

Case Study

Improve productivity of ring frames with SPinFO

Background

One of India's most modern spinning mills, located near Coimbatore, is well-known for processing 100% combed cotton and selling high quality yarn in the domestic as well as international markets. Unfortunately, they were facing the issue of low productivity of their ring frames.

The mill was looking for a solution to overcome this challenge, so that they could identify areas of improvement, and provide appropriate training to their team to improve their skills. The mill approached A.T.E. to find a suitable solution.

Solution

A.T.E. recommended the mill adopt a technology-enabled solution for monitoring various parameters of their ring frames, so that the mill could use facts to determine their action plan, and continuously raise their benchmarks. Based on A.T.E.'s recommendation, the mills purchased the spindle monitoring system SPinFO, developed and manufactured by A.T.E.'s principals, MAG Solvics. Considering the problems faced by the mills, MAG had developed and incorporated in SPinFO a special programme to monitor all the parameters related to ring frames as well as the mill workforce.

SPinFO consists of EMF sensors to monitor individual spindle performance by measuring travellers' speeds and proximity sensors for production, drafts and doffs to monitor the output of each machine in real time. Data is collected through a wireless transmission system from ring frames and captured in a centralised server. Each ring frame's data, as per the sample shown below, are displayed on a large LED screen in the ring frame department.

Count: 34s CCHY • Manual Doffing Ring Frame • 1200 Spindles

Parameters	Before SPinFO	After SPinFO	Improvement	Improvement%	Current Status
GPS	168.3	181.4	13.1	7.8	–
Production/day/machine (kg)	583	643	60.0	7.8	–
Production/shift/machine (kg)	194	214	20.0	7.8	–
Production efficiency %	93.5	100.8	7.3	7.8	–
Doff time	4.8	3.5	1.3	27.1	–
Number of doffs	11	13	2.0	–	–
Doff stoppage/RF/day	53	46	7.0	–	–
Utilisation	96.2	98.5	2.3	2.4	–
Waste %	2.3	1.2	-1.1	47.8	1.2
Rogue/day/machine	6	2	-4	66.6	2
Idle/frame at a point	4	0.2	-3.8	95	0.2
Standard slip %	–	5%	–	–	3%
Speed	17500	18500	1000.0	5.7	–
BPHSH	6.7	4.2	-2.5	37.3	3.5
EM time	–	5.1	–	–	3.4

GPS – Gram Per Spindle, BPHSH – Break Per Hundred Spindle Hours, EM time – End Mending time

Conclusion

With the installation of MAG SPinFO and the availability of real time accurate data, the mill achieved significant improvement in the performance of their ring frames, such as:

- Production increased due to improved utilisation, reduced end breaks/doff time
- Waste % reduced due to continuous monitoring of end breaks and end mending time
- Slip spindle standard revised from 5% to 3%
- Better utilisation of workers