

Annual report on the activities of the KCORC foundation – 2019

February 2020, prepared by Jos van Buijtenen, 2018-2019 Chairman

Introduction

The Knowledge Center on Organic Rankine Cycle technology (KCORC) is a not-for-profit international foundation of volunteers incorporated in the Netherlands. Its premises are in Kluyverweg 1, 2629 HS Delft, The Netherlands (RSIN: 858237799, Chamber of Commerce: 70288283). The KCORC Foundation operates globally, is run by a Board of five volunteers, and its main objective is to promote research, development and implementation of Organic Rankine Cycle (ORC) technology.

ORC technology is used in all fields where thermal energy is available for conversion into mechanical power or electricity. This enhances the use of renewable energy, energy conservation and reduction of greenhouse emissions. Capacities range from tens of kW for automotive applications and domestic cogeneration to the MW size for geothermal, solar and biomass power plants.

The foundation activities are currently funded from surplus from the organization of conferences and from contributions by affiliated universities, research institutes and companies. More information can be found on the KCORC Executive Plan 2018.¹

The purpose of this document is to give an overview on the activities and results achieved by the KCORC Foundation in the year 2019.

The biannual International Seminar on ORC systems

The KCORC Foundation organizes this event which is the reference for the ORC community since its first edition in Delft in 2011. The Foundation main activities in this context are to

- launch a call for proposals to identify the location of the event,
- support the organization of the event and helping with finding industrial sponsors,
- contribute to the definition of the Scientific Committee,
- support in the review process of abstracts and papers submitted for presentation at the Seminar and for publication in the associated international peer-reviewed journals,
- confer the best paper award the best paper contributed to the Seminar,
- confer the “Prof. G. Angelino Award” to the best Poster Presentation contributed to the Seminar.

In 2019, the fifth ORC conference has been held in Greece from the 9th to the 11th of September, and was organized in cooperation with The National Technical University of Athens (NTUA)². This conference attracted

¹ Available online: www.kcorc.org/media/medialibrary/2018/10/18-10-30_Executive_plan_KCORC.pdf

² Conference website: <https://www.orc2019.com/>

270 delegates from 33 countries, 18 sponsors, more than 200 papers of which 124 were selected for publication, and 40 posters.

The next conference will be held in 2021, for which an offer for the organization has been received from the Technical University of Munich.

Scholarships

The KCORC Foundation proudly invests the surplus generated by the Biannual Seminar to fund competitive scholarship for students and researchers aiming to pursue R&D projects in field of ORC technology. These bi-annual scholarships cover travel and accommodation related to short-term research projects of 3 – 6 months. The grants amount to €3000 – €10,000, depending on project duration and location of the hosting institution.

During 2018, the Scholarship Committee active within the Foundation launched the 4th Call for Proposals, with deadline on December 31st. The total available budget was 25.5 k€, of which 21 k€ could be allocated to promising researchers. The selection committee awarded the scholarship to three candidates. The awardees started their activities during 2019.

Standards & Regulations

There is a committee active within the Foundation which involves professionals from companies and academic institutions which aims at defining “suggested standards and regulations guidelines” in the field of ORC systems. The long-term vision is to foster the establishment of a recognized international standard devoted to ORC technology, its design, performance definition, and so on. During 2019 the international committee gathered 3 times through Skype. A first concept for Technical Guidelines has been conceived and will be extended during 2020.

Thermal Energy Harvesting Advocacy Group

During the year 2019 another Committee was established, and it is called the Thermal Energy Harvesting Advocacy Group, and it is focused on the promotion of the utilization of large potential of waste or residual heat in industrialized countries. It is called “energy harvesting” because from the point of view of public acceptance, the positive concept of harvesting is more attractive than a definition containing the term “waste”. Thermal energy can be upgraded to electricity with ORC technology, thus making it generally applicable and transportable. The Advocacy Group should attract the attention of EU and governmental bodies, in order to point at the large greenhouse gas saving potential provided by ORC and other technologies. One of the aims is to create boundary conditions similar to other renewable technologies like wind and solar energy, in the fields of research funding and support of concrete applications. Special attention is to be given to the regulatory framework for “waste heat to power”, to the alignment between EU countries and to the promotion of R&D activities.

The first opportunity to attract the attention of the EU was the presence of a high-level EU official at the Athens conference. The new group was also presented during the plenary membership meeting at this conference. The group consists of 8 people by the end of 2019 and had its first Skype meeting in November 2019. In 2020, Registration of KCORC as an association in the EU Transparency Register (possibility of lobbying) will follow.

Collaborations

The Foundation works constantly to establish collaborations with other organizations active in the promotion of technologies related with energy conservation and the exploitation of renewable resources.

In 2019 KCORC established a collaboration with the Engine ORC Consortium – EORCC and with the Rankine 2020 conference organized by the International Institute of Refrigeration – IIR.

The KCORC Website

The KCORC website³ is the main channel through which the Foundation activities are disseminated. The website is constantly developed and maintained by an Editorial Committee whose Chairman reports monthly to the board.

This website is the hub of a community of professionals from the academia and the industry dedicated to the promotion of ORC technology. Anyone can become a member of KCORC by submitting a registration form via the website, which is then approved by the Secretary of the Board. In case of doubt, the Secretary reports to the Board for a decision.

³ <http://www.kcorc.org/en/>