



In this edition...

In the second issue of H2go Newsletter we find out what is happening with our Partner, National University of Ireland, Galway (NUIG). Led by Dr Rory Monaghan; the GenComm team at NUIG will develop an online map-based decision support tool, H2GO, which will assist others in developing renewable H₂ systems in their own communities. The NUIG team will also direct the creation of a Europe-wide Community H₂ Forum (CH2F), which will foster H₂ energy storage projects across Europe.

There are approximately 45 GenComm Associate Partners throughout the NWE Regions. Cormac Walsh, CEO of Energy Co-operatives Ireland Ltd; one of our Irish Associate Partners, has contributed to this edition with a thought provoking article on the positive impact of energy co-operatives across Ireland.

This edition also includes some highlights from the Official GenComm Launch event which took place in Belfast in September 2017; hosted by lead partner Belfast Met.

All partner organisations will be represented at the next GenComm workshop and seminar which will take place on December 13th and 14th in Saarbrücken, Germany, hosted by IZES GmbH; the partner lead on the solar pilot plant in the Saarland Region.

Building H2GO and CH2F

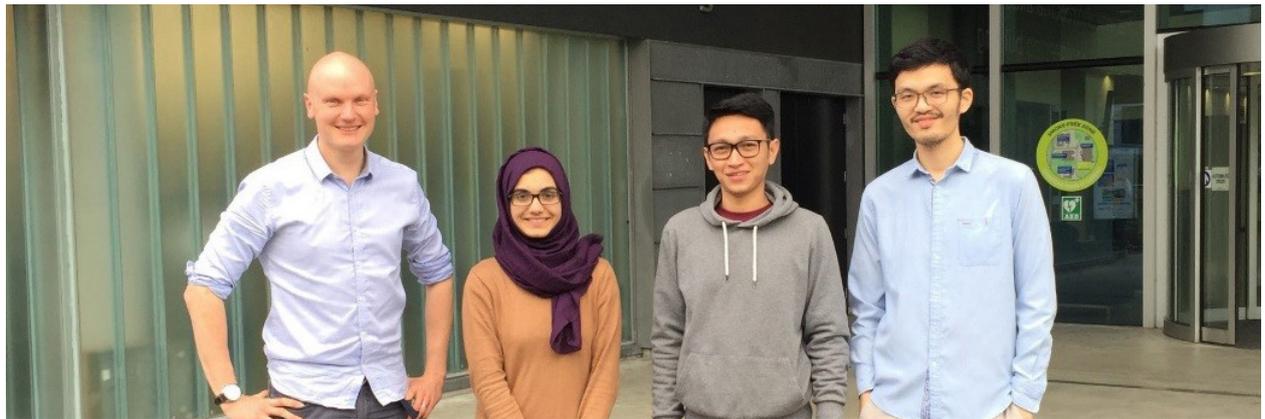
Researchers in the College of Engineering and Informatics at the National University of Ireland Galway (NUI Galway) are leading the development of H2GO and the establishment of CH2F. Located on the west coast of Ireland and exposed to the power of the Atlantic Ocean,

Galway is at the centre of North West Europe's richest concentration of renewable energy potential. NUI Galway is situated 15 km from Ireland's largest wind farm, with 170 MW of installed capacity. An additional 200 MW of capacity of biomass-ready thermal power plants lie within 100 km. At sea, the Galway Bay Ocean Energy Site tests one-quarter scale ocean energy prototypes, while Galway's Aran Islands are earmarked to become Ireland's first energy independent community. H2GO will be a map-based user-friendly web app that will inform stakeholders on the economic viability of H₂ based renewable energy storage for energy security in their communities. At its core will be models for the technical and financial performance of H₂ storage. These models will be provided by GenComm partners INSA Rouen (technical) and TK Renewables (financial), and will in turn be informed by data gathered on-site at the three GenComm pilot sites.

The design of the web app will be user-focused, meaning that potential users will be identified at an early stage and consulted on what outputs H2GO should give and how it should look and feel. This will be the first aim of the Community H₂ Forum CH2F, with which NUI Galway is tasked with establishing. Key stakeholders including local, regional and national authorities, energy agencies, community development groups, energy cooperatives, electricity and gas grid operators, electricity generators, large energy users, educational institutions and others will be invited to participate in the CH2F and get involved in the design of H2GO.

The second aim of the CH2F is to encourage the use of H2GO beyond the GenComm project and therefore to increase the use of safe, clean and reliable H₂ energy storage in communities across Europe.

The NUI Galway GenComm team



The NUI Galway GenComm team (l-r): Dr Rory Monaghan, Rjaa Ashraf, Arya Gunawan, Wells Tang

The NUI Galway team is headed by Work Package Lead Dr Rory Monaghan (Mechanical Engineering), and Co-Leads Dr Padraig Molloy (Mechanical Engineering) and Dr Ed Curry (Computer Science and Information Technology). Mechanical Engineering PhD Candidate Arya Gunawan is taking on the tasks of developing H2GO and establishing the CH2F. Masters of Energy Systems Engineering students Rjaa Ashraf and Wells Tang are providing support through their thesis research.

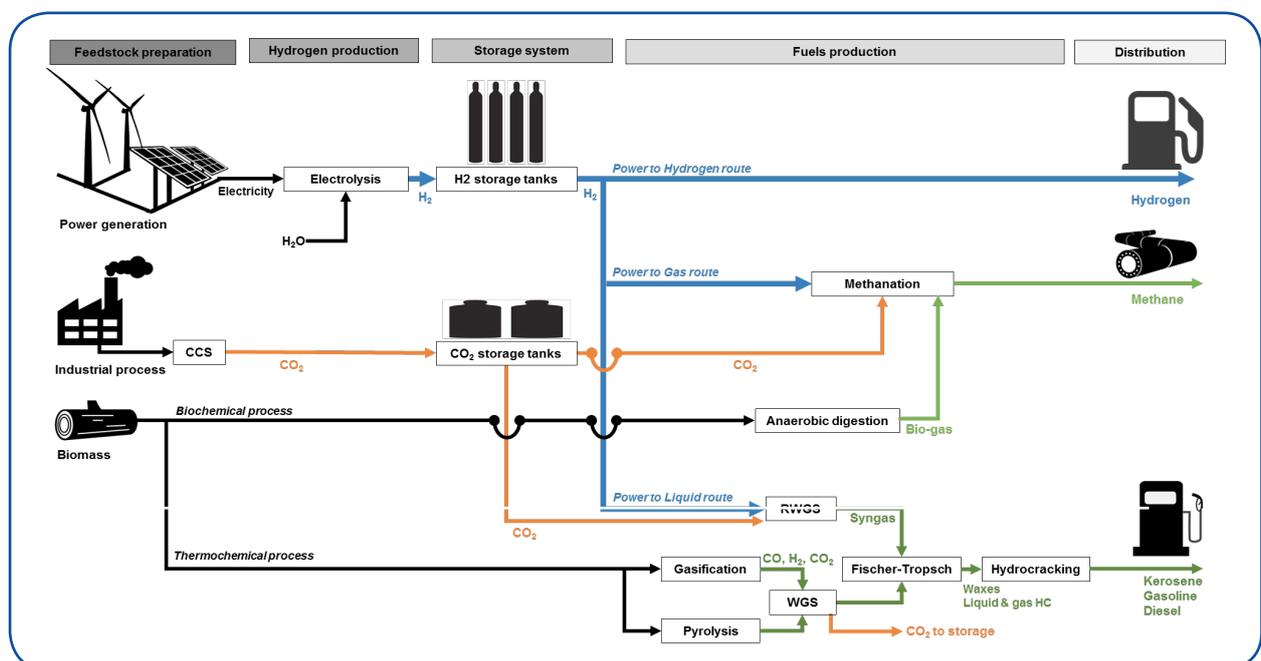
PhD Research – Arya Gunawan

As a PhD Candidate in Mechanical Engineering, Arya Gunawan, will be the key person working on GenComm at NUI Galway. Hydrogen (H_2) has the potential to be a safe, clean and reliable energy storage technology in the future, particularly for communities that use renewable energy. H_2 can be produced by various renewable energy sources like wind, solar, biomass, and others. As an intermediate product, H_2 can also be transformed into other energy

products such as electricity, vehicle fuel, biomethane, heat, and valuable chemicals. This product flexibility will increase the penetration of renewable energy, reduce emissions, and increase energy security in communities.

In order to deliver accurate data of renewable energy potential to stakeholders, an online map-based DST, H2GO, is proposed to be a platform to empower communities in designing, sizing and evaluating the

cost of H_2 production in their specific location. The map will geographically display renewable energy potential across north west Europe. This visualised data can be used to assist communities in developing renewable H_2 in a way specific to their resources and needs. The CH2F will be organised to strengthen the use of DST, to improve its contents and features and to enhance the public's participation and awareness of H_2 as an energy storage solution in the future.



Masters Research – Wells Tang and Rjaa Ashraf

Two Masters of Energy Systems Engineering students, Wells Tang and Rjaa Ashraf, are working on GenComm as part of their research projects.

The first project is to develop a geographic information system (GIS) tool which will be linked into the H2GO framework and the second is to explore the additional renewable energy to feed biomass-based synthetic natural gas production as part of a P2G system.

Wells will design the first version of the H2GO DST within a GIS environment. This will evaluate the

untapped or curtailed potential renewable energy sources across north west Europe, particularly in remote communities. A wide range of technical, economic and social criteria will be taken into consideration to determine the gains. All of this is done through a GIS platform to spatially show the unique features of the study area or any area of interest in the future. The visually rich GIS user interface will provide a template for the final online version of H2GO.

Rjaa will develop a range of simulation tools based around the production of renewable gaseous

and liquid fuels through waste pyrolysis. By working closely with an Irish company that has developed its own pyrolysis process, Rjaa will adapt the existing Galway Bioenergy Model to build an overall mass and energy balance model for the process, then use the model to assess the technical feasibility of producing renewable methane and incorporating stored H₂ into the process to link to the P2G concept.

The outcomes of this work will enable the expansion of the GenComm concept to other renewable energy resources and technologies.



Associate Partner Meeting

NUI Galway will host the third GenComm Associate Partner meeting on the 14th March 2018. We look forward to welcoming you to Galway and showing you our progress on the project.

Energy Co-Operatives Ireland

I was reminded last evening at Dusk why we at Energy Co-operatives Ireland are so interested in the GenComm project. I was driving home in heavy Dublin traffic behind a large Diesel SUV car. Each time we reached traffic lights the vehicle pulled away and its two exhaust pipes spewed out filthy pollutants down onto the road surface. It struck me just how dirty our atmosphere must be becoming.

Energy Co-operatives Ireland are in existence since 2012 and are members of the European body of such Co-ops which is called Rescoop (www.rescoop.eu). In the Republic of Ireland, we have helped establish four fully functioning Co-ops with two more in the pipeline.

The best known is the Aran Islands energy Co-operative, which was effectively adopted by the SEAI in 2012 because they viewed the islands as a microcosm of Ireland as a whole. With 70% of the three islands, building stock now retrofitted to a high SEAI standard, the attention locally now is to establish a 2.2 mw

wind turbine that would have the capacity to run the entire three islands. Following extensive local community consultation, this initiative has been given 100% support.

Another example is the Claremorris energy Co-operative, which among many other things has two 5 mw solar farms in planning in association with Mayo County Council. They have also embarked on a comprehensive district heating project plan for the town and this is in a 50/50 ownership agreement with the council.

The Kerry Energy Co-operative based in Tralee town is currently working with Kerry County Council, Transition Kerry and the SEAI, on a 750K deep retrofitting project. This four-minute video shows local people describing the benefits of the work done on their homes
<https://youtu.be/LXyTYO6OTT4>

Energy Co-operatives Ireland are working on behalf of the SEAI providing mentoring services to 21 communities across the western region of the country as part of the

Sustainable Energy Communities Programme or SEC. These groups range from rural islands to large colleges including GMIT (Galway and Mayo Institute of Technology) and NUIG (National University of Ireland Galway). This 4-5 minute video shows how the programme works: <https://www.youtube.com/watch?v=XL462yvuKGA>

This initiative currently has 114 communities signed up around the country and by the end of 2018 the SEAI expect to have 200.

We at ECI see the GenComm Project as a significant contributor to the continued growth of these organized community groups. A network of communities will be in place to assist with the hydrogen highway roll out as the GenComm Project is completed.

Cormac Walsh
CEO

Belfast launch of GenComm Project

The official launch of the Interreg North West Europe funded €9.39m GenComm Project was held at Belfast Met e3 Campus on Wednesday 13th September 2017. The Guest of Honour was Lord Mayor of Belfast, Councillor Nuala McAllister. We were also joined by Gina McIntyre, Chief Executive of Special European Programmes Body (SEUPB). The keynote address was delivered by Dr Michel Junker, a leading European expert in new energy technologies, hydrogen energy, fuel cells and energy security.

Over 100 delegates learned how the GenComm Project will demonstrate the commercial maturity of hydrogen technologies by implementing three pilot plants, linking the three main north west European renewable sources, Solar Power, Wind Power and Bioenergy, with energy storage together with the main forms of energetic demand; heat, power and transportation fuels. The ultimate goal of the project is, through the combination of sources and forms of demand, to lead North West Europe's road to sustainability while granting hydrogen its position as a commercially viable energy medium for the future.



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This European project in renewable technologies reinforces the Belfast Met purpose of leading the city and Northern Ireland to work. Through this pioneering project, we will deliver the skills, education and competencies required for new green collar jobs.”

Marie-Thérèse McGivern, Belfast Met Principal and Chief Executive



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The need for using an increasing part of renewables in our energy mix to make them available for our everyday applications, to reduce our dependence to fossil fuels and to solve our climate and air pollution challenges is one of the toughest challenges for Europe for the next 20 years.”

Dr Michel Junker, Keynote Speaker

“

The GenComm project addresses Europe's energy challenges and as such has significant commercial benefits, promoting energy security and economic growth. Hydrogen technologies will deliver a new, cleaner energy system for Europe across many applications including energy storage, transport and distributed power generation.”

Paul McCormack, GenComm Project Manager

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The €9.39m Interreg NWE funded GenComm Project will work with remote communities around three pilot facilities in Scotland, Germany and Northern Ireland; extending throughout the NWE region and beyond. GenComm aims to reverse the need for communities to meet their energy needs from non-renewable sources.