

International Gas Turbine Congress 2023 Kyoto Flash Report

IGTC2023 Kyoto Executive Committee

Chair Yutaka Ohta

1. Introduction

The International Gas Turbine Congress 2023 Kyoto (IGTC2023 Kyoto), organized by the Gas Turbine Society of Japan (GTSJ), took place as the 13th International Congress from November 26 (Sunday) to December 1 (Friday), 2023, spanning six days at the Kyoto International Conference Center (Fig.1). Since its inception in 1971, this congress has been committed to facilitating international information exchange, dissemination of gas turbine and related technologies, and fostering human connections. In particular, the congress has been dedicated to the mission of disseminating Japan's advancements in gas turbine-related technologies, as well as providing the latest information globally. In pursuit of this mission, the Congress has consistently contributed significantly to the field's development, not only through academic lectures but also by incorporating exhibitions. For IGTC2023 Kyoto, the event continued its tradition with the support of 9 international organizations, including the Gas Turbine Institute (GTI) of the American Society of Mechanical Engineers (ASME), and 39 domestic organizations.



Fig.1 Congress venue (Kyoto International Conference Center).

Thanks to the diligent efforts and cooperation from the parties concerned, the congress concluded successfully. The Executive Committee is still putting together the final report, but in this flash report we want to provide a summary of the event. The details of the congress shall be reported again in publications such as the Society newsletter after the Executive Committee have completed their activities.

2. Participants

The total number of participants in this Congress was 492, with 258 attendees from within Japan and 234 from 23 different countries (in addition to 9 accompanying persons). Despite concerns about the impact of the COVID-19 pandemic, the event concluded successfully amid a vibrant atmosphere. Among the attendees, 92 individuals came from China, 51 from Germany, 33 from South Korea, and 10 from the United States,

contributing to a diverse and significant international presence. There were also participants from Asia and the Middle East: 3 from Viet Nam, 2 from India along with Serbia and 1 each from Malaysia, Singapore and Hong Kong. Notably, student participants numbered 127, representing over 25% of the total attendees.

3. Presentations

(1) Paper presentations

In this Congress, a departure from the traditional approach was adopted by conducting paper reviews based on submissions of extended abstracts, limited to a maximum of four pages, rather than full papers. This modification allowed for presentations without the need for a full paper submission. The rationale behind this change was to address concerns related to the COVID-19 pandemic, making it easier for participants to contribute to international conferences without hesitation. There were a total of 214 general presentations. The breakdown of general presentations included 148 submissions from 21 different countries overseas and 66 from within Japan. The proportion of presentations from overseas reached approximately 70% of the total. Unfortunately, there were seven no-shows.

(2) Invited lectures

Six speakers were invited from foreign countries, and three from Japan. The plenary lectures were held by the following four speakers : Professor Toshinori Watanabe of the University of Tokyo who provided an overview of the progress and development of gas turbines and related technologies in Japan (Fig.2), Dr. Mark Hardy of Rolls-Royce gave a presentation on material challenges and solutions for modern gas turbines, Mr. Krishnakumar PG of GE Gas Power delivered a lecture on decarbonization technology for gas turbines, and Mr. Yasuhiro Kinoshita of Kawasaki Heavy Industries, Ltd. introduced hydrogen aircraft for a carbon neutral society.



Fig.2 Professor Watanabe's plenary lecture.

Additionally, keynote lectures were entrusted to the following five speakers : Professor Agustin Valera-Medina of Cardiff University presented on the use of ammonia blends for zero carbon gas turbine power, Prof. Tekn. Dr. Damian Vogt of the University of Stuttgart made a lecture on aeromechanical optimization of turbomachinery, Prof.

Richard Sanberg of the University of Melbourne explained the role of high-fidelity simulation and machine learning, Dr. Kyoko Kawagishi of NIMS (National Institute for Materials Science) presented on the development of advanced Ni-base single crystal superalloys and direct recycling technique, and Dr. Dale Van Zante of NASA Glenn Research Center introduced NASA's aeronautics sustainable flight national partnership. All of the invited lectures had many participants, and the Q&A sessions also showed active participation, contributing to the overall positive feedback.

(3) Panel Discussions

A panel discussion titled "Future Prospects of Gas Turbine Combustion Towards a Carbon Neutral Society" was held as a Plenary Session (Fig.3). This panel was divided into two parts: Aircraft Gas Turbine and Industrial Gas Turbine. A lively discussion took place focusing on achieving a decarbonized society and received acclaim from many attendees.



Fig.3 Panel Discussion on aircraft gas turbine.

4. Exhibition

31 companies and institutions set up a total of 62 booths in the Annex Hall of the Kyoto International Conference Center from November 27th (Monday) to November 30th (Thursday) as shown in Fig.4. In addition to displays of hardware, such as gas turbines, jet engines, models and parts, many people also gathered at the software exhibition booths. ASME/IGTI had a booth to introduce activities and publications. GTSJ has been exhibiting at the ASME Turbo Expo since 2014, and this exhibition displays the feelings of mutual cooperation.



Fig.4 Exhibition.

There was a total of more than 1600 visitors. Additionally, a survey was conducted at

the venue. The results will be summarized into a document to allow the opinions to be reflected in the future. The laboratories of ten universities displayed A0 size posters in the corridor of the Annex Hall adjacent to the exhibition venue (Fig.5). During breaks, students of the laboratories explained their research projects or results of them to the participants of the Congress.



Fig.5 University exhibition.

5. Events

Registration began on the evening of the first day, and a welcome reception was held in the evening (Fig.6). More than 140 attended, and the event was crowded with people catching up with old friends or meeting others for the first time.



Fig.6 Welcome reception.

A banquet was held on November 29th (Wednesday) after the sessions ended, and about 230 participants attended (Fig.7). The nigiri sushi and Japanese sake tasting corners were very popular, and the dances performed by maiko-san were very popular, and many participants enjoyed taking photos together with them (Fig.8).



Fig.7 Banquet.



Fig.8 Dance performance by maiko-san at the Banquet.



Fig.9 Plant tour at MHI.

Kawasaki Heavy Industries Co. Ltd.) were conducted. Both tours attracted a large number of participants and were very well-received (Fig.9).

6. Related Events

(1) International Advisory Committee Meeting

On Tuesday, November 29th, the International Advisory Committee Meeting was held on the 5th floor, Room 509, of the Kyoto International Conference Center (Fig.10). The meeting took place over lunch. Many committee members provided feedback on the strengths, weaknesses, and areas for improvement in this Congress, which will serve as valuable references for future congresses. The venue, Kyoto International Conference Center, was praised for its stunning autumn foliage, and overall, received positive feedback from the committee members.



Fig.10 International Advisory Committee Meeting.

(2) Women's Meeting

As we had at IGTC2015 and IGTC2019, a women's meeting was held. Sixteen ladies and President of the GTSJ, Professor Yamamoto participated in it on November 29th (Thursday) during their lunch break (Fig.11). The meeting greatly facilitated communication between female engineers. After IGTC2015, the Gas Turbine Society of Japan established a Committee for the Promotion of Participation by Women in order to encourage activities to promote women's participation in the Society.



Fig.11 Participants in the Women's Meeting.

7. Final Words

We were able to successfully conclude IGTC2023 Kyoto, thanks to the dedicated efforts of everyone involved, the support from sponsoring and supporting organizations, for which we express our deep gratitude. Especially, amidst the global pandemic of the COVID-19, I would like to extend my heartfelt thanks to the executive committee

members who devotedly contributed to the preparation and operation. As the chairperson of the executive committee, I am sincerely grateful to all of you. Furthermore, I extend my appreciation to President Yamamoto and Vice President Wajima of the GTSJ (Gas Turbine Society of Japan) which was the sponsoring society, all the directors, including those like Secretary General Ms. Nakamura from the society's secretariat, the International Committee, the Paper Committee, and the Gender Diversity Promotion Committee for their various cooperation and support towards the success of this Congress. I would also like to express gratitude to e-Side Co., Ltd., who managed the conference secretariat, and all those involved with the Kyoto International Conference Center, the venue for the congress, for enabling smooth operation. Thanks to the members of the International Advisory Committee who encouraged participation from overseas, the organizations both domestically and internationally that exhibited their work at the congress, the companies that welcomed us as visiting destinations, the paper review committee members, and finally, to all who participated in this congress, we extend our thanks and appreciation.