芝浦工業大學 SHIBAURA INSTITUTE OF TECHNOLOGY

AY2020Global PBL (online)Performance report

Power system control training

Date	Place	Partner Organization	Students' Major and Grade	Participants' Information	SIT Instructor
October15 ～December17,2020	Japan	Hanoi University of Science and Technology Bandung Institute of Technology Thai-Nichi Institute of Technology	Department of Electrical Engineering ・Undergraduate 3rd grade	(SIT) Students 6, TA 1, Professor 1 (Hanoi University of Science and Technology) Students 4, Professor 2 (Bandung Institute of Technology) Students 4, Professor 1 (Thai-Nichi Institute of Technology) Professor 1	FUJITA Goro (Department of Electrical Engineering)

We opened online gPBL program in October–December 2020, inviting Hanoi Institute of Science and Terchnology in Vietnam and Institute of Technology Bandung in Indonesia. 10 times of weekly workshop were held. Target is to realize excellent spreed and voltage control of synchronous generator, afrer learning control theory using kit. At the beginning, we conducted small experiment at home university using the kit which is based on MATLAB/Simulink and Arduino. Students could learn fundamental of control theory by themself. They also exchanged the progress and trouble shooting at the workshop. After that, They also conducted experiment but the devices are at SIT, Therefore, by splitting the role, SIT students performed experiments meanwhile other students designed the controller and evaluated the results. Final presentation concluded how the target is achieved and future problems.

Image1 Generation experiment

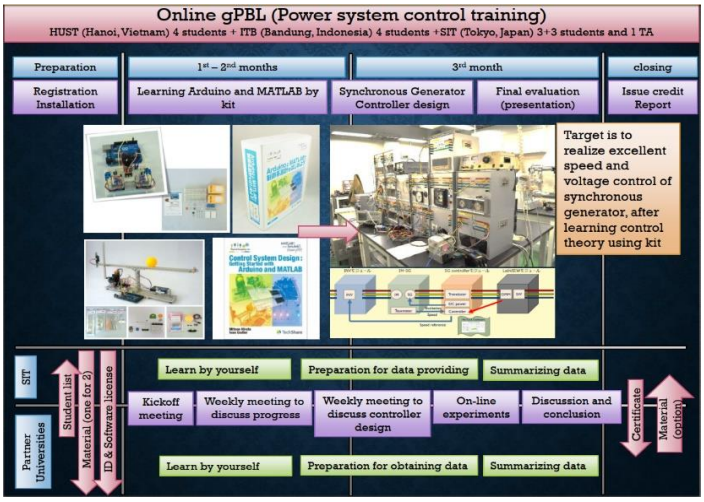

Image2 gPBL outline

Schedule

Oct. 15th (Thu)	14:00-15:30 JST	Kickoff meeting, self-introduction, schedule, preparation
Oct. 22nd (Thu)	14:00-15:30 JST	Control theory by using kit (1) Report by appropriate chapter, including trouble issue
Oct. 29th (Thu)	14:00-15:30 JST	Control theory by using kit (2) Report by chapter 4.3
Nov. 5th (Thu)	14:00-15:30 JST	Control theory by using kit (3) Report by chapter 5.2 SIT: Introduction of Experiment procedure
Nov. 12th (Thu)	14:00-15:30 JST	Control theory by using kit (4) Report by end of chapter 5 SIT: Outline of experiment devices
Nov. 19th (Thu)	14:00-15:30 JST	Experiment (1) : Demonstration Report by end of chapter 6 (ITB, SIT) SIT: Demonstration of experiment devices HUST and ITB: Proposal for experiment procedure
Nov. 26th (Thu)	14:00-15:30 JST	Experiment (2) : Model identification (split to HUST-SIT team and ITB-SIT team) Report by end of chapter 6 (HUST) SIT: Perform on-line experiments, data correction and sharing HUST and ITB: Evaluate and improve the performance 14:00-15:00 ITB-SIT team experiment 15:00-15:10 Common session (HUST report) 15:10-16:00 HUST-SIT tem experiment
Dec. 3rd (Thu)	14:00-15:30 JST	Experiment (3) : Controller design (split to HUST-SIT team and ITB-SIT team) SIT: Perform on-line experiments, data correction and sharing HUST and ITB: Evaluate and improve the performance
Dec. 10th (Thu)	14:00-15:30 JST	Experiment (4) : Final result (split to HUST-SIT team and ITB-SIT team) SIT: Perform on-line experiments , data correction and sharing HUST and ITB: Evaluate and improve the performance
Dec. 17th (Thu)	14:00-15:30 JST	Presentation (10 min presentation and 5min discussion for one university) SIT: 1-HUST team, 1-ITB team HUST: 1-kit evaluation, 1-controller design, 1-controller evaluation, 1-ex. evaluation ITB: 1-kit evaluation, 1-controller design, 1-controller evaluation, 1-ex. evaluation

Image3 Detailed schedule

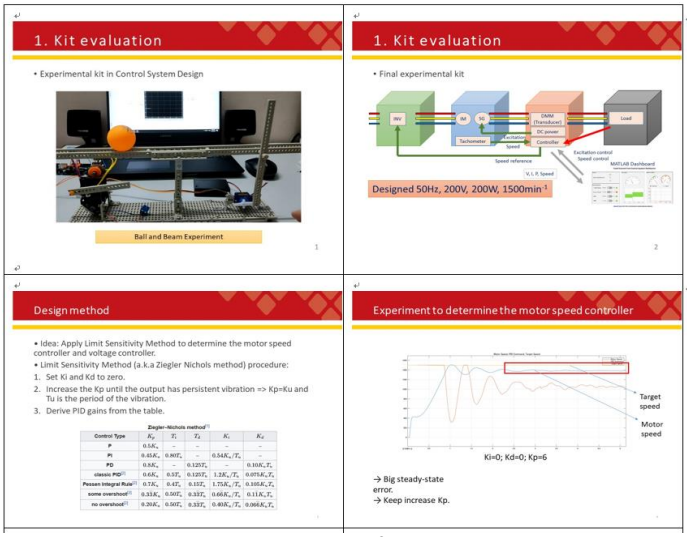

Image4 Example of presentation