



Converting the surplus of intermittent renewable energy to carbon-negative advanced biofuel (co RENE)

Due to the nature of renewable electricity production strong fluctuations occur in production output, thus imposing challenges to consistent electricity production. Chemical and physical methods have been developed for storing the produced electricity in order to improve the reliability and stability of electricity supply. However, storing electricity is problematic and very expensive in relation to the efficiency gained. In this study, new approach is studied to circumvent the problems related to electricity storage. In this approach renewable electricity production is integrated with sustainable production of traffic fuels: storing of electricity can be avoided by directly converting the surplus of produced renewable intermittent energy to advanced carbon negative biofuel (long chain carbon molecules for use in biodiesel and jet fuel). The overall aim of the project is to develop sustainable bioenergy system by integrating the renewable electricity production and advanced biofuel production. Advanced biofuels can be produced from surplus renewable electricity and carbon dioxide by exploiting bacteria. By this approach, the two key processes of renewable energy and advanced biofuel production can be integrated to establish a production system, thus circumventing the main issues of both the processes, storing electricity and providing sustainable carbon-negative platform for biofuel production. Thus inefficient and expensive intermediate stages for both processes can be eliminated.

Researchers working in your group + their titles or tasks

Ville Santala, PI

Suvi Santala, senior researcher

Tapio Lehtinen, researcher

contact information

ville.santala@tut.fi



The research group