

**NEWSLETTER****18th May 2021*****Welcome/Croeso/Fáilte***

Welcome to our Summer 2021 Newsletter bringing you up to date on the Dwr Uisce project. Hopefully, you remain well.

In this issue, Dr Novara explains how a pump-as-turbine works in a water network in parallel to a pressure reducing valve. Dr Murali and Dr Singh illustrate their latest advancements in drain water heat recovery technologies.

In addition, you can read about the launch of the Heat Recovery Tool kit for commercial kitchens, the outcomes of our programme of on-line events and the latest research updates and publications.

We take this opportunity to wish all our followers and cluster members an active summer!

**Roberta Bellini**

Editor

Croeso i'n cylchlythyr Haf 2021 sy'n rhoi'r wybodaeth ddiweddaraf i chi am brosiect Dwr Uisce.

Gobeithio y byddwch yn parhau'n dda.

Yn y rhifyn hwn, mae Dr Novara yn esbonio sut mae pwmp-fel-tyrbin yn gweithio mewn rhwydwaith dŵr ochr yn ochr â falf lleihau pwysau. Mae Dr Murali a Dr Singh yn darlunio eu datblygiadau diweddaraf mewn technolegau adfer gwres dŵr draen.

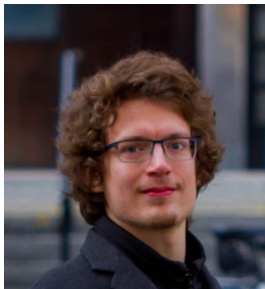
Yn ogystal, gallwch ddarllen am lansiad y pecyn Offer Adfer Gwres ar gyfer ceginau masnachol, canlyniadau ein rhaglen o ddigwyddiadau ar-lein a'r diweddariadau a'r cyhoeddiadau ymchwil diweddaraf. Manteisiwn ar y cyfle hwn i ddymuno haf gweithredol i'n holl ddilynwyr ac aelodau'r clwstwr!

**Roberta Bellini**

Golygydd



*Upgraded test rig with PAT in parallel to PRV*

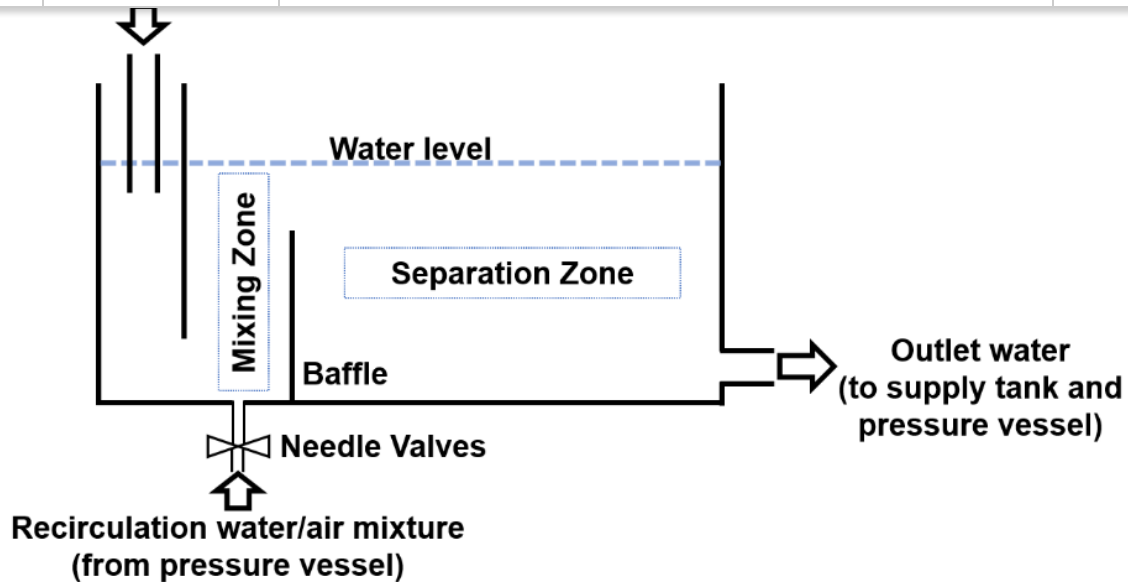


**Daniele Novara**

A Pump As Turbine (shortened as “PAT”) consists of a regular water pump running in reverse as a turbine, and therefore generating power from a stream of pressurized water. How do these devices operate when installed within a water network in parallel to a Pressure Reducing Valve (PRV)? And how to design a system able to cope with sudden variations in water pressure and flow rate? Read more [here](#).

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## MINIMISING THE IMPACT OF HEAT RECOVERY ON WASTEWATER TREATMENT PROCESSES

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*A schematic diagram of the lab-scale dissolved air flotation tank*



#### Madhu Murali

The Dwr Uisce project monitoring work at industrial and municipal wastewater treatment plants has found that they have significant potential for heat recovery. However, there are some concerns regarding the impacts of heat recovery on the efficiency of treatment processes, particularly if a heat exchanger is introduced into the treatment area. To assess these potential impacts, we have replicated a common industrial treatment process, Dissolved Air Flotation, at lab-scale in Trinity College Dublin. This setup will be used to both determine the scope for heat recovery from Dissolved Air Flotation Tanks and assess any subsequent impacts on their treatment efficiency. Read [more..](#)

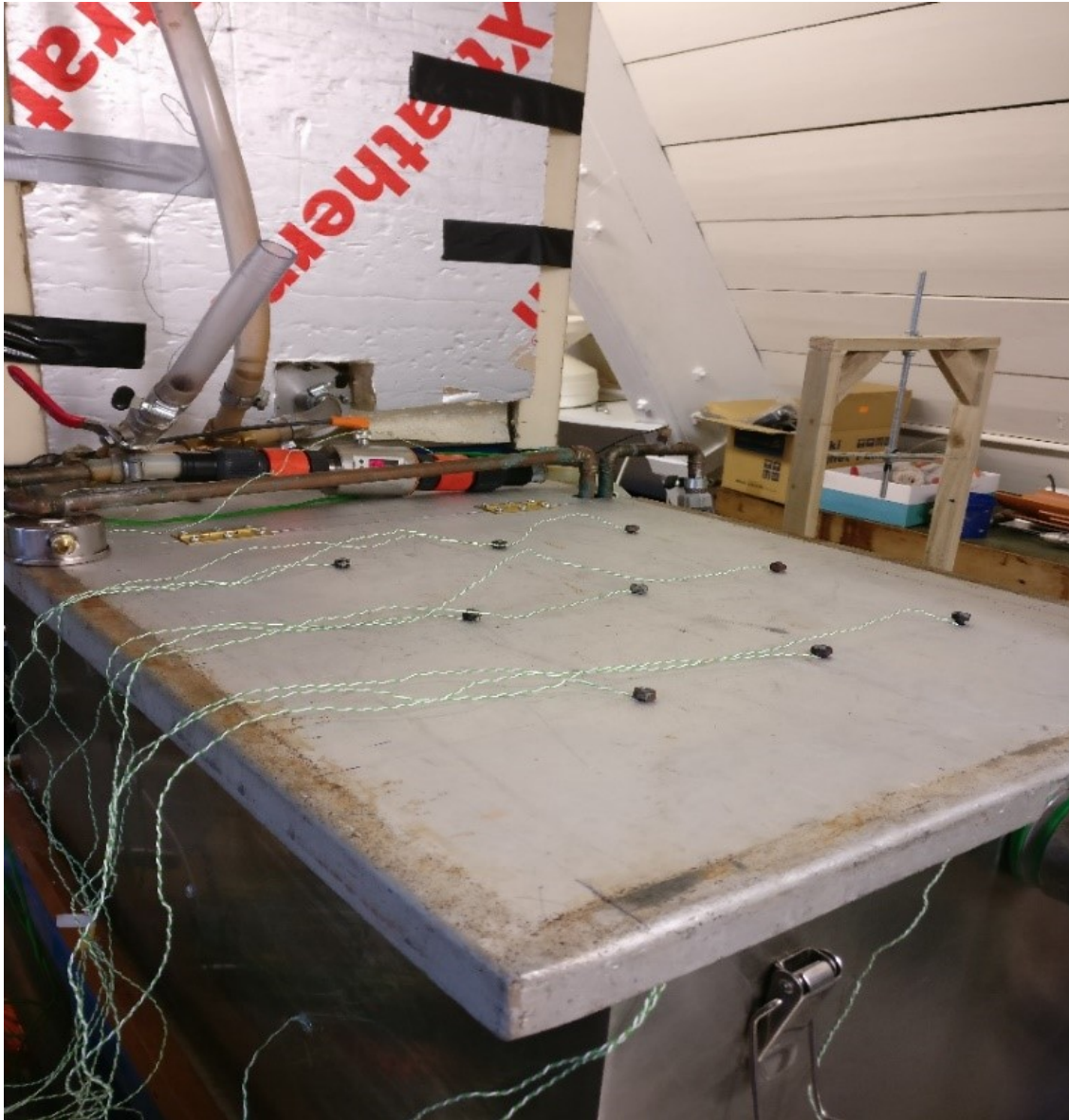
## AN ADVANCED DESIGN OF A GREASE TRAP SYSTEM IS IN PROGRESS

#### Ajeet Singh

Since joining the Trinity Dwr Uisce project team last September, Dr Singh has been carrying out a series of assessments to integrate a hybrid grease trap (GT) with a thermal recovery unit to harness the maximum potential amount of heat embedded in the wastewater. The hybridization will improve the grease removal efficiency of the GT and the new



flushed down the sewer. More details [here](#).



*Laboratory testing of the hybrid grease trap designs*

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## LAUNCH OF THE DWR UISCE HEAT RECOVERY TOOLKIT



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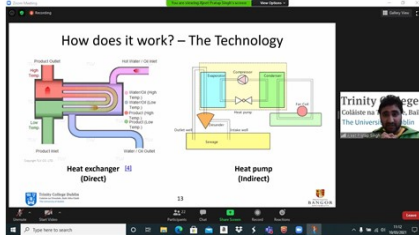
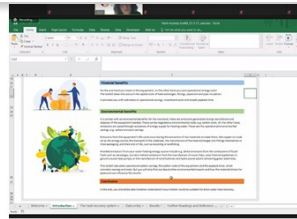
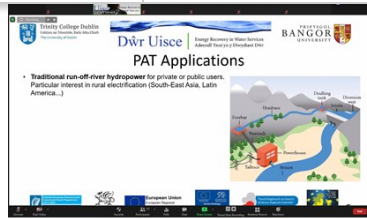
**Isabel Schestack**

The Dŵr Uisce project launched the Heat Recovery Toolkit on March 24 2021! Designed to support commercial kitchens interested in recovering heat from their drain water, it was introduced to the participants of our sustainability webinar “RECOVERING HEAT FROM DRAIN WATER - MAKING IT HAPPEN”. Participants had the opportunity to test the tool using either their own kitchen data or a set of data provide by our team. Read more [here](#).

## SHARING THE FINDINGS: INSIGHTS FROM THE DWR UISCE ONLINE EVENTS PORTFOLIO


**Roberta Bellini**

The Dŵr Uisce Online Events Portfolio was planned and designed with the aim to share the research findings and project progress with a broad audience. The Portfolio featured a Panellist Discussion on Heat Recovery potential in leisure centres and the Dŵr Uisce Sustainability Webinar Series, a programme of four online events covering the topics of Micro-hydropower, Drain Water Heat Recovery and Benchmarking water and energy efficiency. All events took place during the period February to April 2021 and have proven very successful. [More..](#)



Screenshots from the four webinars of the Sustainability Series.

## A SUMMARY OF THE DISCUSSION BY THE EXPERT PANEL ON HEAT RECOVERY POTENTIAL OF LEISURE CENTRES

**SAVE THE DATE**

23 February 2021  
14.00 - 15.30

A PANELIST DISCUSSION

# Heat recovery potential of leisure centres

*Opportunities, challenges and risks*

Trinity College Dublin  
Dwr Uisce  
BANGOR



Aisha Bello-Dambatta

At the Dwr Uisce expert panel discussion early this year, experts working in different areas of leisure centre design, development, operation, and management discussed the potential for leisure centres to adopt heat recovery as a means of emissions reductions.

The experts agreed that, although the potential for heat recovery is there, significant challenges remain and much remains to be done for the sector

## RESEARCHING ACROSS BORDERS AND BOUNDARIES



**Paul Coughlan**

Research that crosses research boundaries is of increasing relevance in the area of water and energy. However, it brings up complex challenges in terms of knowledge production and research design. Different research questions enquiring into a phenomenon of shared interest require new research designs.

Normally, research can be designed, developed and implemented in conformance with discipline-specific research quality criteria. However, integration and synthesis are required in a project that crosses disciplinary boundaries. This complexity is not to suggest that such research is to be avoided. Rather, it is to suggest the real potential for an exciting synthesis of different approaches to knowledge production and a research-based response to complex issues.

The Dŵr Uisce project exhibits that challenge and richness of response. Different discipline groups – Engineering, Environmental Science, Geography and Management - are collaborating in this single research project focused on energy recovery. The normal development of work packages has enabled the distribution of research tasks and the matching of those tasks with key objectives of the project. However, it is in this sharing across disciplines of responsibility for research design and implementation that the promise of insights from different knowledge production approaches emerges. No one discipline is more relevant than the other: collectively all enable the Dŵr Uisce project to deliver a research-based response which is broader and deeper than discrete (but disconnected) projects.



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## SPREADING THE MESSAGE

[Richard](#) Dallison, a postdoctoral researcher in our Bangor team, has been attending the [European Geosciences Union's \(EGU\) 2021 General Assembly](#) this week, as well as presenting and discussing his work. Usually held in Vienna, this year's conference is being conducted online due to the ongoing global pandemic, providing a fantastic opportunity to disseminate Dŵr Uisce research to a wide global audience. Indeed, the event is one of the largest gatherings of geosciences related researchers in Europe, with the EGU having over 20,000 members. [More...](#)

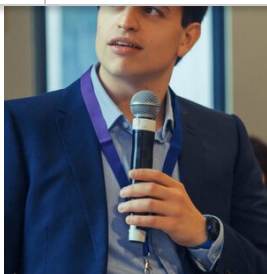
Trinity Team members working on Work Package 2 have conducted an extensive literature review on the topic of wastewater heat recovery and published our findings in a journal paper entitled "*Heat Recovery from Wastewater—A Review of Available Resource*". This publication reviews and summarises the available scientific literature in the field of wastewater heat recovery with a particular emphasis on predicting wastewater temperature in sewers, assessing the financial feasibility of heat recovery systems, and challenges in the implementation of these systems. Read the full paper at: <https://www.mdpi.com/2073-4441/13/9/1274>.

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## CONGRATULATIONS TO...

[Richard](#), from our Bangor University Team, for successfully defending his



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His thesis, entitled '*Climate change and Welsh catchments: Implications for hydrological regime, water quality and water abstraction*', explores how historical and future climate change has impacted, and will continue to impact, on river systems in Wales, and their exploitation as a water resource. Read more [here](#).

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## RECENT PUBLICATIONS

- Nagpal, H.; Spriet, J.; Murali, M.; McNabola, A. Heat Recovery from Wastewater—A Review of Available Resource. *Water* 2021, 13, 1274. <https://doi.org/10.3390/w13091274>
- Crooks, E.C., Harris, I.M., and Patil, S.D.. 2021. " Influence of Land Use Land Cover on River Water Quality in Rural North Wales, UK." *Journal of the American Water Resources Association* 1–17. <https://doi.org/10.1111/1752-1688.12904>.
- Coughlan, P & Coughlan, D. What happens to P? Lessons from network action learning research, *Action learning research and practice*, 2021, DOI: 10.1080/14767333.2021.1884044.
- [Coughlan, P Coughlan, D Rigg C and O'Leary, D 2021, Exploring and Exploiting the Dynamics of Networks in Complex Applied Research Projects: A Reflection on Learning in Action, British Journal of Management, DOI: 10.1111/1467-8551.12482](#)
- Walker, N., Styles, D., Gallgher, J. and Williams, A. P. (2021), [Aligning efficiency benchmarking with sustainable outcomes in the United Kingdom water sector](#). *Journal of Environmental Management*, Volume 287, 1 June 2021, 112317.
- Walker, N.L., Williams, A.P. & Styles, D. 2020. [Key performance indicators to explain energy & economic efficiency across water utilities, and identifying suitable proxies](#). *Journal of Environmental Management*, 269, 110810.

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Are you a company, a consultant, a university, a scientist interested in saving water and energy? Are you in one of the regions in Ireland or Wales covered by the [INTERREG funding initiative](#):

- Ireland - Carlow / Cork / Dublin City / Dun Laoghaire / Rathdown / Fingal / Kerry / Kildare / Kilkenny / Meath / South Dublin / Tipperary Waterford / Wexford / Wicklow
- Wales - Carmarthenshire / Ceredigion / Conwy / Denbighshire/ Flintshire / Gwynedd / Isle of Anglesey / Pembrokeshire / Swansea / Wrexham

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## BUSINESS SUPPORT

Let us help you to reduce your water and energy costs.

**For free!**



**Dwr Uisce** | Energy Recovery in Water Services  
Adennill Ynni yn y Ddwyliant Dŵr

Trinity College Dublin  
College of Business, Arts & Education

PRIFYSGOL BANGOR  
UNIVERSITY

Our aim is to support your business in saving water, energy, emissions and money, and thus making it more resilient for the future. We are a team from Trinity College Dublin and Bangor University, Wales, experienced in working with industry.

**We offer a minimum of six hours free consultation time to:**

- Measure your current water and related energy use
- Identify opportunities to reduce your water and energy consumption
- Propose cost-effective solutions
- Advise on how to improve your environmental footprint, both in your business and along your supply and demand chains

The free consultation we offer only involves a little time from your side - no financial investment is required.

Participation qualifies you to become part of the DWR UISCE network with the opportunity to link and learn from similarly-challenged businesses. You will hear about technology choices, cost and carbon savings, avoid the mistakes others have made and connect with trusted suppliers.

**Send us an informal request and start benefitting from our expertise, our support and our network.**

Email: [admin@dwr-uisce.eu](mailto:admin@dwr-uisce.eu)  
Phone: +44 (0) 1248 38 3219 (Bangor)  
+353 (0) 1 896 1311 (Dublin)  
Web: [www.dwr-uisce.eu/business-support](http://www.dwr-uisce.eu/business-support)



DWR UISCE stands for *Distributing our Water Resources: Utilising Integrated, Smart and Low-Carbon Energy*. The project is contributing to improving the long-term sustainability of water supply, treatment and end-use in Ireland and Wales. DWR UISCE is funded by the European Regional Development Fund through the Ireland-Wales Cooperation programme.

## CONNECT WITH US

All project updates, progress, activities and events are posted regularly and shared widely on our

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# Dŵr Uisce

Energy Recovery in Water Services  
Adennill Ynni yn y Diwydiant Dŵr



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