

ARECA FIBRE REMOVAL MACHINE

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Abstract

The paper is concentrated on areca fiber extraction machine manufacturing. This removes fiber from areca husk. The areca husk is the exterior cover of the fiber-consisting areca nut. The machine comprises a 3-phase ac motor that is connected directly to the driven shaft. The driven shaft is enclosed in a case designed to remove only dust and fiber from the rectangular duct at the bottom of the case. Two bearings support the driven shaft and have blades designed by modifying the blade design of the decorating machine for coconut husk. This machine will therefore be of assistance to rural entrepreneurs and farmers.

Key words: areca fiber, extract, blade.

Introduction

Bio-fiber[1] is described as a fibrous material obtained from tree, plant or shrub. Natural fibers can be regarded as natural composite materials consisting primarily of cellulose fibrils[2] (fibers) inserted in lignin matrix[3] (resin). The cellulose fibers are positioned with the length of the fibers regardless of their origin. These fibers are currently used conventionally in the manufacture of ropes, mats and mattings as well as in the manufacture of fancy items such as table mats, purses, wall hangings, and handbags. Areca fiber[4], [5] is obtained through the retting process in the traditional technique. The restoration process uses water and bacteria to disintegrate or rot many cellular tissues and other substances on areca husk. The problems faced by the person by using a traditional method is that it is time consuming, requires more labor, depends on the water resources and is prone to human errors.

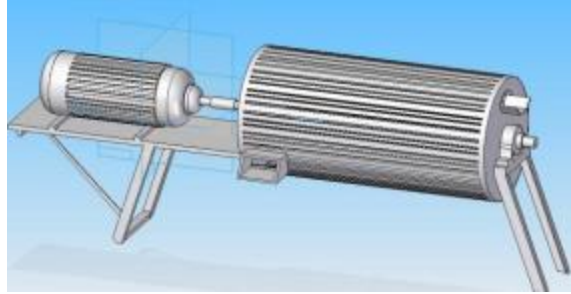


Fig.1 Areca fiber extracting machine

Methodology

1. A supporting unit has been manufactured from channel sections and equal angles are meant to provide the machine base. This gives the machine adequate stability.
2. The two V-shaped supports have been welded to motor support made of 38 cm long and 20.5 cm wide mild steel.
3. Through four bolts, a 3-phase and 1440 RPM motor is fixed to the motor support.
4. A 14.25 cm radius case is made of mild steel. In the circumference, 42 square rods of 24 inches long and 1 cm wide are welded to make the case. A gap of 5 mm is maintained between two square rods, so that dust flows through these gaps during the process of fiber extraction. The casing ring has 2 buttons to open and close the casing.
5. A thin sheet of metal made of mild steel was cut to a length equivalent to 13.5 cm and width equal to 14.5 cm for the manufacture of a U-shaped hopper. This hopper[6] is soldered horizontally to the case at an angle of 330.
6. A shaft having a diameter of 2.5 cm and a length of 76.5 cm is made of mild steel. This shaft is placed into the casing and is backed by two bearings on both sides of the pillow block. Bearing pillow block with accommodation.
7. The blades are cut down into rectangular shapes of 11.5 cm in length, 5 cm in width and 1 cm in thickness. The surface grinding machine sharpened those blades. With 2 blades per set and a total of 18 blades, nine sets of blades were welded to the shaft.

Conclusion

Taking into account the amount of fiber generated, the general performance of the electric engine powered areca fiber extraction machine was satisfactory. Areca fiber extraction machine is cost-effective and can, therefore, be used to produce areca fiber commercially on a small scale.

References

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