Progress WP1 activities task 1.2&1.4

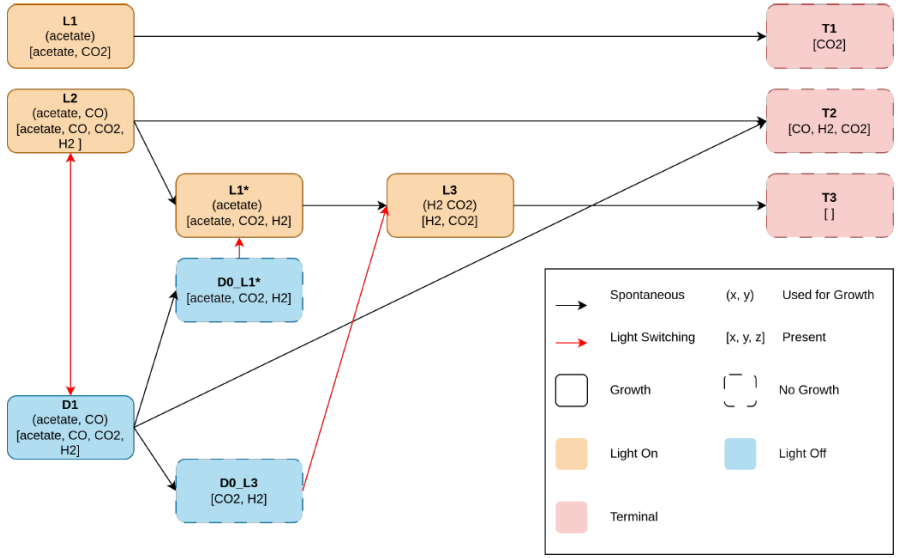


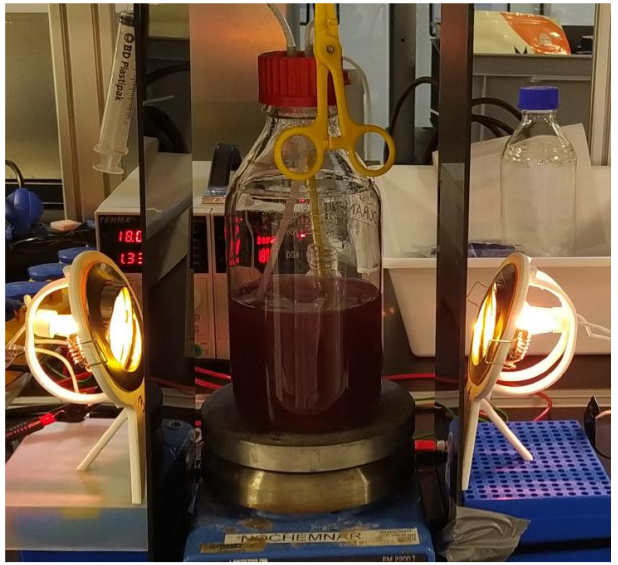

Manon Seyer (CEG/AS), Mar Palmeros Parada (CEG), Samarpita Roy (AS), Ralph Lindeboom (CEG)

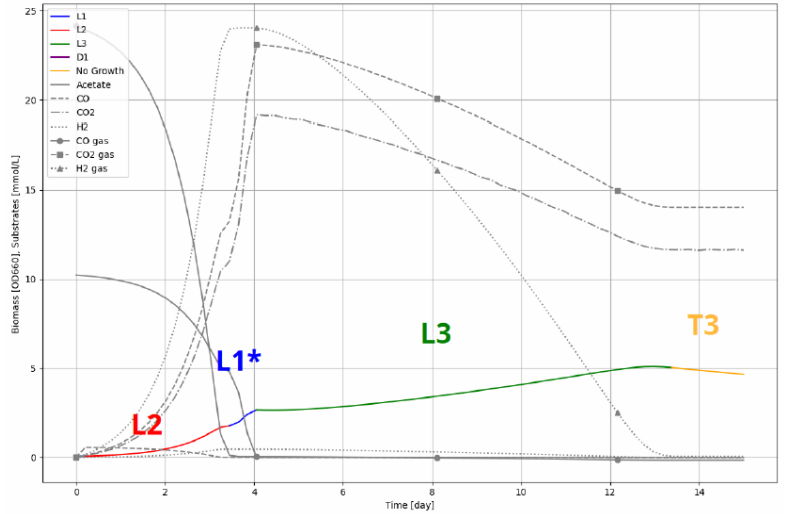
3-6-2026

Task 1.2 – Optimisation FBPW and syngas 1/2

- Feasibility study - CO utilization by *R. rubrum* (fed-batch) – completed and submitted as abstract for 2nd Photorefinery conference (Kiss et al. 2026 – submitted)
  - Key take-away 1: transition from photoheterotrophic to chemoheterotrophic metabolism on adapted growth medium /synthetic fruit juice and CO is feasible but will reduce growth rate significantly
  - Key take-away 2: mixotrophic (dark/light) growth rate *R. rubrum* of on CO and VFA can be simulated – more batch experiments needed for improved parameter estimation







Task 1.2 – Optimisation FBPW and syngas 2/2

- Optimisation FBPW (Manon)
- Research design & experimental plan – completed
- Experimental Setup in-progress (with delays):
  - Risk assessment for lab experiments – completed
  - Training on equipment/ preparation medium – on-going
  - UV-VIS methods ok, HPLC/LCMS methods on-going
  - Culture provided by Umons
  - Temperature room provided by Waterlab
  - Light setup batch – internal official costs (~8000 euro + labview)

    manual construction (temporary) ➔ then alternative PLC (suitable for 1.4)

Task 1.4 - Discontinuous lighting strategy

- Proposed dark/light strategies – electricity-price based (Manon)

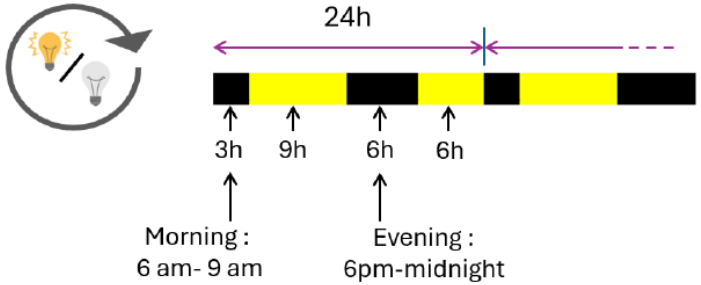
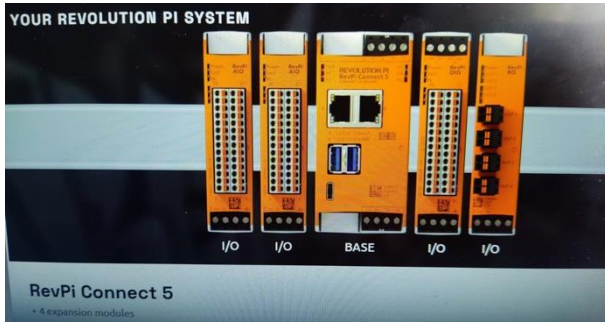


Figure 4: The 3D-9L-6D-6L cycle

- Method for calculation of minimum required growth rate for financial feasibility (Manon)

Total growth rate (h-1)		*factor f*		
		0	*-0.025*	*-0.08*
growth rate in the dark (h-1)	*0.03*	0.074	0.067	0.053
	0.0465	0.085	0.073	0.042
	0.063	0.086	0.080	0.065

- Code + PLC in development for real-time control including grid interaction (Ali Moradvandi – other project)



TU Delft