

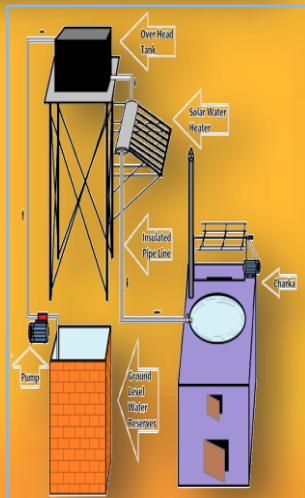
SOURONEER (SOLAR WATER HEATING DEVICE)

Hot water is essential in silk reeling and Katghai (Charkha) reeler use coal for that purpose. It involves considerable costs apart from causing environment pollution. Renewable solar energy for heating water is conceptualized and designed 'SouroNeer' for use in silk reeling.



ADVANTAGES

- Pre-heated water from SouroNeer saves about 50% fuel consumption
- Improves overall yarn quality
- Improves working condition
- Prevents environmental hazards
- Reduces conversion costs



BENEFITS OF SUVARNA & SOURONEER

The combined usage of 'Suvarna' and 'SouroNeer' provide the following advantages for the silk reeler in terms of economics

- Conversion cost is reduced by about 37% as compared to 'Katghai' in silk reeling
- Motorization ensures improvement in filament uniformity & yarn quality
- Saves labour
- Drudgery is prevented to a large extent
- Improved weft yarn quality
- Improved working environment
- Benefit Cost Ratio (BCR) improves from 1.33 : 1 (Katghai) to 1.5 : 1 (Suvarna with Souroneer)

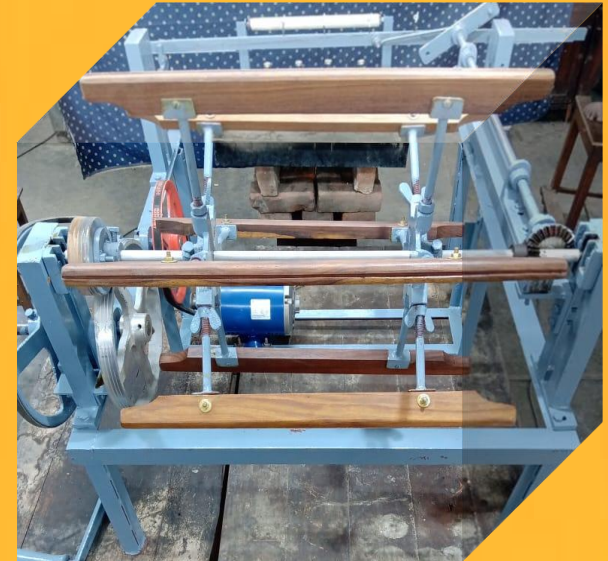
Suvarna with Souroneer
is being popularized as a
Transfer of Technology Programme
in West Bengal with an expenditure of
Rs. 52,000 per unit

For Further Details Contact:

Director, CSRTI, Berhampore - 742 101, West Bengal
Tel: 03482-224713, EPABX: 224716/17/18
Fax: 03482-224714/224890
Email: csrtiber@gmail.com; csrtiber.csb@nic.in
www.csrtiber.res.in

Pamphlet No. 78 @CSRTI-Berhampore Jan, 2020

SUVARNA (MOTORIZED CHARKHA) with SOURONEER (SOLAR WATER HEATING UNIT)



CSRTI
Central Sericultral Research & Training Institute
Central Silk Board, Ministry of Textiles
Govt. of India, Berhampore, West Bengal

SUVARNA with SOURONEER

An Improved Package for Charkha Silk Reeling

KATGHAI (Traditional Charkha)

West Bengal is known for Katghai reeling for conversion of mulberry silk cocoon to yarn. It is a 4-end manually operated wooden device and requires 2 persons for operation. It is fitted to a wide basin on a coal-fire oven. Cocoon cooking in hot water and reeling at high speed are conducted in the basin by a reeler, while the reel is rotated by a turner. This device is preferred as high amount of yarn could be produced with low expenditure as compared to the other machine-based processes.

- Raw silk production (32/34 denier): 2kg/day
- Manually operated (2 manpower required)
- Coal consumption: 15-20 kg/day
- Conversion cost/kg silk: Rs.503/-



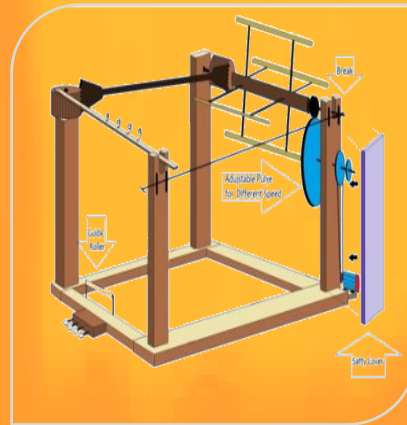
DISADVANTAGES

- Manual rotation of charkha results in variation of rotating speed leading to poor yarn quality
- Involves drudgery (rotation of the reel)
- Coal burning creates health hazards
- Produces only weft quality yarn (varna)
- Causes gum spots leading to quality deterioration

SUVARNA (Motorized Charkha)

Motorization of Charkha is used for production of good quality yarn and is being liked by the silk reeler. However, the technology is restricted only to ensure uniform reeling speed for quality improvement and reduction of manpower. Continuous and long-standing demand for motorization of Katghai for production of superior quality weft yarn is being met with the development of 'Suvarna'.

'Suvarna' is developed by CSRTI-Berhampore by incorporating motorization along with certain gadgetry provisions in Katghai without affecting the productivity. Major gadgetry provision includes providing the option of rubbing action to the yarn on its way to the reel with a soft non-woven duster cloth for removal of excess moisture in the yarn for reducing gum spots. 'Suvarna' is also provided with a brake to stop the rotating reel, whenever it is required, to reduce the size deviation in yarn. An option for varying the reel-speed is also available in 'Suvarna' to facilitate reeling of cocoons of different quality in different seasons.



"Suvarna" ensures production of good quality weft yarn

ADVANTAGES

- Motorization reduces one manpower and thereby contributing ~29% cost reduction
- Soft rubbing action with non-woven duster cloth removes excess moisture from the yarn and reduces gum spots
- Variable speed arrangement controls the reeling speed depending on cocoon quality
- Reel can be stopped instantly or at any time with the brake arrangement to reduce size deviation in the yarn
- Provided with 0.5HP motor (1425 rpm)
- Electricity expenditure is compensated by the reduced labour costs & improved yarn quality
- Removes drudgery completely
- Facilitates uniform reeling speed leading to uniform tension and formation of compact yarn hank

