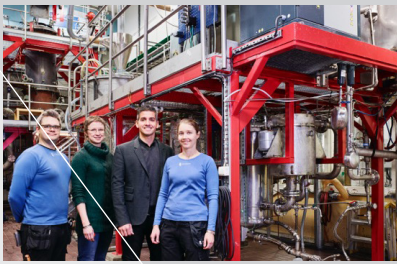


Biorefinery Pilot Research, 5 hp

PhD Course within the Bio4Energy Graduate School

Bio4Energy is a research environment based in northern Sweden. Its 220 researchers deliver methods and tools for making biofuels, “green” chemicals and bio-based materials. Appointed by the Swedish government as a Strategic Research Environment in bioenergy and biorefinery, it includes researchers from three universities and several of the RISE Research Institutes of Sweden. Umeå University, Luleå University of Technology and the Swedish University of Agricultural Sciences at Umeå are academic members, working in collaboration with RISE Energy Technology Center, RISE Processum and a part of RISE Innventia. The research environment includes an industrial network of 21 founding members.

BIO4ENERGY

This is an invitation to participate in the **Biorefinery Pilot Research** course hosted by the Bio4Energy Graduate School in collaboration with RISE Energy Technology Center (ETC) and RISE PROCESSUM within RISE Bioeconomy. The course consists of three parts, where part 1 starts **2 September 2024**. The course is suited for people interested in the future of biorefineries, especially students at doctoral and postdoctoral levels, as well as people from industry who want to increase their knowledge and insight into the innovation chain.

Objectives

- **The course will provide an overview of**
  the biorefinery technologies represented in the pilot/demonstration scale facilities within the Bio4Energy environment.
- Insight into various approaches for physical upscaling of research facilities and examples of challenges and benefits when performing research in large-scale facilities.
- Understanding of the societal landscape for taking biorefinery research to implementation.
- Access to interdisciplinary exchange through networking activities with the participants.

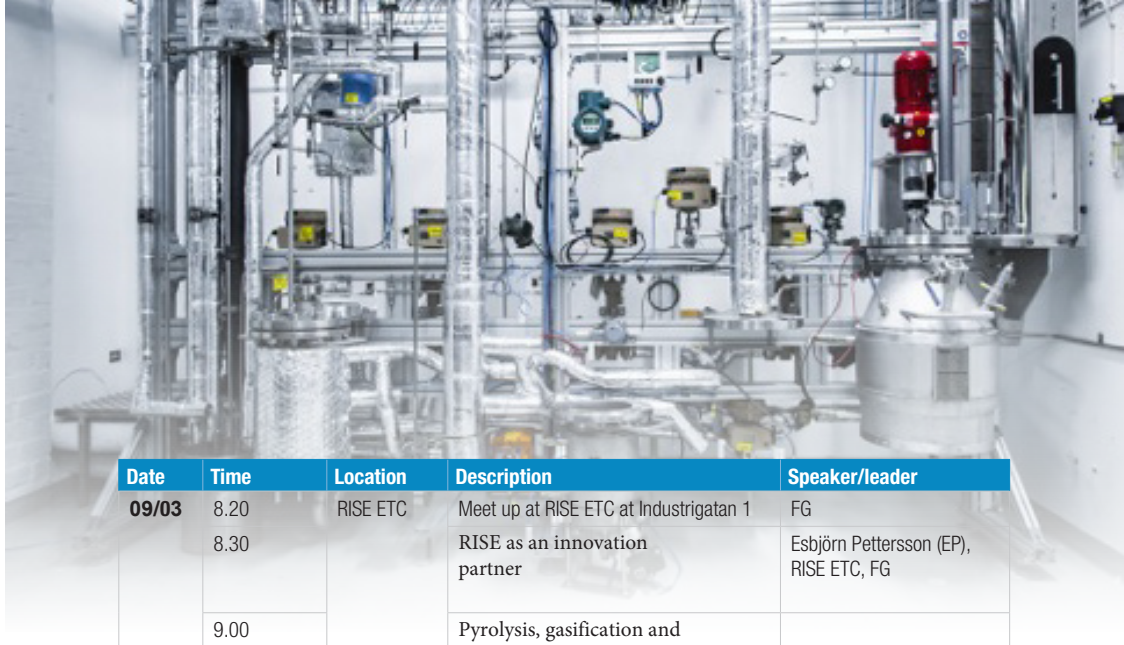
Contents

- On-site at pilot and demonstration facilities: Demonstrations, lectures and interactive seminars.
- Biorefinery pilot and demonstration R&D: Concepts of technical innovation system, knowledge and skills of importance issues in pilot and demonstration R&D: Lectures, literature and interactive seminars.
- Technology upscaling within your own research field: Group/individual work to describe, compare, and discuss the current state-of-the-art (approaches, bottlenecks, actor constellations, etc.) – Written report and examination seminar.

Preliminary program and dates

Part 1, Piteå 2 -- 4 September 2024

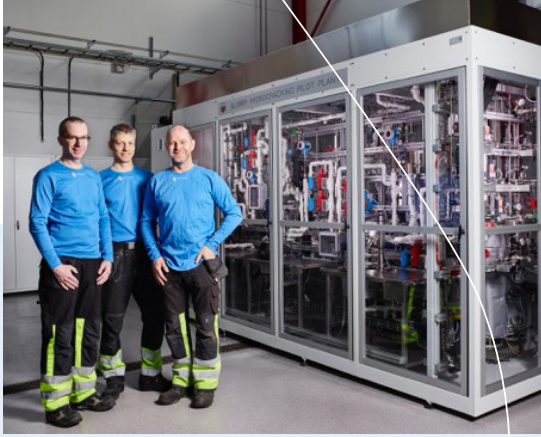
Date	Time	Location	Description	Speaker/leader
PITEÅ 09/02	11.30	Hotel Piteå	Gathering and checking in	Francesco Gentili (FG), SLU
	12.00		*Lunch*	
	13.00		Welcome and Introduction	FG
	14.00		Introduction to innovation system roles	Mats Tysklind (MT), UMU
	14.20		Innovation system roles – group seminar + *Coffee*	FG & MT
	15.40		Introduction to Technical Innovation Systems (TIS) and the strategic value of pilot and demonstration plants	MT
	16.30-17.00		Introduction to Pilot project assignment	FG
	17.30		*Dinner*	
	18.30-20.00		*Socialising & networking*	



Date	Time	Location	Description	Speaker/leader
09/03	8.20	RISE ETC	Meet up at RISE ETC at Industrigatan 1	FG
	8.30		RISE as an innovation partner	Esbjörn Pettersson (EP), RISE ETC, FG
	9.00		Pyrolysis, gasification and upscaling of a pyrolysis plant	
	13.00		*Buffé lunch and networking*	RISE ETC
	14.00		Pilots and testing facilities: Group work	RISE ETC
	18.00		Summary	EP & FG
	19.00		*Dinner*	
	21.00		*Transportation to* **accommodation**	
09/04	8.50	SunPine	Meet up at SunPine, Cisternvägen 53	FG
	9.00		SunPine 	SunPine staff
	10.30		LTU Green Fuels gasifier	Fredrik Granberg, LTU
	12.00		*Lunch Smurfit Kappa Kraftliner*	
	13.00-13.45		Summary of Piteå gathering	FG

Part 2: 23 -- 27 September, Örnsköldvik - Umeå
The Swedish northern coastal area with the cities of Piteå, Umeå and Örnsköldsvik offers a unique opportunity to visit several different pilot facilities. In the second part we will visit and gain experiences regarding the potentials and challenges of the pilot park of RISE Processum (Örnsköldsvik), and the algae pilot (Umeå). *New for this edition of Biorefinery Pilot Research is a visit to AREVO developer of high-efficiency plant nutrition products.

Part 3: 14 October, Umeå; Final seminar and presentation
This will be the final event where all the course participants present their study cases about the pilots visited or their own initiative of a potential pilot of interest for the course participant.



Course fee and accommodation

The course fee is **SEK 6,000** for academic participants not member of Bio4Energy and **SEK 12,000** for participants from industry. The course fee includes all course materials, social events, amenities, meals and accommodation.

Registration

Registration should be done no later than **1 June 2024** using the registration form on the Bio4Energy website (https://bio4energy.se/bio4energy_events/biorefinery-pilot-research-bio4energy-graduate-school/).

Contacts

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