

A photograph of an industrial facility featuring a complex network of pipes and metal scaffolding. A prominent red pipe curves through the structure on the right side. The background is a clear, light sky.

PROCESS AUTOMATION MSc/PA7

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GAMBICA APPRENTICESHIPS EVENT, 29TH SEPTEMBER 2020

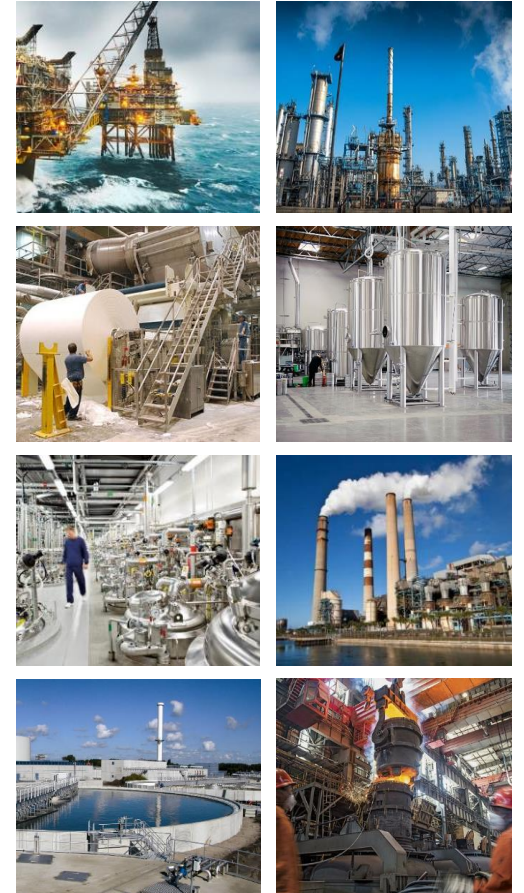
PROCESS AUTOMATION

- This presentation concerns the level 7 non-integrated degree apprenticeship in process automation (PA7):
 - offered by the Engineering Dept of **Lancaster University** with effect from Sept 2020,
 - based upon a part-time **MSc** degree delivered on a continuing professional development (**CPD**) basis,
 - PA7 is aimed at, and designed around the needs of, young engineers working in the sector whose job function is in process automation.
 - funding is available for PA7 through the training levy of **£27K per apprentice**.



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- The chemical & process industry sector is **diverse**: water, pharma, biochemicals, agrochemicals, food and drink, water, pulp & paper, power, oil & gas, nuclear, etc.
 - products are usually **materials**, not parts, assemblies ...
- Plant and equipment used is specialist, tends to be large, integrated, and is invariably monitored, controlled and operated automatically:
 - control systems more **complex** than the plant itself,
 - process automation is about the design, development and support of such systems,
 - there is an on-going need for **personnel** with relevant expertise and experience.



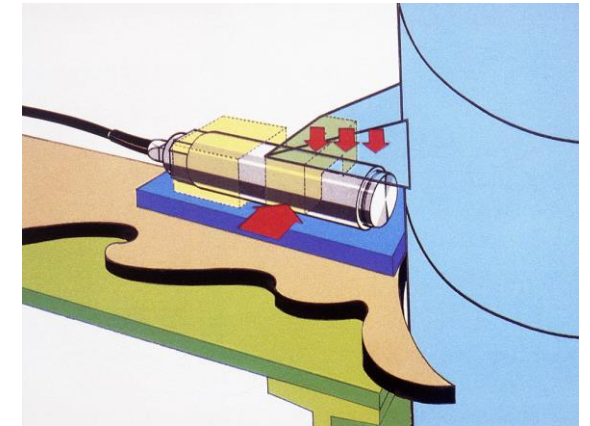
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- The 'trailblazer group' responsible for PA7 was **PACT**:
 - the Partnership in Automation and Control Training,
 - established in 1992, an association of companies and industry bodies from the sector,
 - **healthy mix** of end-users (operators), contractors (EPC) and suppliers (vendors),
 - memorandum of understanding (**MoU**) between PACT and Lancaster University underpins long-term support.
- **Current members:** ABB, Astra-Zeneca*, Aveva, BP, Emerson, GSK, Honeywell, SABIC, Sellafield, Worley plus EEMUA and GAMBICA. *subject to confirmation

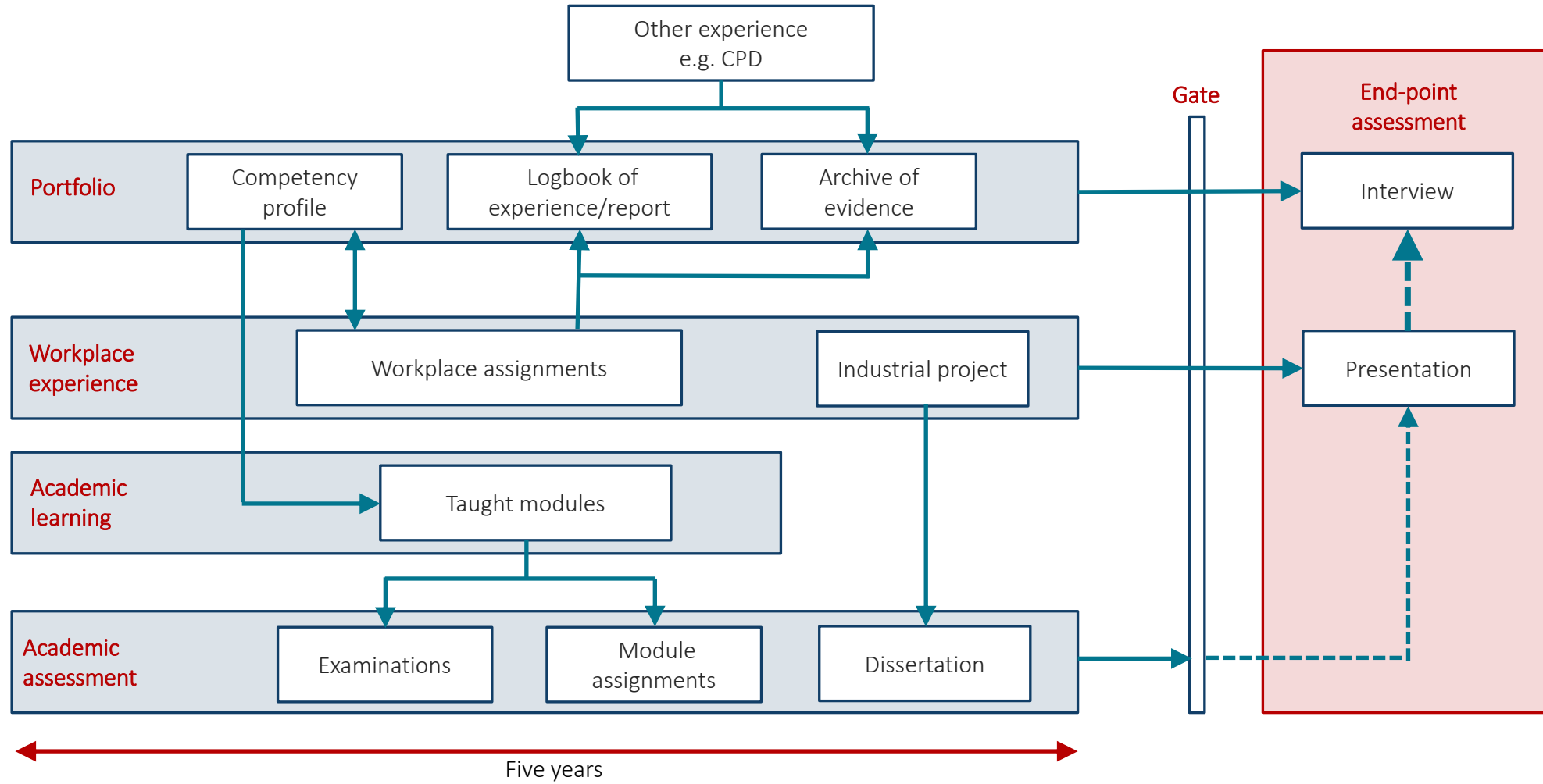


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- The **structure** of the MSc/PA7 is as depicted on next slide:
 - note the 5-year time scale for completion,
 - mix of **academic** learning and **workplace** experience, each complements the other,
- **Learning**, 12 generic programme learning outcomes (**PLO**):
 - apprentices do 8 **taught modules** + industrial project,
 - typically 2-3 modules/yr. over 3-4 years,
 - re-accreditation of MSc subject to confirmation.
- **Experience**, 26 specific knowledge skills and behaviours (**KSB**):
 - acquired through **employment-based** jobs, tasks, projects, etc., referred to as workplace assignments.

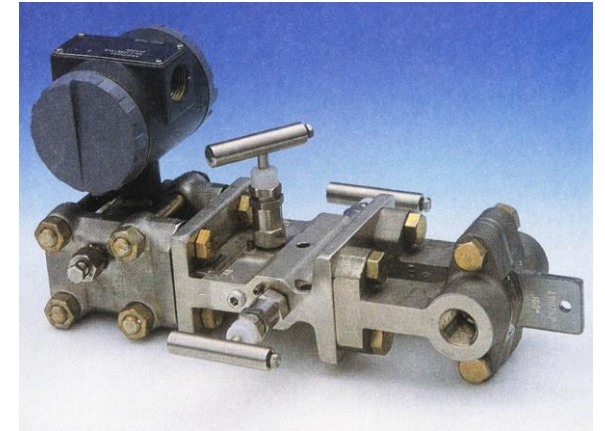


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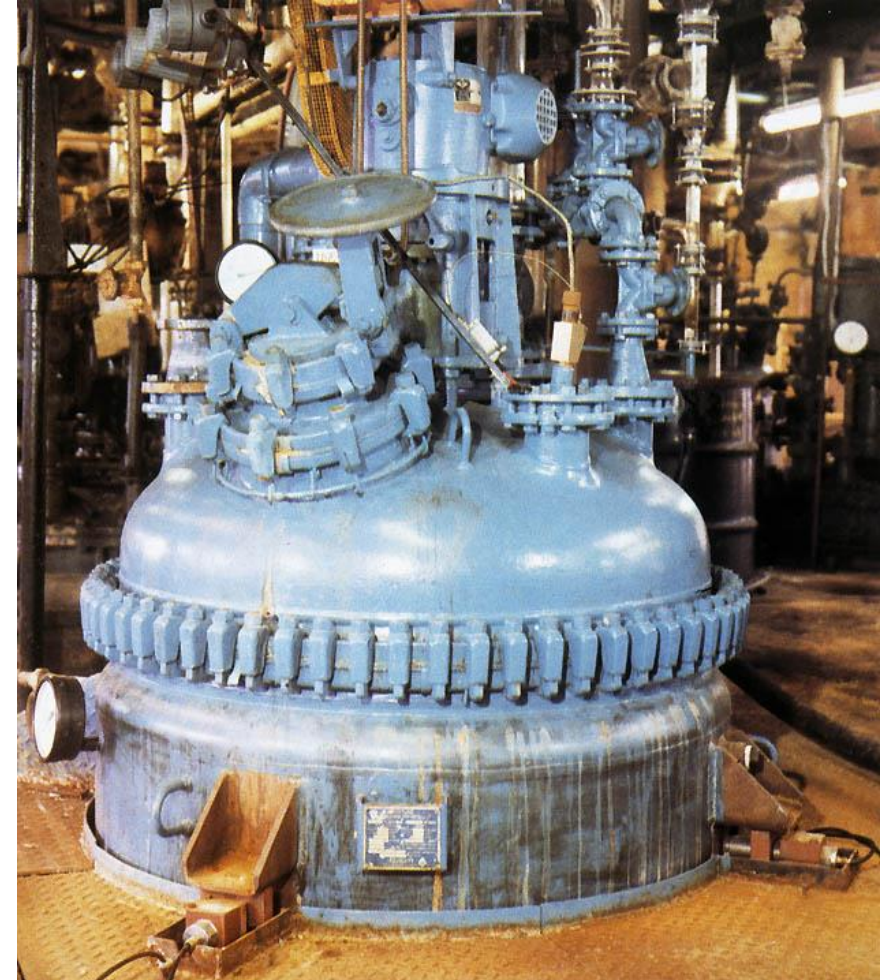
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- **Conventional** academic assessment: written exams, reports on assignments and dissertation on industrial project.
- Assessment of experience based upon **portfolio**:
 - competency profile, logbook and archive of evidence.
- **Competency profile** is key:
 - a plan which **evolves** over the 5-years,
 - involves **mapping** of opportunities to acquire KSBs onto apprentices' work profile,
 - **shapes and is shaped by** workplace assignments,
 - industrial **mentor** signs off KSBs when acquired,
 - detailed **guidance** in end-point assessment (**EPA**) plan.



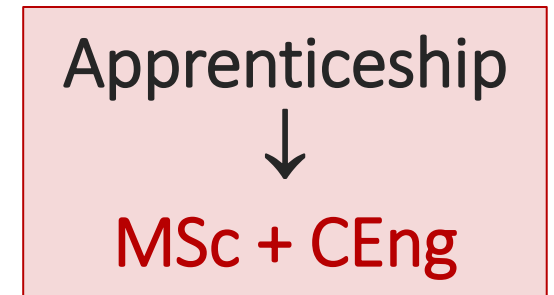
PROCESS AUTOMATION

- Suite of 13 modules, **choice of 8 out of 13:**
 - Advanced Process Automation
 - Advanced Process Control
 - Chemical Engineering Principles
 - Classical Control Systems Design
 - Control Schemes and Strategies
 - Control Systems Technology
 - Functional Safety and Security
 - Instrumentation and Measurement
 - Management of Automation Projects
 - Modelling and Simulation
 - Modern Control Systems Design
 - Optimisation and Scheduling
 - Process Analytical Technology

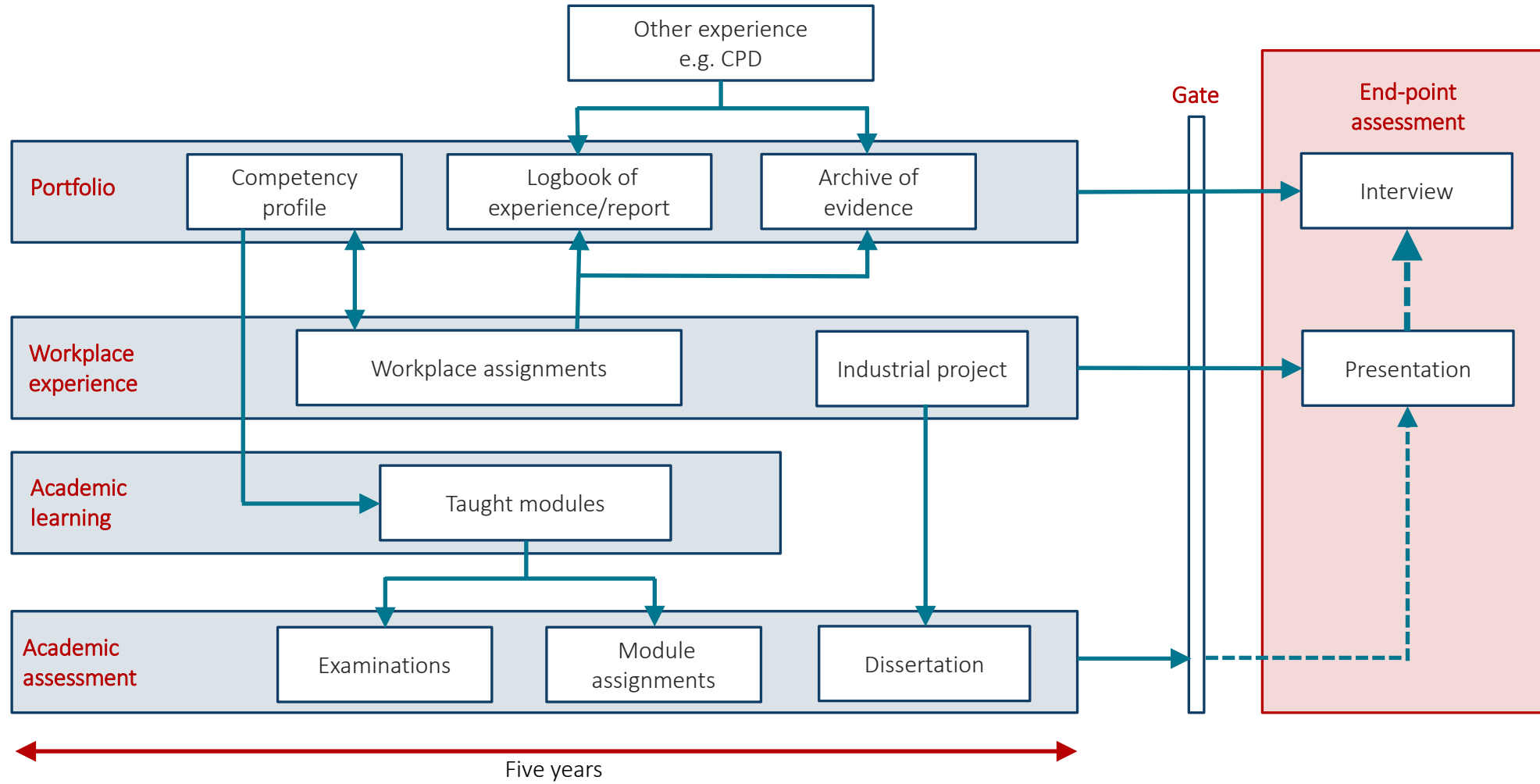


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- **Gate** to end–point assessment (EPA):
 - portfolio completed,
 - MSc awarded (but not necessarily conferred).
- EPA consists of presentation and interview:
 - **presentation** based on industrial project,
 - **interview** conducted by representative of independent assessment organisation (**IAO**).
- EPA for PA7 is pitched at **CEng** level so intent is that professional body becomes IAO for EPA:
 - IET agreed in principle, IChemE and InstMC to confirm.

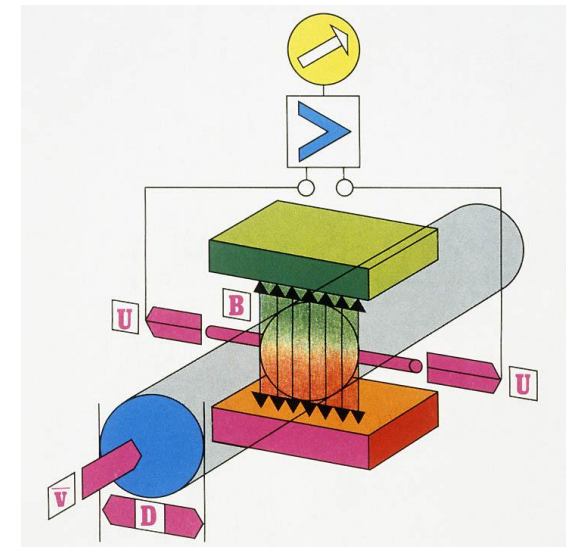


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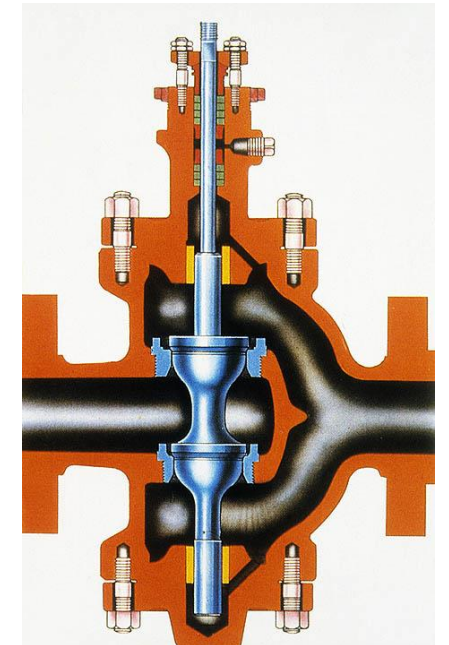
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- Lancaster University is the **main provider** for PA7.
- **£27,000** available per apprentice to cover **MSc/PA7**:
 - £21,000 for **MSc**: £2,100 per module + £4,200 for industrial project.
 - £6,000 for **overheads** (EPA, QA and admin) of PA7.
- **Essential criteria** for admission to MSc/PA7:
 - BEng or equivalent in appropriate **discipline**,
 - English nationality/**residency** (for PA7),
 - **employment** in chemical/process industry,
 - **job function** in area of inst'n, control and automation,
 - **sponsorship** by employer (for PA7).



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- Companies are **already** paying the training levy and entitled to claim (SMEs can claim too):
 - it's a question of getting **your own money** back to invest in staff development.
- Institute for Apprenticeships & Tech Education reference **ST0407**.
- Full details of the standard, EPA, etc, found at:
<https://www.instituteforapprenticeships.org/apprenticeship-standards/process-automation-engineer-degree/>
- Further information under the 'study' tab at:
<https://www.lancaster.ac.uk/engineering/>





THANK YOU

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