# Lavasa Corporation Limited

## Energy Optimization at Lavasa

CASE STUDY

Training to O&M Team

25MVA Transformer-Preventive Maintenance


### Summary

The Energy Optimization Programme in Lavasa is incorporated to facilitate Lavasa Corporation's implementation of sound, cost-effective power and energy optimization and investment practices to enhance the nation's energy security and environmental stewardship.


### Objective of Intervention

Each of these activities is directly related to achieving requirements set forth in:

The Energy Conservation Act of 2001, established a number of energy optimization goals for utility facilities. Overall, these best practices highlight Operations and Maintenance (*O&M*) programmes targeting power performance. Depending on the Lavasa consumer, these savings can represent substantial savings each year, and much more can be achieved with minimal cash outlays. In addition to energy/resource savings, a well-run O&M programme will:

- Increase the safety of all staff, as properly maintained equipment is safer equipment

- Ensure the comfort, health, and safety of building occupants through properly functioning equipment providing a healthy indoor environment.
- Confirm that the design life expectancy of equipment is achieved
- Facilitate the compliance with the above-mentioned Acts and Orders as well as Clean Air, Clean Water and expected carbon mitigation legislation.

The focus of these 'best practices' is to provide Lavasa O&M/Power management and practitioner with information and actions aimed at achieving these savings and benefits.

## Description of Intervention

1. Annual Planner: All preventive maintenance activities for all equipment in the power transmission and distribution system are well planned and executed accordingly as per the Annual Planner.

2. Operation Management:

- Power system equipment monitoring: basic, power, and energy parameters
- Visual inspection of equipment in service
- Logs management
- Daily management report (DMR)

3. Maintenance Management:

- Work plan
- Intimation to affected areas before 48 hours
- Permit to Work (PTW)
- Tool box talk to men going on work
- Follow-up of Standard operating procedures (SOP) for the work being executed
- Safety at work— isolations and earthing
- Execution of planned activities
- Permit put back and system restoration
- Maintenance Records: Check lists, Test reports, History registers, Observations

4. Steps taken for System Improvement:

- Fault passage indicators installed in 11 kV network to identify the faulty section in power network so that during tripping, faulty section can be isolated in minimum time.

- Redundancy arrangement done at 11 kV level for 33/11kV High-voltage Stationary Stand. That helps to allow restoring power in minimum time and providing sufficient time to repair the fault.
- Monthly patrolling of loaded substation up to consumer point to detect unmetered connection so that power loss can be minimized.
- Periodic preventive and predictive maintenance of power network and equipment is carried out by adopting all safety precautions.
- 24x7 monitoring of power system at Meter Reading System & High-voltage Stationary Stand.
- Power quality monitoring system installed at 40 places and real time data is assessed periodically
- Power quality audit conducted for 40 consumers
- Installation of auto-reclose system for 11 kV overhead line to avoid transient faults.
- Installation of energy meter at distribution transformer for energy audit purpose to pinpoint power loss
- Periodic health assessment of all the equipment—110/33kV Yard equipment

## Intangible or Tangible Benefit

| Sr. No | Specific Performance Outcomes | Measurement Method | Optimum | 2013–14 | 2014–15 |
|---|---|---|---|---|---|
| 1. | Uninterrupted power | Uninterrupted power available to the customers as a percentage of total hours | 100% | 99.64 | 99.62 |
| 2. | Power quality | Number of excursions outside ±10% from 415 V and other quality parameters in the distribution network | Nil | 5 | 2 |
| 3. | System loss | Total uninterrupted power loss as a percentage of total power consumption | 8% | 19.85 | 13.25 |
| 4. | Cost per unit | Cost / KWH including O&M, overhead, cost of power excluding capital and HR cost | TBD | 10.38 | 10.77 |
| 5. | Accidents | Accidents causing injury to humans and / or equipment damage | Nil | 0 | 2 |

## About Lavasa

Lavasa Corporation Limited (LCL) is a city involved in the development, construction, and management of Lavasa, a private hill station development project in India. Once complete, the city will house residential, institutional, recreational, educational, and tourist facilities. LCL's objective is to develop the hill city into a sustainable city which offers world-class facilities and infrastructure in a sustainable manner. LCL has earlier won prestigious awards from the Congress of New Urbanism (USA) and the American Society of Landscape Architects for its Master Plan and Landscape Plan, respectively.