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E-LAB KEY MANAGEMENT SYSTEM

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Politeknik Kuching Sarawak

"E-Lab Key Management System" is systems that help to secure the key and record the data of the key user. This system records the name of the lecturer who holds the key. There are three objectives that to achieve, first is to identify the person who holds the key for Department of Technology Information and Communication in Polytechnic Kuching Sarawak. Second objective is to build up a secure place to store the key by using this system. The last objective is to generate key usage log report for audit purpose. The methodology that have been use to develop this system is Rapid-application Development Model. The model is a step-by-step sequential execution of each phase of the software life cycle. In addition, this system was developing using XAMPP to create a local web server for testing and deployment purposes and PHP as a programming language support. Based on information obtained, it is known that the Department of Technology Information and Communication in Polytechnic Kuching Sarawak does not have a system to record the person who holds the key when they using the key. It is difficult for the administrator to record the data of the usage of the key. Hence, this system can make the job of the administrator become easier.

ELECTROKINETIC TREATMENT (EKT) ON REINFORCED PEAT WITH NYLON FIBER FOR THE SUB-GRADE LAYER STRENGTHENING

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Peat consists of the highly organic substance that derived primarily from plant material which is form when decomposed plant/animals accumulate more quickly than it humidifies. Peat possesses low strength, low bearing capacity and easily undergo differential and total settlement and recorded the highest moisture content (200-2200%) among all the soils. Therefore, it is crucial to enhance stability, increase bearing capacity, and reduce excessive settlement as well as lateral deformation to support and improve any structure and/or infrastructure build on peat. This study focused on investigating the strength increment of peat in natural and dry state mixed as sub-grade layer with various percentages (0.3%, 0.5%, and 0.8%) of nylon fiber (NF) as reinforcement, 5% cement as binder and later the treated peat were applied to the electrokinetic treatment (EKT) for further enhancing the compressive strength. The nylon fiber is chosen due to its very strong characteristic with extremely resistant to abrasion and bending. It is lightweight with the specific gravity of 1.04 and durability properties make nylon fiber an ideal reinforcement material. The nylon fiber varies from 10 mm to 50 mm length sizes and is a product from the tire waste disposal (extracted from car type). The peat samples collected are

categorized as Sapric peat (H7) with recorded moisture content of 425%. The development of the compressive strength was determined by using Unconsolidated-Undrained (UU) Triaxial test for natural state, Unconfined Compressive Strength (UCS) test and California Bearing Ratio (CBR) test are at drying state. All samples were air-cured for 7 days, 14 days and 28 days. The application of EKT was practiced with 3.0 V and 12 V applied for 10 minutes duration for UU/UCS and CBR, respectively. From the preliminary results obtained (Figure 1), the treated peat using nylon fiber and electro-kinetic treatment has improved significantly the compressive strength of the treated peat for both natural and dry state when compared to non-treated peat.

ENERGY PINCH ANALYSIS OF PALM OIL MILL

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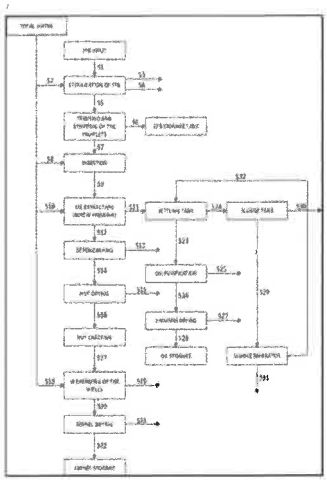

Since it is well known that energy wastage would lead to loss of profit, this research is conducted to reduce and conserve the energy consumption at its optimal level. In order to achieve the major aim of this research, three objectives are drawn as an aiding guideline to be achieved throughout the project. Upon the progress of achieving the objectives of this research, Microsoft Excel was used to develop the mass and energy balance of the overall palm oil mill and Optimal Heat software was used to perform energy pinch analysis as well as to develop heat exchanger network diagrams for each possible case of pinch analysis. The major reason for this approach to be chosen is that, heat exchanger network design is the very direct optimization method which had been adapted from pinch analysis itself.