



DLF EDGE

New Generation Workplaces

2nd Edition

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Self-Sustained BUSINESS DISTRICT


Cybercity



Uninterrupted & High Quality Power at DLF Cybercity & DLF IT SEZs, Gurgaon

Thanks to 100 MW Captive Power Plant of DLF

- DLF Cybercity – India's Largest Integrated Business District has Private Captive Power generation System.
- Implemented Co-generation Technology Concept to produce more than 100 MW power at any given point of time.
- Energy Centre produces uninterrupted high quality power, and also saves the equipment degradation, since every trip in the power supply affects the life of the equipment as well
- Uses natural gas instead of diesel for power generation that helps to remarkably reduce operating/maintenance cost. Such cost savings are passed on to DLF occupants/tenants.
- The co-generation technology can deliver the same power and air-conditioning required with 41% less fuel.
- Further contribution to Sustainable Development.
- DLF is the only Real Estate Organization in the country to have such self-sustained model of power consumption & generation.

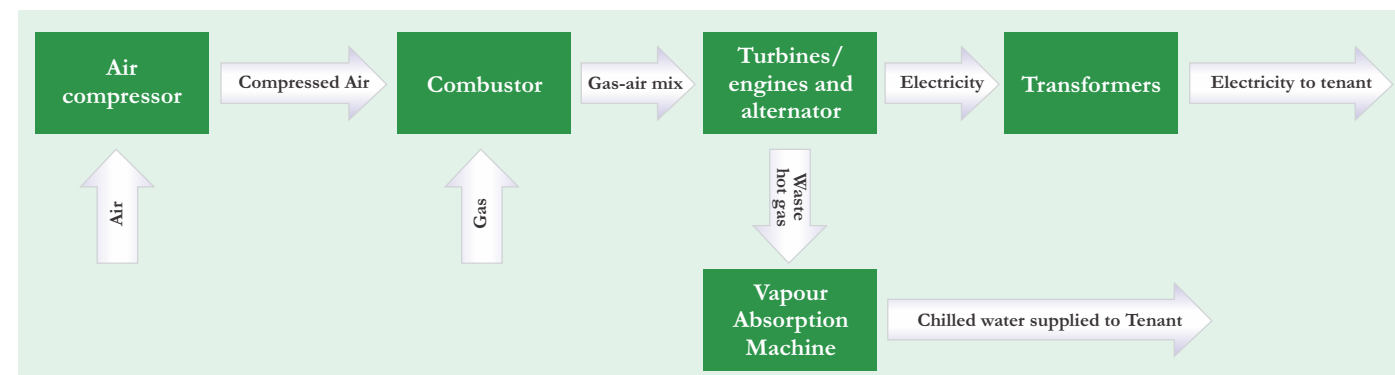
Cogeneration Technology Concept

- Cogeneration technology produces both electricity and chilling units through co-generation power plants located in/close to the consuming facility.
- Gas engines and gas turbines are placed in the basements of the buildings and used to generate electricity.
- Waste heat from engines and turbines is converted to chilled water through vapor absorption machines and is used to provide air-conditioning to the consuming facilities.
- Co-generation portfolio produces 0.3 equivalent of electricity units for every unit of power produced.



Advantages: Cogeneration Technology Concept

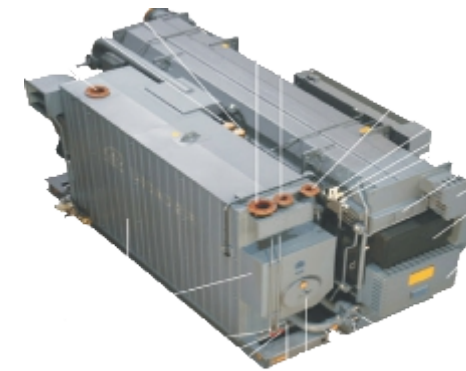
- Cost effective
- Runs on gas (clean fuel)
- Increased power & thermal efficiency
- Environment Friendly
- Complete control over plant through Energy Management System
- With the use of cogeneration technology at our energy centers we further save energy by providing chilled water through VAM, utilizing the heat of exhaust gases



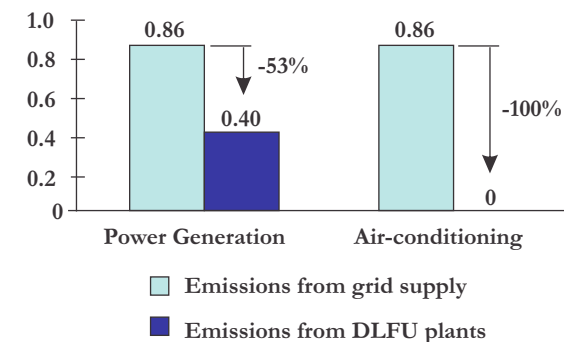
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Vapor Absorption Machine (VAM)

VAMs utilize the waste hot air/ exhaust gases from a heat source/ power generating equipments like Gas Turbines & Gas Engines to produce chilled water through a vapor absorption refrigeration cycle. The chilled water produced is utilized for providing air conditioning to the buildings.



Emission comparison between grid supply and DLF Utilities power plants



What is co-generation technology?

It is to simultaneously generate electricity and heat. The generating station is located in/close to the consuming facility, and gas engines and gas turbines are placed in the basements of the buildings. The waste heat from engines and turbines is converted to chilled water through vapor absorption machines and is used to provide air-conditioning to the consuming facilities.

Co-generation is cost effective, it uses clean fuel, increases power and thermal efficiency, it is environment friendly, there is complete control over the plant through an energy management system, and utilizes waste gases for air conditioning.



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Advantages: VAM

- No Ozone depleting substances like Chloro Fluro Carbons (CFC) etc used, hence eco- friendly
- DLF's CCHP technology uses natural gas, which is one of the cleanest fuels available; reducing emissions (CO₂ and NOX) reduced levels of CO₂ emissions besides conserving energy and reducing our carbon footprint
- Eliminating T&D losses leads to a saving of almost 34% in fuel consumption
- Less fuel consumption as Vapor Absorption Machines (VAM) utilize exhaust gases
- Lower maintenance requirement, as there are no moving parts in system
- Low running cost
- Noiseless operation
- No location constraint
- Short gestation periods of 10-12 months combined with best in class equipments lead to low execution risk
- DLF Utilities' CCHP technology is eligible for carbon credits of 0.40 ton CO₂/MWh of power generated and 0.87 ton CO₂/MWh of chilled water produced



Control Room, Energy Center at DLF Cybercity, Gurgaon

Our date with power began way back in 2008

Today DLF Cybercity is Self-Sustained for the Electrical Supply through its Own Captive Power Generation System



Since early 2008, DLF has generated its own power for DLF Cybercity through its private captive power generation system.

DLF took visionary steps to be ready when a scenario of shortfall of power came about. Five years ago, we started to move from a deficiency syndrome, to a situation of abundance today.

The energy centre in Cybercity produces more than 140 MW uninterrupted, high quality power at any given point of time. Recently, when the national power grid tripped and states in the north and east of India had a breakdown, DLF chipped in with its own power. The Cybercity area with all its offices had uninterrupted power throughout.

Savings

The Co-generation Technology Concept saves precious equipment, since every trip in the power supply affects the life of the equipment as well. The use of natural gas instead of diesel for power generation also helps to reduce operating and maintenance cost by 41% which is passed on to the occupants.

Milestones

We at DLF are visionaries, looking years - even decades ahead to determine what will be needed and where. We imagine and drive the imagination to reality and in the process grow our communities and our nation.

People tomorrow will see perfect workspaces because we today dare to have a vision to foresee the needs.

	Our Project on Cybercity	Status / Timelines
1	100 MW Captive Power Plant with co-generation technology offering 40% energy saving	Operational
2	Safety Initiatives with DuPont as a safety Partner	Implemented
3	Dedicated Fire Station set up by DLF at Cybercity with 90 Mtrs Hydraulic Platform - First in India	Operational
4	Tier Security, CCTVs & 1500 Single Frequency Walkie-Talkies for Cybercity	In Use
5	BMS of Siemens installed in all DLF Buildings	Operational
6	16 lane Signal Free Road Network in association with HUDA – First Private Developer in India	Work commenced
7	Peripheral Security by CISF for entire Cybercity	Contract signed
8	Rapid Metro with 05 metro stations across Cybercity	Q4, 2013
9	Retail Hub designed by International architect Mr Paul Friedberg	Q4, 2013
10	Skywalks connecting buildings on both sides of the road as well as rapid metro stations	Q4, 2014
11	Landscaping, open and green areas and aesthetic beautification of Cybercity	Q2, 2014

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Sustainable Development

The use of clean fuel, completely eliminates ozone depleting CFCs. Natural gas, one of the cleanest fuels available, also reduces by more than half (53%) the emission of carbon dioxide and nitrogen oxide.

The elimination of transmission and distribution losses means a savings of nearly 34% electricity, contributing to a more sustainable future for the city.

Another unique feature of DLF's electricity venture is the zero-emission air conditioning technology, which uses chilled water.

It is time to be self-sufficient, especially in times like these, when power from the outside is unstable at best, erratic at most, and completely absent at the worst. Especially for those in the Cybercity area, this is a boon and a blessing, especially those who rely heavily on IT systems and cannot afford a power breakdown.

DLF Utilities, the new name for power, is always there not as a back-up but as the first choice.

Amit Grover, National Director - Offices, DLF

Breakthrough at Cybercity

An Interview with Mr. C.P. Poonacha, Senior Executive Director - DLF Utilities Ltd

DE: Compliments on ushering in a new age of power generation and distribution through the technology of Co Generation in Cybercity.

CPP: Thank you.

DE: Please explain Co-generation for our readers?

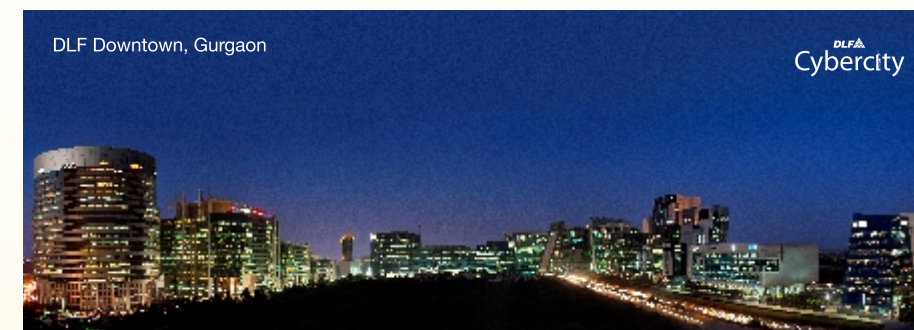
CPP: Co-generation is any system having two or more streams of energy with the simultaneous production of power and heat. While conventional electricity is generated through thermal power plants, gas turbine power plants, etc. in cogeneration system, waste heat produced during electricity generation is used to improve energy utilization in another function.

What distinguishes co-generation is that the heat is used in a practical application i.e. both the power and heat outputs are fully utilized. The method is also about 10% more efficient as compared to conventional generation.

DE: How do you utilize this principle? How is Co-generation different from conventional electricity?

CPP: In Cybercity, IT and many other businesses require uninterrupted electricity of good quality. Co-generation is much higher in energy efficiency as compared to conventional thermal generation because it reuses heat and energy. Higher efficiency comes through 'Vapour Absorption Machines' (VAM) which work on the Basis of Heat Absorption when they draw upon the induced heat to chill water directly for air conditioning.

Because of its efficient use of energy, co-generation is economically and



environmentally more attractive than conventional fossil fuel power plants. The Co-generation system is highly efficient and environment friendly with Carbon Emission being half of a normal plant. This also avoids the production of CFC (Chloro Fluoro Carbons) which depletes the Ozone layer.

Moreover, Co-generation can be located close to the consumer, thereby reducing transmission line losses. Conventional systems face a 30 % loss due to transmission distribution while cogeneration being near the consumption points can give 66% more energy efficiency. The launch of this facility has made DLF eligible for additional Carbon Credits.

DE: Where else is this technology available and what is especially unique about the DLF run Cogeneration technology?

CPP: Co-generation as a technology is very popular in the US, Europe and other highly developed nations. In India, it is fairly new but this is unique and remarkable because in a city like Gurgaon where land is at such a premium, we are running this plant in the basement of the building, without wasting any space while the exhaust is taken through shafts 620 meters above.

There is no pollution because this system is so environment friendly.

DE: How do you envisage the future? What reforms can the Government bring to the power sector?

CPP: The future for conventional systems is difficult because of the depletion of fuels and other problems. However, the present and the future of DLF Cybercity is very bright as there is 24/7 good quality power supply is available. We are also providing back up facilities, thus creating a very good system which is not only feeding DLF Cybercity, but is also supplying power to DLF and Ambience Mall.

The government should encourage extensive usage of power generated through co-generation technology, thus responding to the need of the hour for nation building. In Gurgaon, since DLF is using its own power, 112 MW of additional power is made available to the residents.



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Awards & Recognitions

At DLF, our constant endeavor is to create a legacy of excellence for our customers. Our various initiatives have been recognized and have won us prestigious awards and acclaim over the years.

DLF IT SEZ, Hyderabad has been awarded as the Top IT SEZ for IT Exports in Andhra Pradesh state for two consecutive years 2008-09 & 09-10.

The award was presented by The Hon'ble Chief Minister of Andhra Pradesh Shri N. Kiran Kumar Reddy.



DLF IT SEZ, Chennai awarded as the Best Project in Chennai by CNBC Real Estate Awards, 2012

Award being received by Mr. Ramesh Sanka, MD, Rentco (DLF) & presented by Sh. Ajay Maken, Minister for Housing & Poverty Alleviation, Government of India on 22 December 2012



EUROMONEY

DLF Awarded in Euromoney's Real Estate Survey 2012, as

Best Office Developer in India

Best Retail Developer in India

Competition is extremely tough for these awards and therefore poll winners richly deserve the accolade.

The results will be published in the September issue of Euromoney.



Fire Station at DLF Cybercity

Operational since April 2012

DLF Safety Team conducts regular fire mockdrills to prepare tenants and building occupants to rescue as well as save others life in case of emergencies.



DLF-National Safety Meet



Left to Right : Mukesh Chandra, Sanjeev Karki, Satvinder Sangwan, Ramesh Sanka (MD), Suresh Rana, Sushil Singh, Sunil Jagga, Benu Sehgal, Pravendra Singh, Gautam Dey, Amit Grover, Saurabh Garg, Mobd. Afroz, O.P.Yadav, Vikram Choube, Karambir Singh Dagar



Map not to scale



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