

# **FY2022 Application Procedures for Joint Research Task of Institute of Ocean Energy, Saga University, Japan**

Institute of Ocean Energy, Saga University studies and educates ocean energies and multipurpose utilization of that. Our institute is composed of two facilities: “Core facility” for power generation and “Application and development facility” for ocean resources utilization. The period for the 3rd Mid-term objective which is beginning FY2016, we will investigate “Ocean thermal energy conversion”, “Wave energy conversion”, “Tidal power generation” and “Offshore wind power generation” in the core facility. Now, we raise the "Joint Research of Ocean Energy" as the project of Joint Usage/Research Center of ocean energies.

## **I. Core facility**

- Division of Ocean Thermal Energy Conversion
- Division of Ocean Fluid Energy (Wave energy conversion, Tidal energy power generation, Offshore wind power generation)

## **II. Application and development facility**

- Division of Ocean Energy System (Control, etc.)
- Division of Material Production from Ocean Energy (Hydrogen, Lithium, etc.)
- Division of Desalination
- Division of Information and Environment for Ocean Energy (Marine information, marine environment, environmental protection, etc.)
- Division of Utilization of Deep Ocean Water (Biotechnology, etc.)
- Division of Promotion of Utilization of Ocean Energy (Environmental law, human resource development, field of education, international education, IT education, etc.)

In FY2022, we raise category of “Specially Promoted Research” and “General Joint Research”. We welcome your application.

## 1. Call for Proposals:

Please choose one among research categories as follows and let the researcher of the IOES participate in the chose joint research by all means.

\*From this time, we categorized five joint researches (Specially Promoted Research A/B/C/D and General Joint Research). Please chose only one between these categories and necessity of grant. The grant of this joint research will be only distributed to the proposed project which can start April 2022. If you don't require our grant for your proposed research, you can apply this joint research all FY2022.

Research Categories	Field
Specially Promoted Research A	Research of Ocean Thermal Energy Conversion (OTEC)
Specially Promoted Research B	Research of Wave Energy Conversion
Specially Promoted Research C	Research of Tidal Power Generation
Specially Promoted Research D	Research of Offshore Wind Power Generation
General Joint Research	Research of Ocean Energy which are not related to the above-mentioned four field

### (1) Specially Promoted Research

There are four “Specially Promoted Research” related to the research of four divisions in IOES. These joint research have to be performed in collaboration with researcher(s) of IOES. We raise joint research on the following themes in FY2022.

#### **Specially Promoted Research A:** Research of Ocean Thermal Energy Conversion

IOES performs the technological advance of the ocean thermal energy conversion system and the substantial study using the organic mediums such as ammonia or an eco-friendly alternative Freon. An important research theme is a technological advance of the heat exchangers using the characteristics of the working fluids. We expect improvement of the overall thermal efficiency for the cycle by this research.

In this time, we advertise the joint research which is fundamental or applied, for heat exchanger of OTEC, LTEC (Discharged energy, ORC cycle, etc.), and general research of OTEC.

#### **Specially Promoted Research B:** Research of Wave Energy Conversion

In recent years, a new wave energy conversion device and tidal power generation device are proposed, and a study aiming at practical use is conducted at a fast pace, every part of the world. IOES also started the research aiming at practical use of wave energy conversion in FY2005. We are studying mainly about the float type wave energy conversion devices.

In this time, we advertise the joint research for technological advance of 1st and 2nd conversion devices as conventional type and new devices for wave energy conversion.

#### **Specially Promoted Research C:** Research of Tidal Power Generation

There are many kind of tidal power generation devices such as horizontal-axis propeller type, vertical-axis Darrieus type and etc. And there are some kinds of installation configuration such as float and sea based types. Research and development about the tidal power generation are carried out energetically all over the world, now. In FY2014, IOES constructed new circulating water tank to perform the tidal power generation and started the development of tidal power generation devices.

In this time, we advertise the joint research for proposal of tidal power generation devices and model-testing using circulating water tank.

#### **Specially Promoted Research D: Research of Offshore Wind Power Generation**

As for offshore wind power generation, big demand is expected worldwide in future. In recent years, some demonstration equipment of the floating type offshore wind power generation was installed in the actual sea area and a project of construction of offshore wind power generation farm was announced in Japan.

IOES will also start the study of floating type offshore wind power generation at FY2022.

In this time, we advertise the joint research for proposal of new devices related to floating type offshore wind power generation.

#### **(2) General Joint Research**

**General Joint Research:** Research of Ocean Energy which are not related to the above-mentioned four field

Our web sites ([https://www.ioes.saga-u.ac.jp/en/collabo/collabo\\_facilities\\_list](https://www.ioes.saga-u.ac.jp/en/collabo/collabo_facilities_list)) has the equipment housed at our university and research laboratory and its specifications.

We will support grant as the upper limit for 400,000 JPY for each research project. The applicant who needs grant, please fill in the section VII- Statement of costs in application form. Please write the costs for devices and consumable, don't include reward and travel expenses. IOES has the right of management of the devices. The travel expense will be supported within the range of budget.

The total funding of joint research in FY2021 was 4,150,000JPY.

#### **2. Eligibility to Apply:**

University researchers and researchers at public research institute, or researcher equivalent to these. And the person who admitted that director of IOES was appropriate.

#### **3. Submitting the Application:**

Before application, please discuss with organizer of IOES about research project theme and contents. Each proposed project will be supported by organizer of IOES. They will consult and communicate to applicant. Please decide the organizer of IOES before your application. If you cannot decide it, because you don't know our staffs, please contact to somebody of organizer for each research division in Table 1.

Please download the application form from IOES Web site ([https://www.ioes.saga-u.ac.jp/en/collabo/collabo\\_apply](https://www.ioes.saga-u.ac.jp/en/collabo/collabo_apply)) and fill in the application form. After that, Please e-mail the original copy of the application form to us before send it to us by postal mail. Please write as "Enclosed application form" by a red letter in an envelope.

If you have any questions about application form and procedure for application, please contact us.

[Postal address and contact us]

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\*Please write "Joint research" in subject of your e-mail.

Phone: +81-952-28-8880

FAX: +81-952-28-8883

4. Research period:

The period of adopted research is from the adoption date to March 31st, 2023.

5. Dead line of application:

If you would like to apply our grant, the application form must reach us no later than Friday, Feb. 24th, 2023.

If you don't need our grant for your proposed research, we can accept the form all FY2022.

6. Screening:

The screening of "Joint research" will be performed through a review board of IOES.

7. Notification of the Decision:

The selection results (whether an applicant is selected or not) will be announced until middle of April, 2022.

8. Report of joint research:

The researcher who received research grant has to submit a joint research report within three months after the end for your joint research period. You may be asked for results of research presentation in the annual report of joint usage/research center or symposium which hosted by IOES. The research report will be published into our annual report.

[Table .1] Organizer of research division

Division	Organizer	Phone	FAX	E-Mail
Ocean thermal energy (Ocean Thermal Energy Conversion)	Prof. Yasuyuki Ikegami	+81-952-20-4744	+81-952-28-8595	ikegami@ioes.saga-u.ac.jp
Ocean thermal energy (Innovation for thermal energy conversion)	Associate Prof.: Hirofumi Arima	+81-952-28-8877	+81-952-28-8595	arima@ioes.saga-u.ac.jp
Ocean Fluid Energy (Wave energy)	Associate Prof.: Yasutaka Imai	+81-952-28-8879	+81-952-28-8595	imai@ioes.saga-u.ac.jp
Ocean Fluid Energy (Tidal power)	Associate Prof.: Tengen Murakami	+81-955-20-2190	+81-955-20-2191	murakami@ioes.saga-u.ac.jp
Ocean Fluid Energy (Offshore wind power)	Prof.: Shigeo Yoshida	+81-952-28-8807	+81-952-28-8595	yoshidas@ioes.saga-u.ac.jp
Interdisciplinary Research	Associate Prof.: Yoshitaka Matsuda	+81-952-28-8571	+81-952-28-8189	ymatsuda@cc.saga-u.ac.jp

If you will publish the journal paper or report related to result of your joint research, please describe the acknowledgement in your paper as follows;

This study was performed under the Cooperative Research Program of IOES, Institute of Ocean Energy, Saga University. (Accept #)

In addition, please submit the copy of your articles to us.