

# CASE STUDY

Engineering unit can save nearly 2 lakh rupees annually by arresting compressed air leakages at minimal investment

## BACKGROUND

Hooghly district, in the state of West Bengal, has a large number of industries including foundry, forging, chemical, engineering and so on. Compressed air is an essential utility for these industries and used in various applications including pneumatic controls and tools, moulding machines, CNC machines, sand plant, short blasting machines, paint booth and so on. Leakage of compressed air from the distribution lines results in significant energy wastage. It is possible to reduce the air leakages significantly by adoption of better maintenance practices like periodic inspection of compressed air leakages in the distribution network.

### Baseline

An engineering unit has installed a screw compressor of the following specifications.

Capacity (CFM)	218
Motor Power (kW)	37
Max. working pressure (kg/cm <sup>2</sup> )	10

A photograph of the leakage point at powder coating booth is shown in Figure 1.



Figure 1: Compressed air leakage point

FAD test, leakage test and physical survey was carried out during an energy audit in 2023. The results were as follows:

Free air delivery of compressor (CFM)	197
Loading time of compressor during normal operation (%)	41
Actual air delivered	81
Loading time during leakage test (sec)	150
Unloading time during leakage test (sec)	123
Estimated leakages (%)	55
Quantity of air leakage (CFM)	44.3
Compressor power at loading (kW)	35.9
Compressor power at unloading (kW)	10.1
Specific power consumption (kW/CFM)	0.18
Acceptable leakages in network	10%
Reduction in compressed air demand	39.9
Annual operating hours	3,600
Estimated annual energy savings	26,156

## ENERGY SAVINGS ACHIEVED

Arresting leakages in compressed lines will reduce electricity consumption by an estimated 26,156 kWh/year, leading to a monetary savings of INR 1.9 lakh/year. The investment required is minimal. The equivalent emission reduction is 20.7 tCO<sub>2</sub>/year. The energy saving is depicted in Figure 2.

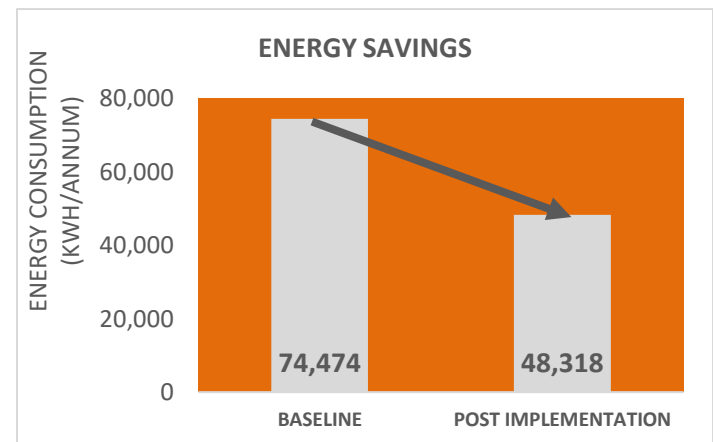


Figure 2: Energy savings

For more details, please contact  
Industrial Energy Efficiency Division

TERI, Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi - 110 003

Tel: (+91 11) 2468 2100 | Fax: (+91 11) 2468 2144, 2468 2145 | Email: sameeksha@teri.res.in | Website: <http://sameeksha.org>