CASE STUDY FOR OAKWOOD PREMIER:

Motivation:

Oakwood Premier is a world renowned chain of 4 star service apartments. The Pune based hotel was completed in 2006 and had been using LPG as the fuel for their hot water requirements. The rising costs of LPG prompted the management to look for an alternative solution, which came up in the form of renewable energy (solar water heating). This is arguably the longest commercial building in the country today.

Facts in brief:

Sr. No.	Parameter	Value
1	Year of system completion	2010
2	Aperture area of collectors	490 m^2
3	Thermal output	322.42 KW_{TH}
4	Total cost of system	35 Lacs
5	Subsidies	10.5 Lacs
6	CO_2 Emissions avoided	108 tonnes/year
7	Replaced energy source	LPG
8	Annual reduction in fuel consumption (calculated)	65%
9	Payback for the system cost	Less than 2 years (without considering the subsidy)

Technical Specification:

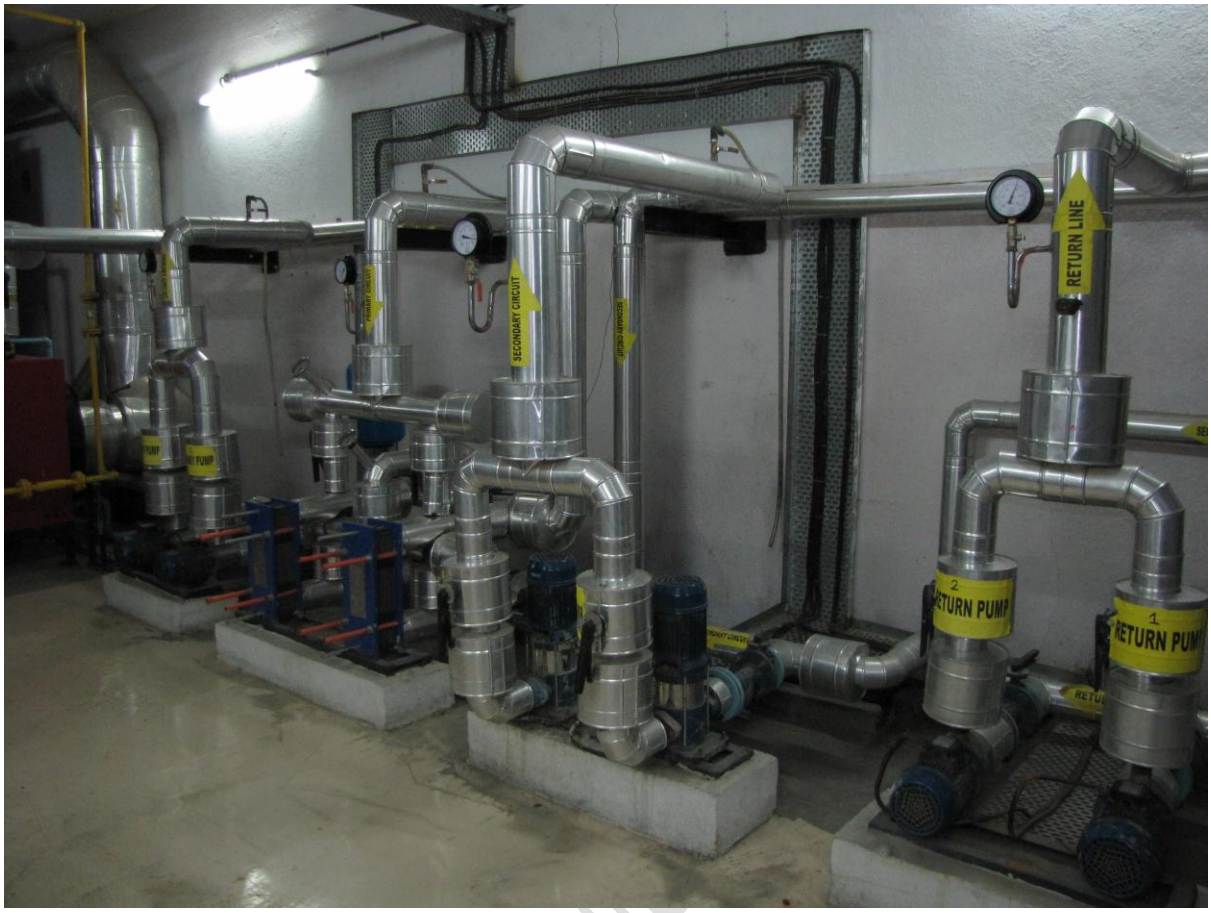
The storage provided is 65% of the total heating capacity. This has been decided after studying the daily consumption pattern. The system operates in Fixed Temperature Forced Circulation mode. The outlet temperature of the water entering the existing calorifier is maintained at 50 degree centigrade, using a PID controller and a Proportional Actuated valve. The entire system is pressurised, as the cold water supply is at 6 bar pressure.

Challenges Faced:

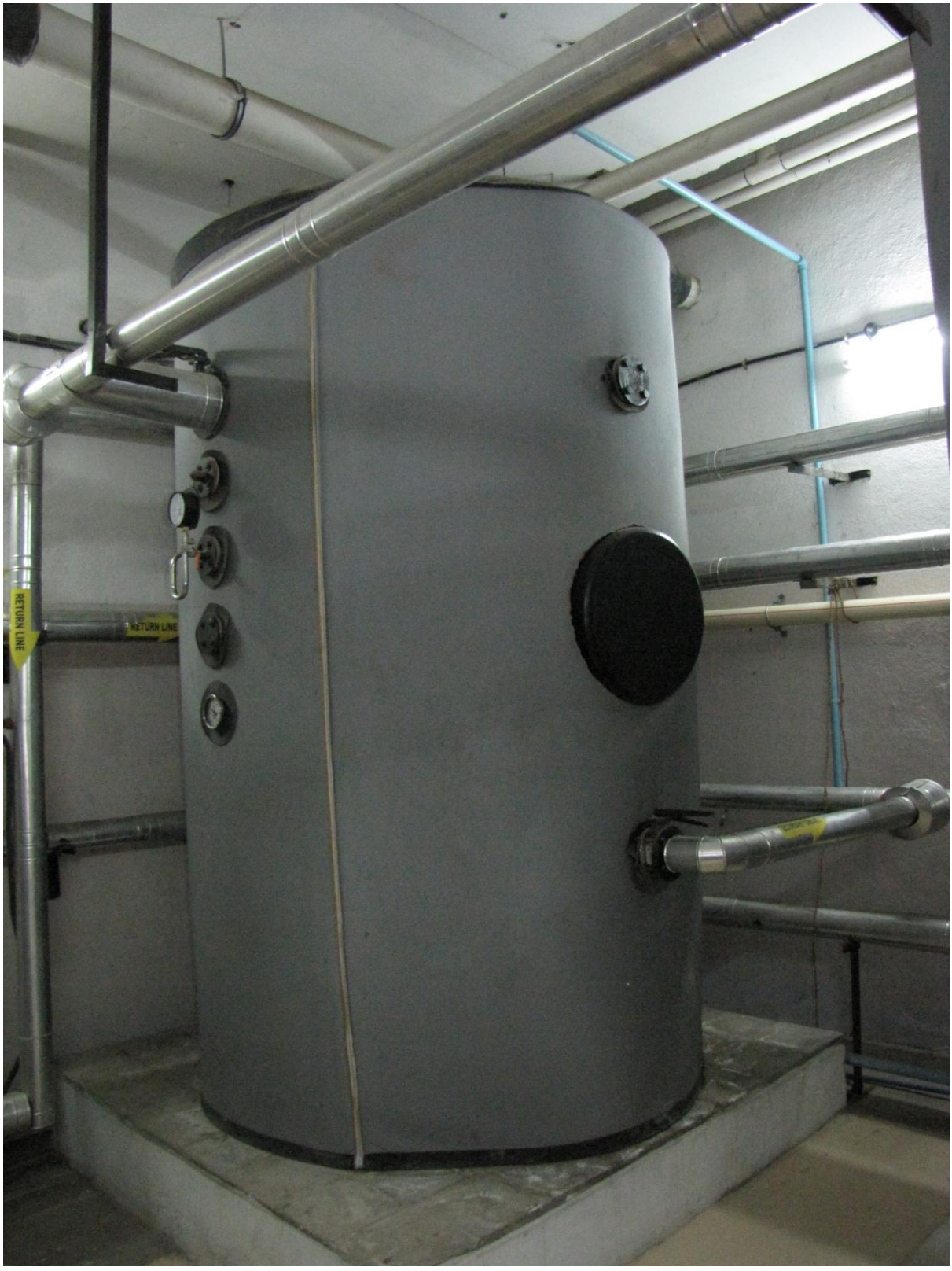
1. The system was to be installed on an existing building and the entire system had to be lifted to the terrace using a crane.
2. The terrace area had been occupied by the air handling units (AHU'S) and the collectors had to be installed on a slightly sloping part of the roof. The slope was in the East-West direction.
3. This prompted the manufacturer to provide variable size frame for the collectors.
4. The cold water supply was pressurised (supply pressure 6 bar). This meant that the entire system had to be pressurised.
5. The hot water supply to the existing calorifier setup was to be maintained at 50 degree centigrade. This was achieved using a PID controller and a proportional actuated valve.

Photographs:

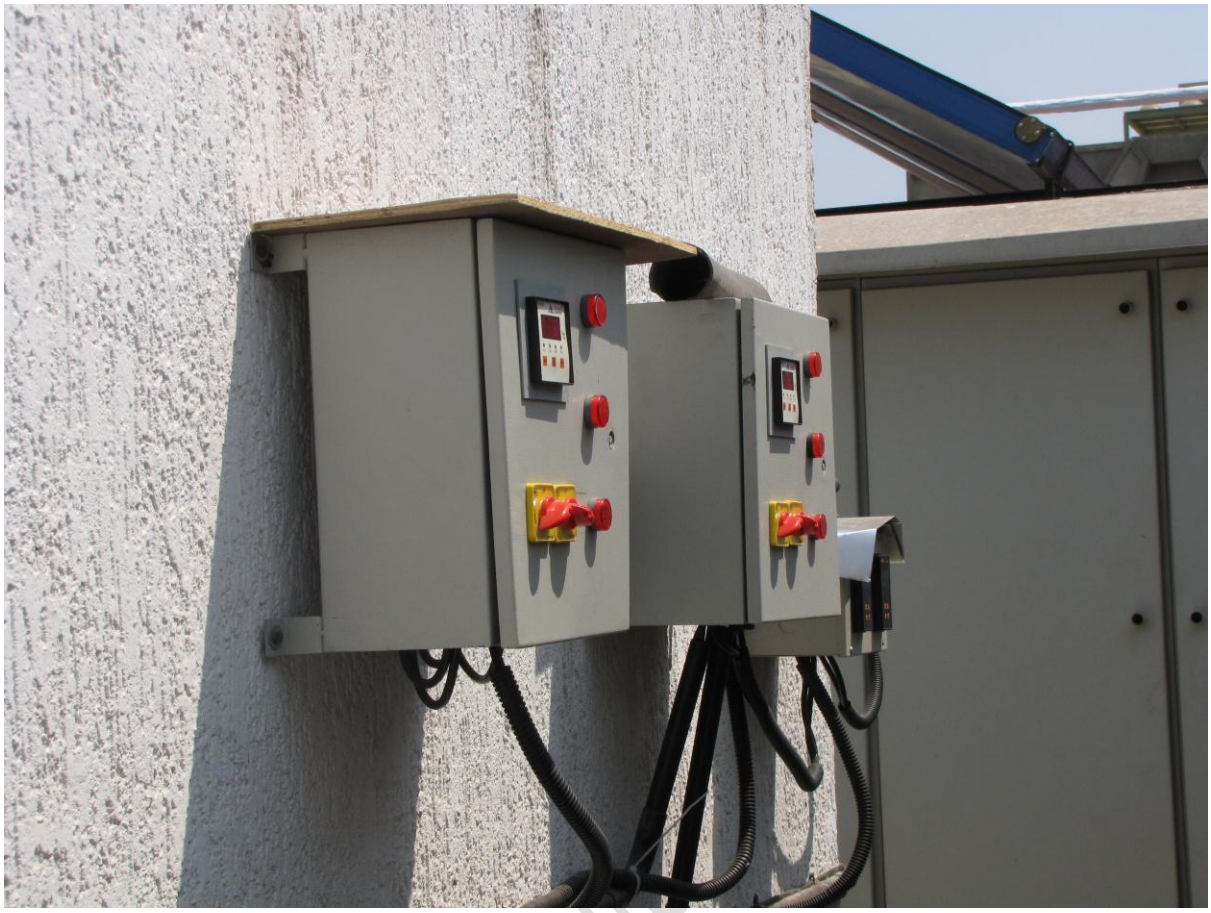
Lifting the system



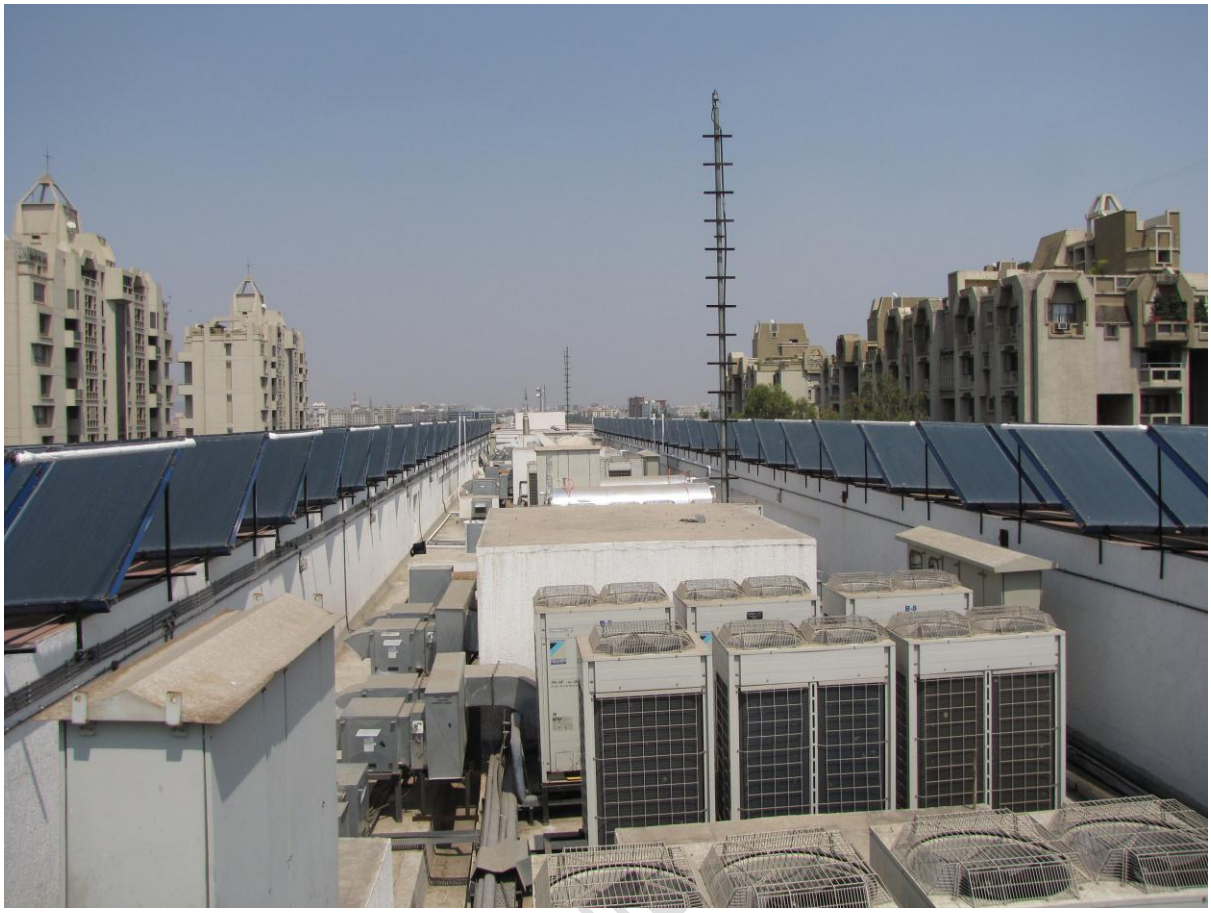
Existing heating system



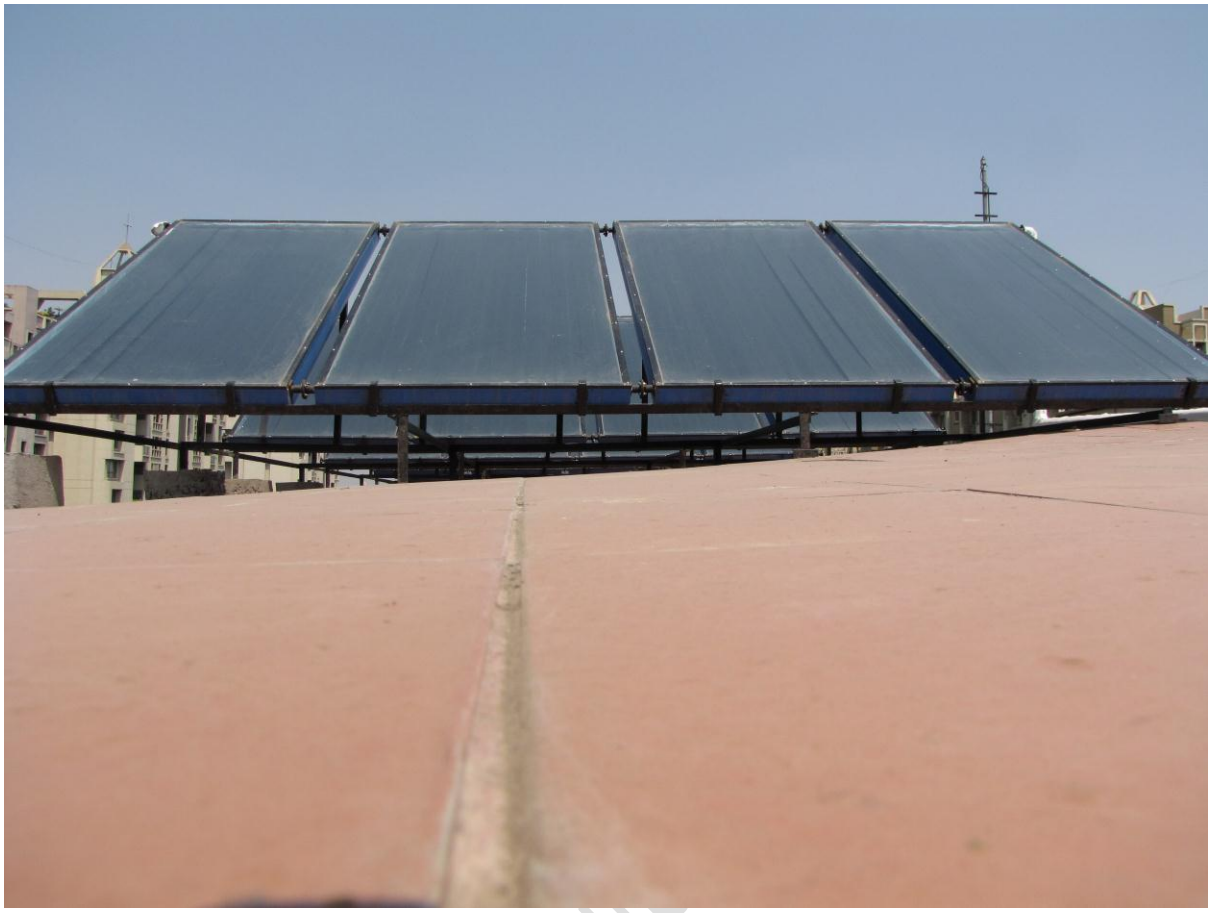
Existing calorifier



Controllers



System



Variable size frame

System view