

# Hand Winding Process

# V/S

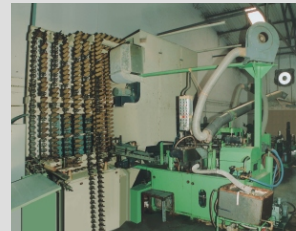
# Automatic Process

*Paper Cones are manufactured with different manufacturing technology viz. Hand Winding which is similar to the khadi style of manufacturing of yarn and cloth, and the second form of manufacturing is atomized process of manufacturing on fully and semi automatic plants.*



Hand Winding

# V/S



Automatic M/c

*In the automatic plant setup because of the advancement of the technology it is runned by trained and experienced staff in an organised manner unlike the raw unskilled labour used in hand winding machines typically women and Child Labour.*

In the hand winding process the raw material is in the sheet form mainly produced by the sun dry paper mills or paper mills with no caliper consistncy, strictness and no parameter controls typically by this paper mills the paper is cut in the sheet form and then the material is sorted based on its weight and is supplied in rim form by this type of manual sorting they control some percentage of the weight but parameters like the strength, Burst Factor, RCT, Tear, Scott Bond and caliper is not maintained or looked into as a part of quality raw material procurement which ultimately leads to sub quality finished cones.



Paper in Sheet form

# V/S



Paper in roll form

During the manufacturing of paper cones the first step which comes in action in a hand winding machine is application of the gum on the entire piece of paper to be utilized for making of paper cone, which leads to addition of a layer of the adhesive on the paper changing the primary color of the paper and the finished product which does not leave any space for the marks on the surface as the whole layer is dipped in gum and change in color takes place although the gum do exists on the paper cones nose, bottom and inside of the paper cones.

As in a hand winding machine the worker has to manually feed the inside starting edge in the winding machine so the edge has to be maintained thick and no taper grinding is done that means stepless starting cannot be achieved. As the processes are manual this leads to variation as it is controlled by human being.

Whereas for the automatic plants the paper has to be purchased from a high quality manufacturer of paper as the paper required in automatic machine is in reel form and it has to be a paper with all the parameter controls like specially BF Scott Bond, Gramage consistency, which means the paper has to be from a organised paper maufacturer which ultimately leads to better quality of paper cones by means of good raw material procurement. With the use of this high quality of paper for the manufacturing of cones helps us to reduce the weight of the cone, maintaining the strength and other pre requisites which further helps us to use paper of less gramage which further makes the control and quality consistency better for manufacturing the cone similar as the manufacturing of the yarn using the finer counts.

**Hand Winding**  
**Machine Cones**

**Enercon Cones**

**Parameter Control**

No parameter control like Gramage consistency, Caliper, BF, Tear, and Scott Bond.

Strict parameter control like Gramage consistency, Caliper, BF, Tear, and Scott Bond on every lot of raw material received.

**Tolerance Variation.**

The level of tolerance variation with respect to dimensions in a hand winding cone is more as handled by human being.

The level of tolerance variation with respect to dimensions in a enercon cone is minimum as cones are produced on high speed fully automatic machines.

**Fitting in Winders.**

Misfit of the hand winded cones in the cap of cone winder leads to vovelling and jumping of the cones during the winding process

Precise fitting of the cones in cap of cone winder leading to no vovelling and jumping of cones which ultimately leads to minimisation of the risk for operating the machine at high speed and no disturbance

**Minimum wear and tear.**

As the cone does not fits the winder precisely, the vovelling of the cone leads to wear and tear to the bearing proving more expensive in a long run.

As the cone fits the winder precisely, and less vovelling of the cones leads to less wear and tear to the bearings proving b eneficial in a long run.

**Higher Productivity.**

Due to the higher wear and tear in the machine the down time of the machine hampers the productivity and the output.

Due to less wear and tear in the machine reducing the overall down time of the machine would be ultimately beneficial in getting the higher productivity.

**Hand Winding**  
**Machine Cones**

**Enercon Cones**

**Unwinding of Cones**

Sharp edges at nose leads to wastage of yarn during the unwinding process.

No edges at nose leads to total unwinding of yarn from cones reducing wastage of yarn upto 0%

**Drying of the cones**

As the cones are dried in the open sunlight the CS of the cones is not uniform throughout the batch and frequent hand change also leads to oblonging of the cones shape.

Cones are dried in a conveyor in where the temperature of 110°C is maintained and as all the cones passes through the same process the the CS of the cones is uniform throughout the batch and no hand change involved