



Turbine Testing Lab

Monthly Bulletin September, 2016

KETEP 2015- 2017 Project

- Fabrication and installation of cross- flow turbine test rig at Turbine Testing Lab.
- Performance test of the 5 kW SS cross flow runner ([designed at TTL](#) and manufactured at [Donggu Infra Co. Ltd, Korea](#)) with the variation of guide vane openings, speed of runner and flowrate.
- Complete Report submission to KETEP upon the [completion of Phase II of this project](#).
- [Phase III](#) (Final) phase of the project commencing from October 2016 which includes the installation of 20 kW cross- flow turbine at Majhifeda VDC, Kavrepalanchok and performance analysis of the same.

Energize Nepal Project

- Studying project documents and formulating work-plan.
- Awaiting for the 1st installment of the project from [Royal Norwegian Embassy \(RNE\)](#).

Lab activities

- Presentation on the topic of [Hydropower and facilities at TTL](#) on DoME orientation program for newcomers Mechanical students- Batch 2016.
- Revamping of [existing test rig](#) at the lab.
- Incorporation of emergency switches and MCB in the test rig for [safety purpose](#).
- Cleaning of the lab floor and arrangement of [temporary canal](#) outside the lab to bypass the rainwater after flooding incident in TTL on 20th Sep 2016.

Academic activities of Masters Student

- Completion of computational analysis and experiment on Rotating Disc Apparatus (RDA) for selection of guide vane profile.
- [Draft manuscript](#) on selection of guide vane profile for erosion handling in Francis turbine underway.
- Fabrication of [3 guide vane model setup](#) in progress.

Internship Program

- Completion of [60 days long internship](#) of 4 number of final year undergraduate students from the department.
- [2 different types of coating](#) done on cross- flow runner for experiment on RDA as a part of internship for Applied Physics department student.



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Academic Projects

Completion of **Mechanical final year** projects undertaken by TTL namely:

- Test rig development and **performance testing** of 5 kW cross- flow turbine available at TTL.
- Study of **sediment flow erosion** in cross- flow runner at laboratory conditions using Rotating Disc Apparatus (RDA).
- Sediment analysis of Upper Chameliya, Chilime and Rasuwagadhi hydropower plants and study of its **industrial applications**.
- Aerodynamic performance analysis and fabrication of **small- scale wind turbine**.
- Performance analysis of **turgo turbine** with CFD.
- Study of sediment erosion in **guide vane** of Francis turbine.

