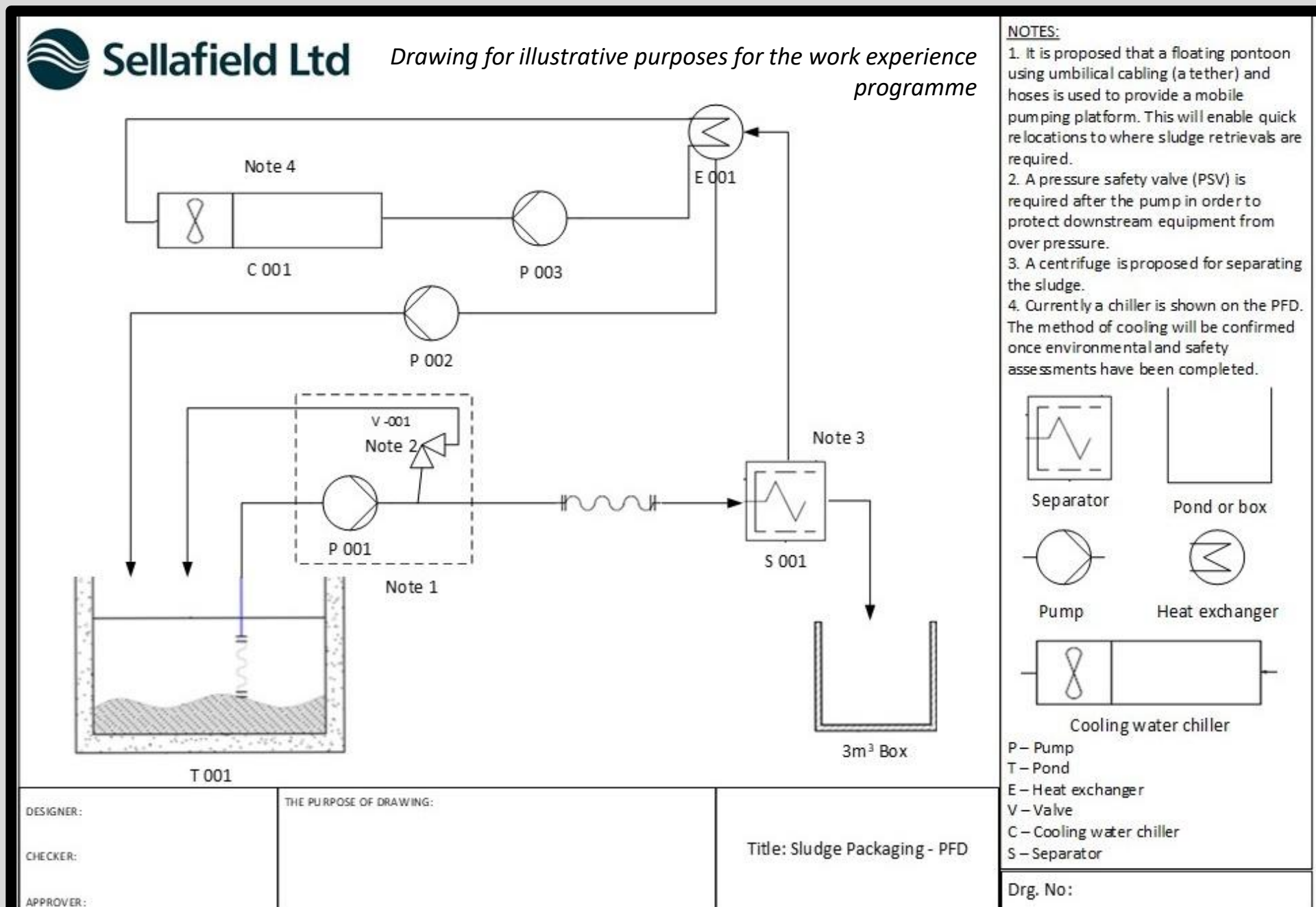
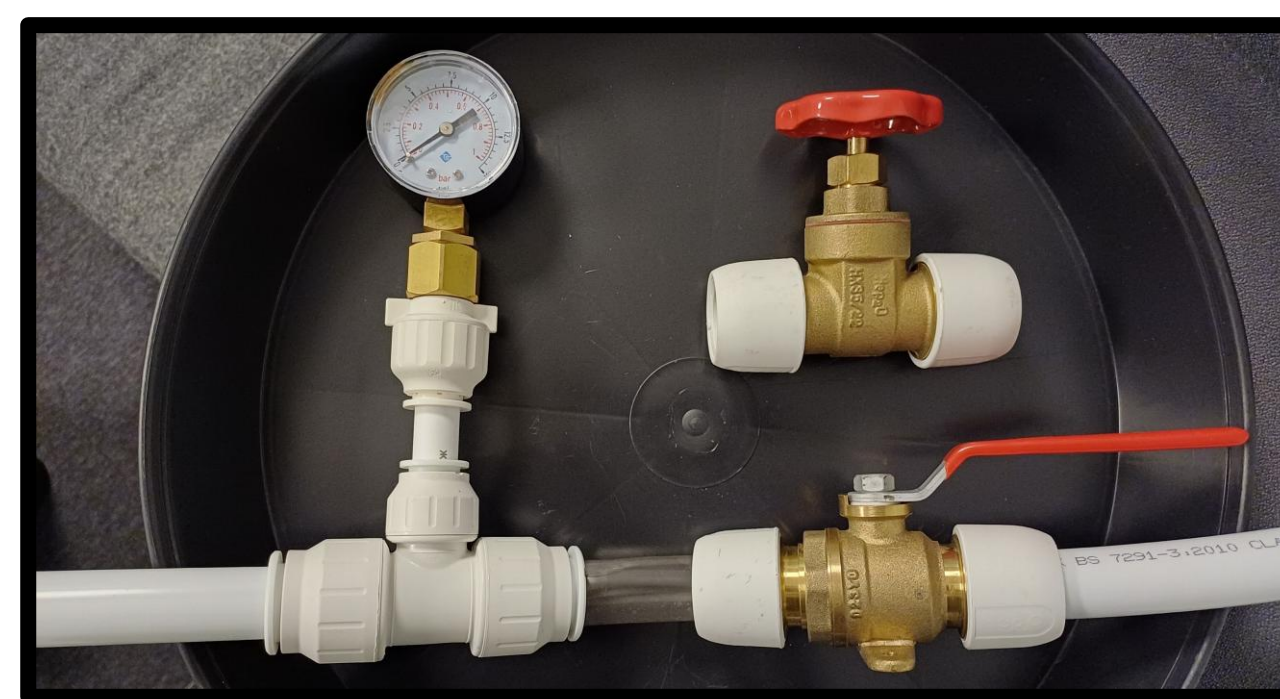


2. Methodology

Using real-world examples, **we introduce what chemical engineering is, then we show them what it is.** We focus on hands-on learning through engaging activities:

- The Design Process – From first principles.
- Senior Engineer Talk – Providing alternative, diverse perspectives.
- Practical - Water Hammer and Reagent System Design.
- Optioneering & BAT Assessment for sludge separation.
- Mass Balance over a student developed P&ID.
- Multidiscipline appreciation.
- Behavioural skills development.
- Highlight career pathways.

All content – workbooks, presentations and practicals – are designed and delivered by Placement Students and Graduates. Feedback and LFE are incorporated to provide accessible support.



3. Evidencing Our Impact

“(My highlight) was the practical as it gave me an insight into how PFDs are turned into actual equipment and processes, and how they work.”

“(I found) mass balance calculations (challenging)... however, I enjoyed trying something new”

“(The highlight was) evaluating separation techniques and doing the calculations to support my views.”

“(taking) leadership in a group... has helped me feel more confident... especially to include less extroverted students (and) include their ideas”

It's not just students that benefit from the work experience. We give early career volunteers the experience of **leading, presenting, organising, and collaborating** early in their professional journey – providing them with an invaluable opportunity to develop key behavioural skills.

Students present their learning at the end of the programme. They regularly say the scheme has made them consider a career in Chemical Engineering, providing evidence of the **lifelong impact**. We have had ~650 students go through our programme with a number of former work experience students returning to Sellafield or venturing into different engineering sectors, showing the **influence we have on the lives and careers of our students**.

4. Benefit to Society

Students begin the week with no knowledge of chemical engineering, or the career pathways open to them. We are **empowering them** to achieve careers in chemical engineering/STEM.

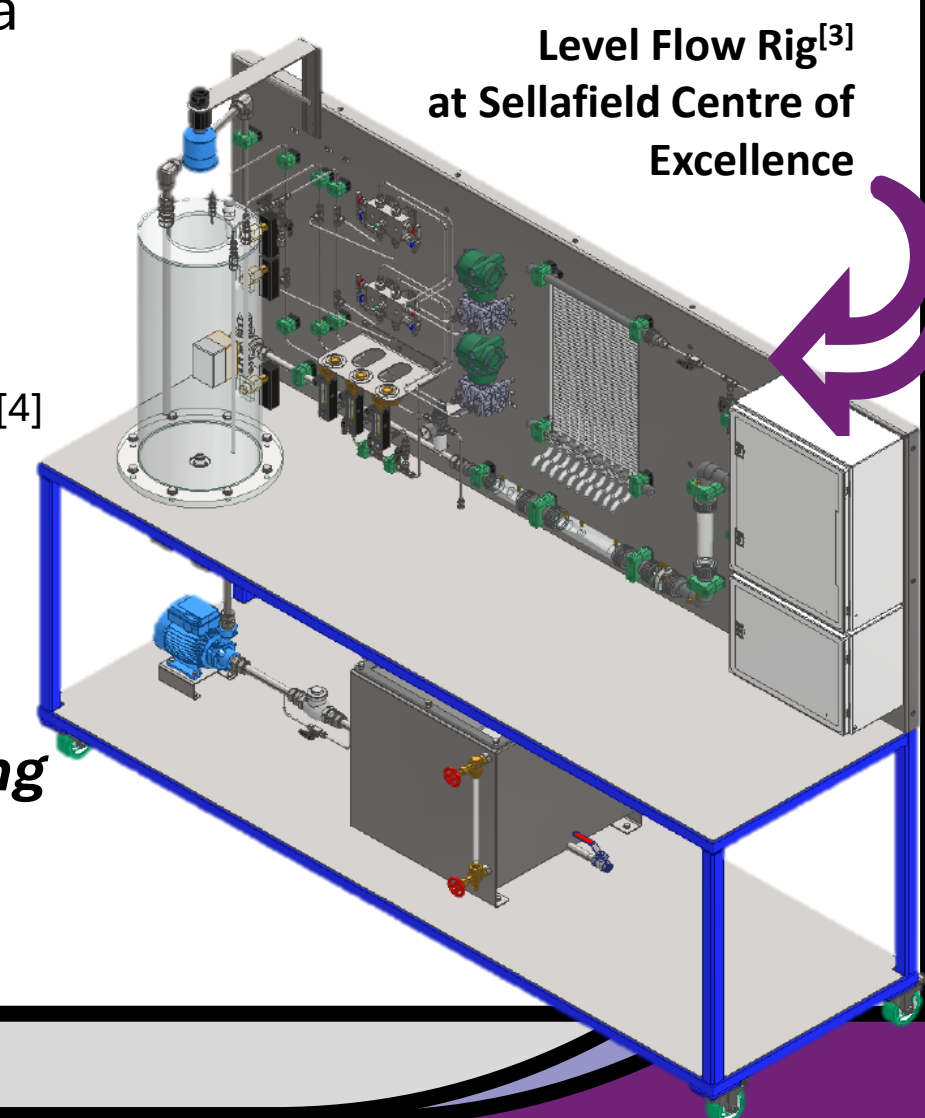
Engaging local communities brings great benefits to society, providing high quality education, by **inspiring a diverse, passionate, and skilled future workforce; benefiting our company and the wider industry.**

Other companies are now looking to adopt our approach for their own work experience schemes.

5. Next Steps

- Programme expansion to our Cumbria site – furthering our reach
- Developing new practicals
- Improving accessibility and content quality
- Alignment to “Skills Builder” Initiative^[4]
- Enhanced sustainability focus

We'll continue to pass down our knowledge and enthusiasm for this programme to future cohorts – ensuring the programme remains by young engineers, for young engineers.



We would like to acknowledge every industrial placement student, graduate, and senior engineer who has supported this work experience programme, particularly Elisabeth Cooke, Kelly-Marie Fulton & Mark Duffy for their support.

[1] IChemE, Demand for engineers increasing, with rapid growth in green jobs, <https://www.icheme.org/about-us/news-releases/>, 24/05/2023

[2] IMechE, Engineering 'could face NHS-like workforce crisis' without skills focus in Industrial Strategy, <https://www.imeche.org/news/news-article/>, J. Flaig, 22/01/2025

[3] Engineering Tools & Consumables Ltd. Level Flow Training Rig Manufacturers Original Instruction Manual

[4] Skills Builder Partnership, <https://www.skillsbuilder.org/>