

The platform for
European Research &
Innovation in District
Heating, District Cooling
and kindred technologies

Progressing Research & Innovation for sustainable energy solutions

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Interview with Mateo de Guadalfajara, winner of the DHC+ Student Awards 2014



Picture:
Mateo de Guadalfajara presenting in Stockholm
Source: Silke Laufkötter

What or who inspired you to take part in the DHC+ Student Awards?

Last year, while reading the DHC+ Newsletter with my thesis director Miguel Ángel Lozano, he told me: Next year I want your picture in this magazine. I thought it would be impossible to win this award and that he was joking, but

he encouraged me to continue working hard and to trust in our research work. He inspired me to write this paper that presents the most interesting results of our research work.

What is the topic of your research paper?

The objective of the article was to demonstrate that Central Solar Heating Plants with seasonal storage are technically and economically viable for District Heating systems. To fulfill this objective, I used a simple calculation method for feasibility studies that I had developed along my PhD research to predesign installations in different locations in Europe, such as Madrid, Berlin or Oslo. Obviously, for these locations different design, performance and economic results are obtained and presented in the paper showing the differences, but also showing that it is possible to produce Solar District Heating in different European climates.

Is heating a topical issue in Spain? Taking into account that it is one of the warmest countries in Europe...

Spain might be one of the warmest countries in Europe, but you can go skiing in winter. Climate conditions are very different from the tropical Canary Islands to the continental winter in Castilla. Energy statistics are not too different from other European countries. The residential and commercial sector consumes a big part of the final energy. 70% of the final energy consumption in the residential sector is used to produce space heating and domestic hot water.

Heating is a topical issue in Spain. The economic crisis has generated energy poverty

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Interview with Mateo de Guadalfajara continued

problems and we need to develop sustainable heating systems based on local resources to secure the energy supply for the future at an affordable price. Solar thermal energy together with other energy sources can be a solution for big communities to produce their own thermal energy without being exposed to market variations of oil, natural gas or biomass.

Did you encounter any challenges during your research?

It is difficult to work on research especially with the objective of getting a PhD. You don't know what the final result will be in four years from the start. So you create small goals, such as preparing journal and congress papers or documents for workshops and meetings. For me, it has been very important to always have short-term goals to achieve. These goals are the bricks that I use to elaborate my doctoral thesis. I would say that my main challenge has been to work for three years preparing bricks that I use now to write my doctoral thesis.

You presented your findings at the 14th International Symposium on District Heating and Cooling in Stockholm. What are your impressions?

I love to go to symposiums. Along my short research period of three years, I have gone to six symposiums. It is always a great opportunity to check your own work with other researchers and to learn what they are doing elsewhere: low temperature District Heating, seasonal storage with phase change materials, control systems based on weather forecasting - amazing ideas that I learned about at international congresses.

The International Symposium on District Heating and Cooling was a very good opportunity for networking. In the research environment of the 21st century it is crucial to build networks. We need to meet people, make contacts and to know what researchers are doing in different locations. The

use of resources and expertise from different researchers and institutes is the key to become more efficient in our research work and to overcome the current challenges in research. Also, it is very important to stay in contact with companies from different locations so that the technology developed by researchers could be used where it is required. From this point of view, the DHC Symposium has been a great opportunity to get in contact with people from different research centres, associations and private companies.

Do you think that young researchers in DHC have sufficient support in Europe?

Europe is encouraging the development of research projects that include institutes, research centres and companies from different European countries in order to increase the bonds between researchers and to create a transnational research strategy. This is reflected in the last calls for European projects that require the creation of consortia with partners from at least three different countries. This emphasis on joint project development has not been translated at the same speed to the educational sphere. However, interesting activities such as the Summer School organised by DHC+ can be found. This kind of training activities allow researchers to go to very specialised courses and to work shoulder to shoulder with researchers of other nationalities. I went to this summer school in August 2013 and the lectures given along the course gave me the idea for this paper.

I firmly believe that the future of my work, as engineer and researcher, will depend on the participation in large size EU research and demonstration projects. These projects will need a high level of organisation and planning, besides working at distance with people from different countries. Maybe Europe should invest more efforts in preparing researchers if good results are expected to be obtained in the following years from these strategic research projects. ■

Investing in Education & Training

2nd International DHC+ Summer School offers unique experience



Picture: Prof. Risto Lahdelma (one of the Summer School day leaders)
Source: Aalto University

After the successful first edition in Berlin 2013, DHC+ had invited interested students and young professionals to Helsinki in late August 2014 for its 2nd International DHC+ Summer School.

29 Participants from all over Europe and far beyond came to the Finnish capital to learn about District Heating and Cooling, to exchange views, to apply their knowledge and visit various sites. The course was hosted by a strong consortium including Aalto University (where the classes took place), Finnish Energy Industries, Helsinki Energy and Fortum, and featured lectures prepared by a variety of experts from academia and business across the continent.

We are currently preparing the ground for the 3rd International DHC+ Summer School. Are you a student or an organisation interested in taking an active role during the next edition of the Summer School?

Please visit www.dhcplus.eu and its dedicated page www.summerschool.dhcplus.eu or contact the secretariat at +32 2 740 21 12. ■

Winners of the 2nd DHC+ Student Awards presented in Stockholm!

In good tradition, this year's Awards applications came from all over Europe and covered an extraordinary range of topics in the field of DHC. Students participating in the competition had a very diverse background: from engineering and energy systems to environmental studies - which confirms the cross-cutting character of DHC. The 2nd edition saw a positive development in terms of geographical representation - even more so as this year's winners come from less prominent DHC countries – Spain, the Netherlands and Switzerland. Here are their names: Mateo de Guadalfajara, University of Zaragoza (first place), Kathelijne Bouw, University of Utrecht and Loïc Quiquerez, University of Geneva (runners-up).

All three winners had the opportunity to present their work in front of over 200 participants of the 14th International DHC Symposium in Stockholm during a special ceremony at the Closing Plenary Session. Their presentations can be found at www.dhcplus.eu and their work will be published in the upcoming issues of the International EuroHeat&Power magazine.

The 3rd International DHC+ Student Awards has already been launched. More information on criteria and timeline will be available at www.studentawards.dhcplus.eu ■



From left: Mateo de Guadalfajara (the winner); Prof. Stefan Holler (Chairman of the Student Awards evaluation committee); Kathelijne Bouw and Loïc Quiquerez (runners-up)

Driving Research in Innovation

GeoDH – potential, barriers and tools

District Heating based on geothermal energy (GeoDH) has potential to supply 25 % of EU inhabitants!

By Morten Hofmeister, Grøn Energi

A key feature of District Heating is its flexibility in relation to other energy technologies. Geothermal energy has a significant potential to replace fossil fuels and to cover the heat demand of companies and households alike. The technology is well-known, although there are technical challenges in relation to the deep reservoirs. Non-technological barriers are, however, the key challenge.

The EU-financed project *GeoDH* has focused on these non-technological barriers. They comprise financial, administrative and regulatory barriers. Many of these barriers are also shared by other renewable energy sources, though the geothermal sector presents a specific risk profile.



Co-funded by the Intelligent Energy Europe Programme of the European Union

A key parameter for the realisation of geothermal energy potential is the availability of District Heating infrastructure. Data from the Halmstad

University District Heating and Cooling Database (HUDHC) has been used to provide an overview of the existing DH infrastructure. Heat demand is another key parameter. Data from the Heat Roadmap Europe 2050 has been used to provide an overview of the heat demand in specific areas.

This research was used to develop one of the key results of the *GeoDH* project - an interactive map, showing the geothermal energy potential at different depths, the heat demand, and the availability of District Heating infrastructure. This tool can be used e.g. by heat planners to identify areas to be investigated further. The tool is freely available on the *GeoDH* website.

Having identified the geothermal energy potential, the local heat demand and the availability of District Heating infrastructure, the *GeoDH* project came up with other useful findings. An analysis of innovative support schemes in the participating countries was performed. Project partners shared experiences and provided recommendations for the regulation of geothermal energy on a national and regional level. The



project has also developed new ideas relating to business models and project management practices, as well as proposals to mitigate the resource or geological risk.

A training manual has been produced to provide basic information on geothermal technology to e.g. District Heating professionals, heat planners and others, who are crucial in paving the way for implementation of more geothermal energy systems. ■

- The *GeoDH* project covers 14 EU-countries, comprising transition and juvenile countries as well as more mature markets such as France and Germany
- For more information visit www.geodh.eu



Communication & Exchange

DHC+ project session at the 14th International Symposium on DHC

The 14th edition of the International Symposium on DHC took place in Stockholm on 6-10 September and was hosted by the Swedish District Heating Association. We are grateful to the organisers for letting the DHC+ Technology Platform take an active part in this major event on DHC Research & Innovation.

The DHC+ Technology Platform hosted two parallel sessions on "Bringing research into practice" where results of EU-funded projects in the DHC field were presented to the interested public. These sessions were very well attended (with over 50 participants each) and confirmed the fact that cities play a key role in the energy transformation, not only as followers but also as leaders.

All presentations of the Project sessions can be found at www.dhcplus.eu ■



Successful Final Project Conferences on sustainable heat use and cooling

On 7 October the DHC+ Technology Platform hosted the Joint Final Project Conferences of the IEE-funded projects *BiogasHeat* and *Rescue* in Brussels. The event which was part of the 2014 edition of DG Regio's Open Days attracted a total of more than 100 stakeholders from across Europe. The conferences featured a bandwidth of meaningful and highly interesting insights gained through the projects' lifetimes, a variety of best practice examples and much more, while offering space for presentations on related projects.

A short report and all presentations are available at www.dhcplus.eu. For more information please check www.biogasheat.org / www.rescue-project.eu or contact iw@euroheat.org ■



Co-funded by the Intelligent Energy Europe Programme of the European Union

Stratego website has been launched!

The new website of the EU-funded project *STRATEGO* - Multi-level Actions for Enhanced Heating and Cooling Plans - provides all information about the project including project results. It contains a calendar featuring events in the field of heating and cooling and energy planning, including coaching sessions and related partner projects' events.

The website has been designed to provide relevant information for the different target groups: national and local authorities, heating and cooling industries, local utilities, urban planners and EU-policy makers.

Check it out at www.stratego-project.eu ■



Enter a circle of highly committed stakeholders!

Founded in 2009, DHC+ is today a strong group of more than 40 entities from academia, research, business and industry driving Research & Innovation in DHC and supporting the development of young researchers by engaging in Education & Training measures. Become part of this group now!

Join us for 2015!

DHC+'s commitment period is coming to an end. Don't forget to sign up for the next years.

Contact us at dhcplus@euroheat.org

UPCOMING

Next Committee Meeting

Next DHC+ Technology Platform Steering Committee meeting will be held on 27-28 January 2015 in Paris.

For more information or if you are interested in participating contact us at dhcplus@euroheat.org

Application for the 4th Global District Energy Climate Awards is now open!



4th Global District Energy Climate Awards
Sustainable energy solutions for today and tomorrow
European Ceremony • 27 April 2015
Tallinn, Estonia

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37th Euroheat & Power Congress, 27-28 April 2015, Tallinn, Estonia

The competition has been launched!



DHC+
TECHNOLOGY PLATFORM

The 3rd International DHC+ Student Awards

 