ENGINEERING AND TECHNOLOGY IN INDIA
Volume 2 Issue (1&2); (April & October, 2011); Page : 10-12

RESEARCH ARTICLE

*Received:* Dec., 2010; *Accepted :* Apr. , 2011

# Energy management in Isabgul processing plant

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## ABSTRACT

Energy audit was carried out in Isabgul processing plant to optimize power consumption. The power requirement of the traditional plant was 21.0 horsepower. The manufacturing of Isabgul processing machinery is not an organized industry. Actual need for power at each operation is not specified by the manufacturer resulting into wastage of energy by installing higher hp motor. Energy utilization efficiency can also be improved by identifying the federate and clearances between under runner disk, where maximum husk recovery is obtained. Study was carried out to determine total energy required for processing of Isabgul seed at each operation and identify the scope to conserve energy by technology upgradation, increasing efficiency of machinery by proper selection of feed rate, clearances between emery disk and reduction of process time. The result shows that the percentage of husk recovered was affected significantly due to different feed rate and clearances. The 175 kg/hr feed rate recorded highest husk percentage *i.e.*, 27.15 per cent under treatment combination of Set-3 (Clearances between under runner disk ranging from 1.55 mm. to 1.18 mm.) and total energy consumption was found 5.46 kwh.

Modi, V. M., Desai, N.N. and Patel, D.B. G. (2011). Energy management in Isabgul processing plant. *Engg. Tech. in India,* **2** (1&2) : 10-12.

**Key words :** Isabgul (Psyllium), Feed rate , Energy, Clearance.

## INTRODUCTION

India at present is the largest producer, consumer and exporter of spices in the world. India produces more than 50 varieties of spices and exports spices to some 120 countries in the world. The Isabgul husk has very good export potential among all crude drugs. According to trade estimates, 90 per cent of the domestic production of Isabgul husk is exported. Isabgul processing mainly involves cleaning, polishing, dehusking and aspiration. Presently most of the Isabgul mills are traditional type and locally manufactured and old design. The manufacturing of Isabgul processing machinery is not an organized industry. The capacity, operating parameters, power requirement and specification of machinery varies from industry to industry. Actual need for power at each operation is not specified by the manufacturer resulting into wastage of energy by installing more hp motor and other accessories. The power consumption is also vary high because of the large number of dehusking operation. The unit operation can be reduced to save the energy and time. The knowledge of energy management for production of a product enables one to produce more processed product with the same energy consumption. Energy utilization efficiency can also be improved by identifying the feed rate and clearances between under runner disk sheller, where maximum husk recovery is obtained. Therefore, emphasis is to determine the total energy required at each operation for processing of Isabgul seed and identify the scope to conserve energy by technology upgradation and increasing efficiency of machinery by proper selection of feed rate, clearances and reduction of process time.

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