INSTRUMENTATION LAB REPORT

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INSTRUMENTATION REPORT ON MARSHYANGDI HYDROPOWER

ABSTRACT

This report presents a comprehensive analysis of the Marshyangdi Hydropower Project, a significant renewable energy initiative in Nepal. The Marshyangdi River, located in the Annapurna region, provides the ideal setting for hydropower generation, boasting abundant water resources and considerable topographic advantages.

The report outlines the project's background, including its inception, planning, and construction phases. It delves into the technical aspects of the hydropower plant, covering the dam's design, reservoir capacity, turbine configurations, and power transmission mechanisms. Environmental considerations and mitigations are also discussed, emphasizing the project's commitment to sustainable development and ecological preservation.

Furthermore, the report evaluates the economic impacts of the Marshyangdi Hydropower Project on the region and the nation at large. It analyzes the contributions to Nepal's energy security, reduction of greenhouse gas emissions, and potential for revenue generation through energy exports.

Moreover, the social implications of the hydropower project are explored, focusing on the local communities residing near the plant. This includes an assessment of the resettlement and compensation programs, employment opportunities, and community development initiatives introduced by the project stakeholders.

The report also examines the challenges faced during the implementation of the Marshyangdi Hydropower Project, encompassing technical, financial, and regulatory aspects. Lessons learned from this endeavor can offer valuable insights for future hydropower projects in Nepal and similar regions.

In conclusion, the Marshyangdi Hydropower Project stands as a remarkable example of sustainable energy development, showcasing Nepal's potential to harness its natural resources for socio-economic growth. While highlighting its accomplishments, this report also underlines the importance of continual monitoring and adaptive management to ensure the project's long-term success and its positive impacts on the environment and local communities.

INTRODUCTION

The following instrumentation report provides an overview of the Marshyangdi Hydropower Project, focusing on the instrumentation systems implemented to monitor and control various aspects of the power generation process. The Marshyangdi Hydropower Project is a significant hydroelectric facility located in , Nepal.



OVERVIEW

The Marshyangdi Hydropower Project is a run-of-the-river type hydropower plant, designed to harness the potential energy of the Marshyangdi River to generate electricity. The project's installed capacity is [Capacity in MW] and is a key contributor to Nepal's efforts to meet its growing energy demands through clean and renewable sources.

OBJECTIVE OF INSTRUMENTATION

The primary objectives of the instrumentation systems in the Marshyangdi Hydropower Project are as follows:

1. **Monitoring:** To continuously monitor the performance of various components and systems involved in power generation, transmission, and distribution. This includes the assessment of water flow, turbine efficiency, generator output, voltage levels, and other relevant parameters.
2. **Control:** To enable efficient control and regulation of power generation processes, allowing operators to optimize output, respond to changing demands, and ensure safe operation.
3. **Safety:** To enhance the safety of personnel and equipment by detecting abnormal conditions, such as excessive vibration, temperature, or pressure, which could indicate potential faults or failures.
4. **Data Logging and Analysis:** To collect and store data from the instrumentation systems for further analysis, trending, and decision-making related to maintenance, improvements, and long-term planning.

**A large dam with water coming out of it

Description automatically generated**

Instrumentation System

The Marshyangdi Hydropower Project is equipped with a comprehensive range of instrumentation systems, including but not limited to:

1. **Flow Measurement System:** Utilizing flow meters and level sensors to measure water flow rates and water levels at key points along the river and within the power generation system. This information helps in optimizing turbine operations and ensures compliance with environmental regulations.
2. **Turbine Control System:** Incorporating sensors to monitor the rotational speed, pressure, and temperature of the turbines. This data is crucial for maintaining the efficiency and safety of the turbine units.
3. **Generator Monitoring System:** Employing sensors to track the generator's electrical parameters, such as voltage, current, and frequency. This data aids in maintaining stable power output and detecting electrical abnormalities.
4. **Temperature and Vibration Monitoring:** Using temperature and vibration sensors on critical equipment like turbines, generators, and bearings to identify potential faults or abnormal operating conditions.
5. **Safety and Alarm System:** Implementing safety sensors, such as smoke detectors, fire alarms, and leakage detectors, to ensure the safety of personnel and the plant infrastructure.
6. **SCADA (Supervisory Control and Data Acquisition) System:** Integrating all instrumentation data into a central SCADA system that enables operators to monitor and control the entire power generation process from a centralized location.

A water dam in a forest

Description automatically generated

Maintenance and Calibration

Regular maintenance and calibration of the instrumentation systems are essential to ensure their accuracy and reliability. A well-defined maintenance schedule and calibration procedures are followed to keep the instrumentation systems in optimal working condition.

Data Analysis and Reporting

Data collected from the instrumentation systems are analyzed to assess the performance of the power generation process, identify potential issues, and make informed decisions regarding maintenance and improvements. Regular reports are generated based on the analysis to provide an overview of the plant's operational status and highlight any significant findings.

CONCLUSION

The instrumentation systems installed at the Marshyangdi Hydropower Project play a vital role in monitoring, controlling, and ensuring the safe and efficient operation of the power generation process. These systems enable operators to make informed decisions, optimize power output, and maintain the plant's reliability over the long term.

Title: Report on Global Cable Industry PVT. LTD

Abstract:

This project report gives a general overview of the cable sector, with an emphasis on Pokhara, Nepal, and its existence and effects there. The research analyses the major actors in the global cable market, analyzes the sector's current situation, and examines industry developments and evaluates the opportunities and difficulties that the business in Pokhara. Additionally, it looks into technical advancements, local cable service demand, and technological developments and regulatory considerations influencing the region's industry growth.

Introduction :

The transmission of data, phone, and video signals is made possible by the cable industry, which is a significant part of the telecommunications and entertainment industries. The increased reliance on digital communication and entertainment platforms around the world has led to a considerable increase in the demand for cable services. This article examines the cable industry's local and international components as well as its significance in Pokhara.

Objectives:

1. Understanding the current state of the cable industry in Pokhara.
2. Analyzing the key players and their market share.
3. Identifying the major drivers and challenges faced by the industry.
4. Exploring the growth potential and emerging trends in the cable industry And Offering strategies for Sustainable Growth and Competitiveness.

Methodology:

This project report's information was gathered from both primary and secondary sources. Primary sources included polls and interviews with important players in the global sector, such as cable providers. Industry reports, government documents, and other secondary sources publications and pertinent writings.

Overview of the Cable Industry in Pokhara:

One of Nepal's larger cities, Pokhara, has seen considerable expansion in its cable business. Cable TV, fast internet, and VoIP telephone are just a few of the services offered by the city's cable operators. Below are a few images of various cables created by international wire cable industries.

Market Analysis:

1. Market Size: In Pokhara, the cable sector has developed rapidly over the past few years, with an more homes are signing up for cable subscriptions.
2. Market Share: The major cable providers have been recognized, and Analysis of their market share has been done.
3. Revenue Trends: Cable companies' revenue trends have been examined to comprehend the financial health of the sector.

Growth-Driven Factors:

1. Growing Need for High-Speed Internet: The rise of the cable business in Pokhara has been greatly aided by the rising demand for high-speed internet.
2. Cable TV's digitalization: By switching from analog to digital, cable operators are now able to offer more channels with better visual quality.
3. Service bundling: Cable operators who bundle TV, internet, and phone services have gained more clients.

Challenges:

1. OTT Services Competition: Traditional cable TV services are facing a threat from over-the-top (OTT) streaming platforms.
2. Infrastructure Development: Adding to and sustaining cable infrastructure calls for a sizable investment and ongoing improvements.
3. Regulatory Environment: The operations of the cable sector may be impacted by changes in regulatory rules.

SUGGESTIONS:

The following suggestions are put forth in light of the findings of this project report:

1. To provide faster internet services, invest in fiber optic infrastructure.
2. Integrate smart home solutions and value-added services to diversify service offerings.
3. To be competitive in the industry, keep up with new trends and innovations.
4. Work together with telecommunications providers to expand services and integrate 5G.

CONCLUSION:

In conclusion, Pokhara, Nepal's cable business has demonstrated consistent growth and has room for additional development. Cable operators in Pokhara can stay competitive in the quickly changing global cable sector by utilizing rising technologies, implementing novel strategies, and comprehending client preferences.