5 Mechanized Loom
Mr. Sorokhaibam Biren Singh

Innovation Brief: Shri Sorokhaibam Biren Singh has innovated a mechanized loom by simulating the working principles of the traditional shuttle loom. The machine runs automatically with the help of half horse power motor thereby reducing the manual labour involved and increased productivity.

Innovation Details: As a young lad, one day Shri Biren Singh and his friends were returning home from a trip by their bicycles. On the way their bicycle got punctured. So they decided to take an overnight halt at a house close to the road. Here they saw an old woman carrying a baby on her back weaving a local cloth named 'Iyong phi'. She was using a dim light source. At the same time she was struggling hard on the loom. Seeing her pitiful condition, he questioned himself, if there could be a way to reduce labour and increase output using electricity.

Shri Biren Singh started working on innovating a mechanical loom. It was completed in 2007 and he attempted his first trial. He has tried weaving bandages, "phaneks", "khudei" (a type of Manipuri men and women wear) and towels.

The mechanized loom simulates the working principles of traditional shuttle loom, except the loom runs fully automatically with the help of half horse-power motor. The wooden materials used in the traditional shuttle loom have been replaced with iron-

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steel materials and the machine has become much smaller in size. The traditional process of rolling warp threads into a beam has been replaced with direct feeding from the bobbins. A large stand of bobbins is made and the threads are fed through a uniform size iron mesh and then to the comb and to the heddles. The whole process has been simplified and hence the preparation time has been reduced significantly. In the traditional loom an expert hand is required for preparation.

The machine consists of a main iron frame that houses the whole assembly. The assembly consists of several gear arrangements, sprockets, ball bearing, levers, rollers, shuttle frame etc. The whole machine is driven by a 0.5 hp motor.

The innovative machine can weave 3-4 fabrics per hour compared to less than 1-2 per day using the traditional loom. Except for the change of bobbin this machine does not require any manpower.

The unique features of this machine are:

- Direct feeding of warp threads from bobbins. This arrangement makes the process easier and simpler.
- The machine simulates the traditional shuttle loom and hence is convenient to adapt for local weavers.
- The machine can be easily operated by a low skilled weaver.

- Quality of woven fabric is better than traditional loom.
- The loom consumes very little power using a single 0.5 hp motor, which is also much lower than other such similar power looms.
- The machine also has an option of switching to manual operation which is an added benefit for places like Manipur.
- There is a variable speed controlling mechanism in the machine along with brakes (hands/leg).
- There is an additional feature of design fabric making.
- The output of the machine is almost 25-50 times more than any other traditional loom or any other power loom.
- The machine costs less than one third compared to cost of the power loom of similar capacity.

The innovator has sold 18 machines till now costing between Rs.1,25000 to Rs.1,30000/-. The maximum cost of the machine is Rs.1, 50,000/- (including accessories). The machine has been sold to 4 districts of Manipur, Imphal East, Imphal West, Thoubal & Bishempur.

Shri Biren Singh is unable to meet the demand owing to financial difficulties.
The drawback of this machine is that it is not designed keeping in mind certain ergonomic factors. People having different body dimensions cannot work efficiently with minimum fatigue. The machine needs some improvement in terms of ergonomics, design and function.

Awardee's background : Shri Biren Singh has passed class 10. He is 55 years old.

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