**INTRODUCTION**

M-HEP is a multidisciplinary project aimed at designing, fabricating, installing, testing and commissioning of a mini-hydroelectric power station along River Ndarugu in Njoro Sub-County, Nakuru County. Power generated from this project shall be used to power streetlights and any other selected loads in the University or within the community.

The project shall be automated and interfaced with a wireless control for remote management and teaching purposes. The project will later be implemented within our country and beyond after proved successful

**CONCEPTION OF THE IDEA**

The idea to have a renewable energy source was first proposed by Eng. John Mwiti from Geothermal development company to Egerton University Technology Enthusiasts’ Engineers Club (EUTEEC) inSeptember 2019.At the moment GDC was looking into more ways they could tap into renewable energy and this inspired Eng. Mwiti to go beyond at his personal capacity. He approached Egerton University and RVIST for different projects and after few consultative meetings we agreed to work on a hydro project as we think of more ways GDC can utilize its steam after generating power. The challenge was thus passed on to EUTEEC and Egerton university at large.

**PROJECT OBJECTIVES**

## Objectives

Main Objective:

To design, develop and install a Micro hydroelectric power generating system plant.

Specific Objectives:

To establish an appropriate site and make preliminary designs.

* 1. To design, develop, and install a non-convectional low head turbine system
  2. To design a Micro- hydroelectric plants.
  3. To develop, test and optimize the hydroelectric plants.
  4. To install, test and commission the best hydropower plant on site.To inculcate an innovation culture among the student using multidisciplinary approach

**PROJECT OUTCOMES**

1. **harnest power from low heads spread across the country**
2. **Generate 1000\*\*\*\*W of clean energy**

**PROJECT TEAMS**

The project involves students, university staff, community leaders, GDC engineers, alumnus and other associates from other universities and countries. We were subdivided into teams to make it easier to achieve our goals. Our teams are;

1. Civil and environmentalists
2. Design
3. Mechatronics
4. Control & automation
5. Electrical and electronics
6. IT & GIS
7. Quality control & assurance
8. Welfare
9. Business and marketing
10. Documentation
11. Public and community relations

We therefore are open to students from all faculties and universities.

**OUR ORGANIZATION STRUCTURE**

We mostly communicate via WhatsApp and SMS. Each team can meet independently discuss in their own platforms and the team leads shares the findings to everyone.

Before the pandemic, we used to meet in the labs/NPLs every Friday or Saturday. We could get mentors and show case our innovations

During the pandemic, we could only organize for few virtual meetings. Few of the team members on site could meet physically in school or town

**SUCCESS**

1. Designed and fabricated an efficient turbine
2. Successful feasibility study and GIS mapping
3. Brought together different disciplines within the university, Kenya and beyond
4. We have several communities in Kenya interested
5. Gained new knowledge and skills

**FUNDING**

It’s been our major drawback since most times we had to fund ourselves in our activities.

For the project meetings, coffee hours were funded by EUTEEC and supported by Electrical and control department (for labs, projectors and moderation)

The feasibility study was supported by GIS department from GDC. The analysis done by DeKuT and UoN students

The website was developed by Rich Techs, managed by EUTEEC associates

Filming of the Feasibility study was funded by Eng. Mwiti

The turbine fabrication was done by Eng. Mwiti

**LESSON LEARNT**

1. Given enough funds and support, this project can be achieved
2. The multidisciplinary approach had yielded to better designs and open up a culture of innovations

**Abbreviations**

1. **EUTEEC**
2. **GDC**
3. **M-HEP**