

Report on Development of a cost effective, user friendly and efficient dryer for different types of rubber

Executive summary of the project

Sri Lanka processes natural rubber latex into a semi industrial raw material in two forms namely dry form and liquid form (concentrated latex). Natural rubber produced in dry form contributes to approximately 75% of the local rubber production. Ribbed Smoked Sheets (RSS) and Crepe Laces (CL) are the major dry raw rubber forms while there are few other forms such as yellow fraction rubber (YFR), brown crepe laces (BCL) and skim rubber laces (SKLC) which are produced as by products at relatively small quantities.

The drying process is the longest production step of the manufacturing processes of all the above dry rubber forms. RSS is dried at 48-54 °C for 5 days in a traditional smoke house and at 55 - 65 °C during a single day in a newly introduced single day smoke drying units. CLs are dried conventionally in heated hot air chambers at 34 °C for 3 days. In this system, energy content of flue gas is not utilized. Other forms of rubber are dried at ambient air at uncontrolled drying conditions for prolong periods. Traditional drying operations of rubber, therefore, require a huge space for drying chambers and are carried out in multi-story buildings. Some of the other drawbacks of these drying systems are energy wastage due to interrupted drying process, low drying efficiency, obnoxious operational practices, delayed cash flow and down grading of rubber dried at ambient conditions particularly in overcast weather conditions. Diversification of the type of product could not also be done at once to absorb the advantages of the price fluctuations of RSS and CL with the presently available drying systems as they are designed for drying only a particular form of rubber.

In this scenario, this project was carried out to develop a drying system with a reduced drying period, lesser firewood consumption and improved working conditions while keeping provisions for drying of different forms of dry rubber in a same drying system.

As the output of the project, a user friendly, efficient and accelerated dual unit drying system which could be used for drying of different forms of rubber simultaneously or separately was designed and constructed. Drying performance of different grades of rubber at different operational conditions was studied.