



Keynote Session	Leading Pilot Facilities for the Bioeconomy (Pilots4U)
Title	The scale up journey of a continuous fermentation process
Company	ATV
Speaker	Guillaume Le Cloirec
Keywords feedstock (max 2)	GMO Yeast
Keywords technology (max 2)	Continuous fermentation
Keywords End-Product (max 2)	Dairy Protein
Abstract:	
The bio-manufacturing sector is undergoing a paradigm shift driven by the need for higher productivity, reduced costs, and more sustainable industrial processes. Conventional fed-batch fermentation, while established, faces limitations in operating expenses (OPEX) due to high water and energy consumption, as well as significant capital investment (CAPEX) requirements for large-scale facilities. In response, continuous fermentation is offering a transformative solution, offering superior productivity, improved automation, and reduced downtime, while drastically lowering CAPEX and OPEX. ATV Technologies leverages its facility and CDMO services to accelerate innovation and industrialization in biotechnology and green chemistry. In partnership with Pow.Bio, ATV has developed a stepwise scale-up strategy for continuous fermentation, progressing from laboratory proof-of-concept to pre-industrial runs. The scale-up trials were conducted using a <i>Pichia pastoris</i> strain, with successive validation stages and integration of predictive modeling tools (CASSIE). Continuous fermentation was successfully demonstrated at 300 L and scaled to 3,000 L for over 300 hours. Results highlight robust process performance with up to three times the productivity compared to fed-batch fermentation, achieving 25 kg of product over 300 hours. The successful demonstration of continuous fermentation at pilot scale paves the way toward industrial implementation and redefines industrial biotechnology.	