

## Energy and Water Footprint of Microspin

The proprietary technology of Microspin, endorsed by the **International Patent Search Authority, Vienna** (International Patent PCT/IN/2011/000856) retains the fullness of the fibres and imparts to them a natural texture and bounce. The cotton fibres are tossed and tumbled in air, carded using aerodynamics and buoyancy, rather than through aggressive mechanical action.

This process is

- Five times more energy efficient than the conventional methods
- Wonderfully absorbent and dye-holding, leading to half the water footprint in dyeing

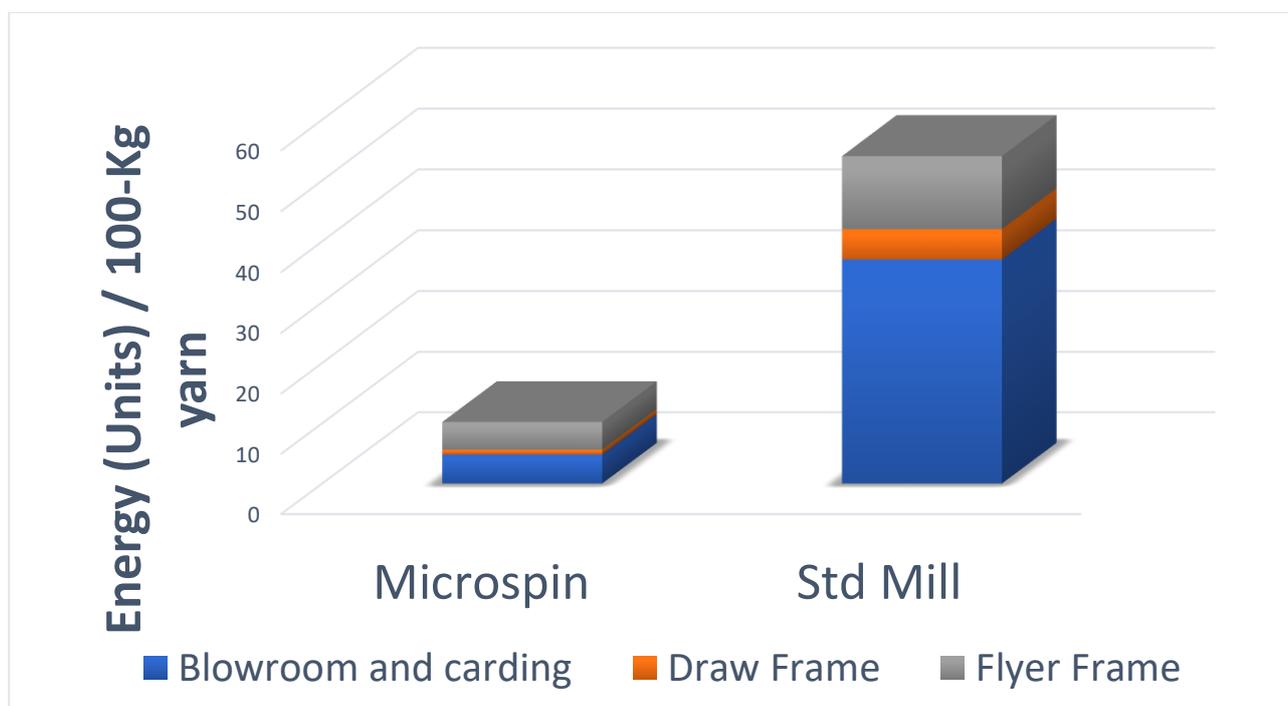
### Energy Footprint

The Microspin process of fiber handling comprises the following steps:

1. The Blow Card
2. The Draw Frame
3. The Flyer Frame

These machines are powered by DC motors, controlled by Digital Signal Processors. The operations of the machines are orchestrated by **energy-efficient algorithms proprietary to Microspin**. It would be illustrative to benchmark their energy efficiency against published industry standards.

However, Microspin machines are of capacity 10 to 100 times smaller than conventional industry machines. Hence, a direct comparison of the power (KW) would not be appropriate. Instead, energy consumed per unit of output (Units/Kg) would represent a correct comparison of the energy footprint. This revealed that the Microspin process is **five times more energy efficient**.

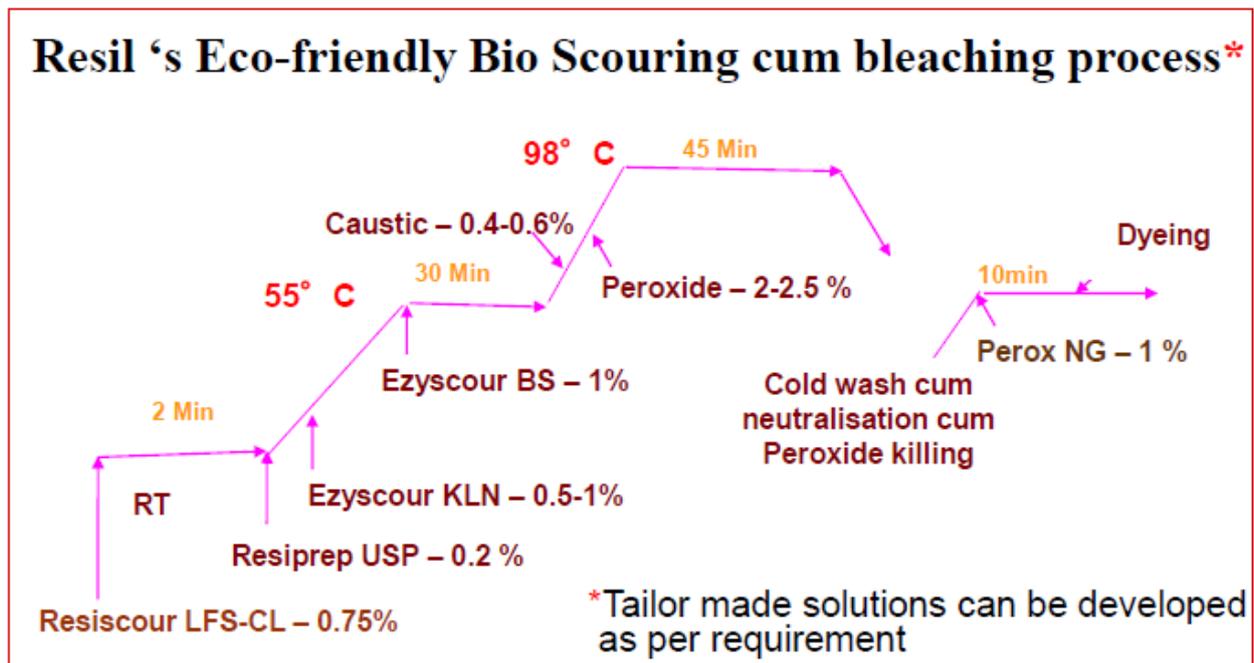


## Water Footprint

The scouring process is for treating the 100% cotton yarn so as to make the yarn more absorbant and suitable for dyeing. In this process, the natural colouring matter, waxes, proteins and other natural impurities are washed away from the grey cotton yarn thereby making the yarn suitable for further process.

Conventionally, **hypochloride method** is used, which causes "after yellowness". This is not a safe method due to the presence of chlorine in the yarn. As an alternative, **hydrogen peroxide** with other required chemicals is used for scouring and bleaching. But, this involves increased water consumption and also leaves leaving higher pH, TDS, COD, BOD effluent which is not safe for environment, polluting flora and fauna.

Microspin implemented **bio-scouring method** for scouring cum bleaching process as the safest method. With this, almost 50% water saving is possible. Also the other inputs used in this process (such as bacteria-rich cow-dung) were 90% biodegradable thereby releasing the effluent with less TDS, BOD and COD. So, the ultimate load on the environment came down drastically, making the process most eco friendly. The treated water is used for irrigation or agriculture. The process time for this method is also reduced by 40% when compared with Peroxide method.



The standard process of bio-scouring involves temperatures close to 100-deg Celsius. However, the unique features of Microspin yarn enabled customization of the process to not exceed 63-deg Celsius at any stage of the process. This resulted in **significant saving of fuel** required for the boiler.

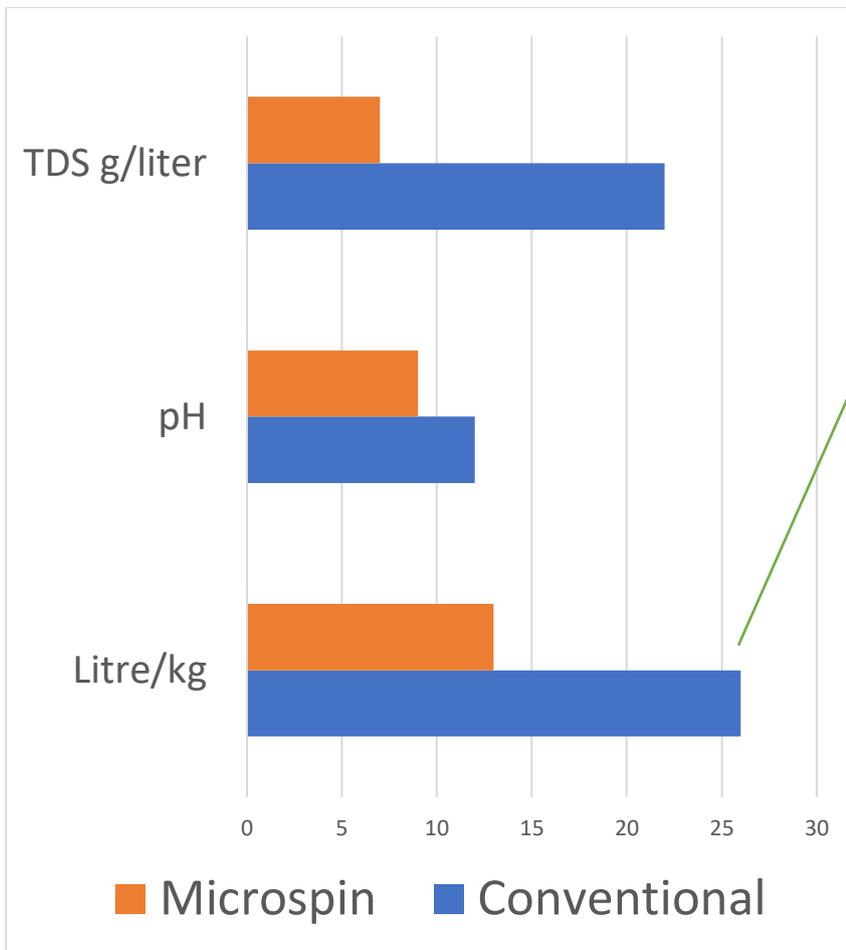
**Results**

Shade Matching: As required by the Customer in any light source / According to end usage.

Wash Fastness: ISO 105 CO3, Rating – 4 to 5

Rub fastness : ISO 105, Rating – 3 to 4

Parameter	Peroxide Method	Bio Scouring Method
Water Consumption/kg	26 liters	13 liters
Effluent pH	Above 12	8 to 9
Effluent TDS	22 g/l	7 g/l



**The Microspin Advantage:**

- Less Fuel
- 50% water saving
- Low toxic load