# CLUSTER PROFILE

## LUDHIANA KNITWEAR CLUSTER

### Background

Ludhiana is an important textile manufacturing cluster located in Punjab. There are around 14000 MSME units in the cluster, of which 9800 are micro (70%), 2800 are small-scale (20%) and 1400 are medium-sized (10%) enterprises. Knitwear manufacturers (including manufacturers-cum-traders/exporters) form the core of the cluster. The Ludhiana knitwear industry manufactures the entire range of winter and summer wear for men, women, and children. The products include high-fashion garments, T-shirts, sweat shirts, pullovers, jackets and grey fabric. Spinners, dyers and sub-contracting knitting units provide backward process support.

The Ludhiana knitwear industry is highly labour-intensive. Including the large-scale industries, the cluster provides direct and indirect employment to about 400,000 people. The cluster has an annual turnover of around Rs 5000 crores (2007–08) which includes exports worth about Rs 1000 crores. There are around 70 industry associations in the cluster representing various interest groups such as exporters, dyers, readymade hosiery manufacturers, spinners, knitters etc.

### Technology status and energy use

There are many categories of textile units in the Ludhiana cluster, engaged in different processes related to the manufacture of knitwear products. The most energy-intensive units are those engaged in dyeing, processing and spinning. The printing units are relatively less energy-intensive. Among all the units, energy cost forms the largest component of production cost.

The textile units in Ludhiana cluster use energy mainly in the forms of (1) electricity for equipment such as air compressors, boilers, motors and transformers; lighting, cooling and temperature control systems; etc. and (2) heat for generating steam which is used for dyeing of yarns and knitted fabrics. The steam is generated in boilers by using fuels such as wood, rice husk, pet coke and high-speed diesel (HSD).

Dyeing machine

### Options for energy saving

Under a SIDBI-supported project to promote 'business development services' (BDS), Apex Cluster Development Services Pvt Ltd conducted a number of energy audits on textile units in the Ludhiana cluster to study the pattern of energy utilization in the textile units and to identify techno-economically viable options for energy conservation that would help improve the specific fuel consumption. The table highlights the potential monetary savings through adoption of energy conservation options in three units that were studied.

| Monetary saving potential (Rs lakh) | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Textile unit* | | *Unit–1* | | *Unit–2* | | *Unit–3* | |
| *S No* | *Particular* | *Annual savings* | *Investment* | *Annual savings* | *Investment* | *Annual savings* | *Investment* |
| *Thermal* | | | | | | | |
| *1* | Boilers | 26.6 | 4.5 | 4.6 | 3.5 | 4.3 | 2 |
| *2* | Miscellaneous equipment | | | 3.1 | 3.3 | 0.6 | 0.5 |
| *Electrical* | | | | | | | |
| *1* | Electricity distribution system | 0.04 | 0.04 | 0.3 | 0.02 | 0.02 | 0.02 |
| *2* | Motors | | | | | 0.18 | 0 |
| *3* | Lighting | 3.1 | 2.3 | 2.5 | 2.4 | 2.5 | 1.6 |
| *4* | Air compressors | 3.2 | 3.3 | 0.2 | 0.1 | 2.7 | 0.7 |
| *5* | Boiler | 1.3 | 1.5 | 0.2 | 0 | 0.2 | 0 |
| *6* | Miscellaneous equipment | 0.6 | 0.9 | 5.9 | 4.4 | 1.0 | 0.3 |
| *Total (thermal and electrical)* | | 34.8 | 12.5 | 16.8 | 13.7 | 11.5 | 5.1 |

The table shows significant monetary saving potential (Rs 11.5 lakh to Rs 34.8 lakh per year) through the adoption of various energy saving measures. Of these, major energy savings can be realized in boilers, air compressors and lighting. Some of the energy saving options within these areas are listed below.

*Thermal energy*

- *Boilers:* Reducing excess air, flue gas temperature, radiation losses and unburnt in ash; auto stopping of ID fan etc.
- *Steam distribution system:* Improvement in condensate recovery; reducing steam generating pressure; improvement in steam distribution system
- *Other measures:* Optimum capacity utilization of machines

*Electrical energy*

- *Boilers:* Auto stopping of ID fan; providing variable frequency drive (VFD) on ID fan; direct coupling of ID fan and VFD or pulley in FD fan
- *Air compressors:* Reducing pressure and temperature; overhauling of compressor; reducing air leakage
- *Lighting:* Providing proper reflectors and lighting transformers; replacement of magnetic ballasts with electronic ballasts; replacing halogen lamps with LED lamps or CFLs, ordinary GLS lamps with LED lamps, and ordinary watt tubes with T5 tubes; reducing/ preventing misuse and wastage and providing controls
- *Electricity distribution system:* Shifting some capacitors to after servo stabilizer and UPS; balancing of current in different phases; installing auto control on distribution transformer fans
- *Other measures:* Full capacity utilization of machines; regular cleaning of machines

*Contributed by Apex Cluster Development Services Pvt Ltd*