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| Division of Mechanical Science and Engineering  | Research field   | Fluid Information | Lab. ID |
|   |  |                   | MS04    |
| Laboratory web site   | <a href="http://www.ms.t.kanazawa-u.ac.jp/~fluid/">http://www.ms.t.kanazawa-u.ac.jp/~fluid/</a>                    |                   |         |
| Research subjects   |  |                   |         |
| <p>(1) To improve the performance of wind turbine generator systems (WTGSs) and reduce the noise they create, we have been developing wind turbines and wind concentrators. We have also been studying the characteristics of natural wind and the optimal siting methods of WTGSs. (2) We have been developing micro hydropower generation systems and a generator system that utilizes flow-induced vibration of a bluff body in water flow. (3) We have been studying the flow characteristics of round and plane jets by implementing various flow control techniques, such as modifying their nozzle shapes, etc.</p>  |  |                   |         |
| Master/Doctor course: Education policy, curriculum, typical activity in the laboratory  |  |                   |         |
| <p>(1) At the time of enrollment in the master's program, we provide guidance regarding the classes to take in two years. In addition to classes, we hold a seminar every week with research groups on thermal systems and heat engines in which students present their research progress. Students are also divided into two to three groups, according to their research themes, and scrutinize the latest research papers that relate to their area of study. Students are permitted to work on their research any time they like. (2) The doctoral program's education policy and laboratory activities are almost the same as those of the master's program.</p>   |  |                   |         |
| Daily life in the laboratory, etc.  |  |                   |         |
| <p>We are able to experience a fulfilling and enjoyable research life. Since professors guide us strictly and hospitably, we can develop the abilities we need to become an excellent engineer. Among the students, there is a culture in which we may readily and sincerely exchange opinions to improve research presentations and job-hunting activities, etc. We are able to have meaningful experiences by communicating with many kinds of people who have different ideas because there are about 10 new students every year. We also have many events, such as a welcome party, a bowling competition, a cherry blossom viewing party, a barbeque party and a rice cake making party, etc. (M2)</p>   |  |                   |         |
| Message or comments by the laboratory faculty staffs  |  |                   |         |
| <p>Our laboratory conducts research and development on various phenomena and equipment related to the field of fluid engineering. Students can acquire skills to perform experimental measurements through wind tunnel experiments, water tank experiments and field experiments. In addition, students can develop the skills to perform numerical analyses by using supercomputers and powerful workstations. With regard to employment, there is no problem; Most of the graduates from our laboratory have accepted jobs at large, well-known companies. If students prefer to go on to the doctoral course, we welcome such a pursuit. We guide the students considerably until they obtain their Ph.D. degrees and support their employment activities.</p> |  |                   |         |
| Recent Master theses in these 3 years (+ more if appropriate)   |  |                   |         |
| year.month  | Thesis title (including English translation of Japanese thesis title)  |                   |         |
| 2017.3  | Flow Visualization and Performance of Micro-hydro Pelton Turbine   |                   |         |
| 2017.3  | Effects of the arm cross-sectional shape on the aeroacoustic noise of a straight-bladed vertical-axis wind turbine |                   |         |
| 2017.3  | Control of a Plane Jet Spread by Tabs at the Nozzle Exit   |                   |         |
| 2017.3  | Performance of the Orthopter-type Wind Turbine in a Shear Flow   |                   |         |
| 2017.3  | Numerical investigation on the performance of a cross-flow wind turbine with a wind concentrator                   |                   |         |
| 2016.3  | Flow Distribution and Wall Shear Stress Downstream from an Orifice Plate in a Circular Pipe                        |                   |         |
| 2016.3  | Performance of a Cross-flow Wind Turbine Located above a Windbreak Fence   |                   |         |
| 2016.3  | Wind tunnel experiments on the performance of straight wing vertical axis wind turbine in a shear flow             |                   |         |
| 2016.3  | Flow-induced Transverse Vibration Characteristics of Cantilevered Prisms for Energy Harvesting                     |                   |         |
| 2016.3  | Numerical Study on the Fluctuating Aerodynamic Forces on the Tower of a Wind Turbine with Rotating Blades          |                   |         |
| 2016.3  | 3D Numerical Simulations of Turbulent Flow around a Rectangular Cylinder Moving over a Ground                      |                   |         |
| 2015.3  | Aero-acoustic Noise from a Variable-pitch Straight-bladed Vertical-axis Wind Turbine                               |                   |         |
| 2015.3  | Performance Improvement of a Cross-flow Wind Turbine Using a Wind Concentrator                                     |                   |         |
| 2015.3  | Performance of Undershot Water Wheel in Snow Drainageway   |                   |         |
| 2015.3  | Development of Airflow around a Rotating Disk  |                   |         |
| 2015.3  | Numerical Simulation of Flow Structure of Round Jet with Divergent or Convergent Deflectors by LES                 |                   |         |
| 2015.3  | Performance of H-type Darrieus Wind Turbine in Shear Flow  |                   |         |
| 2014.3  | Performance of a Cross-Flow Wind Turbine and Flow around a Porous Fence in Oblique Wind                            |                   |         |
| 2014.3  | Time-averaged and Fluctuated Wall Shear Stresses Downstream from an Orifice in a Circular Pipe                     |                   |         |
| 2014.3  | Flow-induced Transverse Vibration of a Cantilevered Prism for Energy Harvesting                                    |                   |         |

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| 2013.3  | Studies of a Small Vertical-Axis Wind Turbine with Variable-Pitch Blades                                      |
| 2013.3  | Flow around a Rectangular Cylinder of Different Aspect Ratios Moving over a Plate                             |
| 2013.3  | Flow Characteristics of a Plane Jet with Deflectors inside a Nozzle   |
| 2013.3  | Flow Characteristics of Round Jet with Divergent or Convergent Deflectors                                     |
| Recent Doctoral theses in these 3 years (+ more if appropriate) |   |
| year.month  | Thesis title (including English translation of Japanese thesis title)   |
| 2015.3  | Numerical and Experimental Studies of a Small Vertical-Axis Wind Turbine with Variable-Pitch Blades           |
| 2015.3  | Study on a Jet with Deflectors and Tapered Annulus  |
| 2014.9  | Study of Performance of a Cross-flow Wind Turbine Located above a Windbreak Fence                             |
| 2013.3  | Performance of a Vertical Axis Wind Turbine with Variable-Pitch Straight Blades Utilizing a Linkage Mechanism |
| 2012.9  | Displacement Efficiency of Water in a Cylindrical Tank  |
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