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SUSTAINABILITY

Mother Earth Takes the Heat

A Mumbai-based start-up uses geothermal cooling to slash air conditioning bills.

By TASLIMA KHAN

The Hyderabad-headquartered Indian School of Business (ISB) opened a new campus in Mohali, near Chandigarh, on April 14 this year. The air conditioning system in the campus buildings,

spread over 70 acres, has been so designed as to save 1.2 million kilowatt hours of power and 143.3 million litres of water a year. The financial saving on power alone will be ₹87.16 lakh annually.

It will be a similar story at the Four Seasons Hotel in Mumbai once its new air conditioning system is installed. The hotel's monthly power bill, currently over ₹40 lakh, is expected to drop to ₹10 to 15 lakh.

- 1** At the ISB's new campus in Mohali (pic, left, shows one of the buildings), cold water from a 'chiller plant' circulates through the building, absorbs heat, reaches high temperature
- 2** The heated water passing again through the chiller plant, reaches the heat exchanger
- 3** The geothermal exchanger cools the water as it flows through an underground network of pipes
- 4** Cooled water goes back into the building



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India now has over 1,300 registered green building projects covering more than 905 million sq ft. Geothermal systems are in use in Canada, the US, Germany, Norway and Sweden. GIBSS brought them to India

Behind both these projects is a Mumbai-based start-up called Green India Building Systems and Services (GIBSS), begun in April 2010, which uses geothermal technology to slash the power requirements of air conditioners. "It eases cooling pressure on air conditioning systems and can save 50 to 60 per cent of the power they usually consume," says Arun Shenoy, GIBSS's founder.

What is geothermal technology?
In a conventional system, the cooling tower of an air conditioning plant sucks out the heat from an enclosed space, and ejects it into the environment. The technology GIBSS has designed uses instead a heat exchanger system to deflect the heat into the earth's crust. As the temperature just a few metres below the earth's surface is much lower than that of the air above, the energy transfer is more efficient, reducing power consumption.

Again, since air conditioning systems emit large amounts of chlorofluorocarbons, or greenhouse gases, geothermal cooling prevents their emission into the atmosphere. The system at ISB's Mohali campus, for instance, will prevent emissions of 1,700 tonnes a year. "Geothermal is a proven technology with great potential in India," says Pradeep Kumar, Senior Fellow and Associate Director, Sustainable Habitat Division at The Energy and Resources Institute (TERI).

Geothermal systems are already in use in countries such as the United States, Canada, Germany, Norway and Sweden, but GIBSS is the first to introduce them in India. "I want to replicate their success in those countries," says Shenoy. A mechanical engineer, who also

studied Building Systems at Oklahoma State University in the US, and worked with Climate Master, the world's biggest geothermal heat pump manufacturer, Shenoy teamed up with Mandar Kaprekar, the sole geothermal technologist in Southeast Asia certified by the International Ground Source Heat Pump Association, to start GIBSS.

Yet India presents a different challenge, since unlike the other countries that use geothermal sys-

tems, it has a tropical climate. Shenoy and Kaprekar have thus reworked the designs used in the West, coming up with 13 variations for different conditions, and will soon be patenting some of them.

Equally challenging has been convincing customers. "Most companies didn't know what we were talking about," says Shenoy. The companies were also taken aback by the installation costs, which range from a few lakh rupees to a few crores, depending on the size of the establishment. "High upfront costs are the biggest roadblock," says Kumar of TERI. But Shenoy and Kaprekar have designed a payment model which seems to be working. "Since we assure clients they will save power right from the first month after installation, we tell them they can pay in equal monthly installments out of the money they save on power," says Shenoy. "They will be able to pay back the full amount in less than two years."

Investors have seen potential in GIBSS: investment firm Hyderabad Angels committed ₹2 crore in February this year. "GIBSS has a multi-billion dollar opportunity before it," says Sashi Reddy, Founder and lead investor, Hyderabad Angels. Shenoy is reluctant to discuss financials, but says his company has been growing 200 per cent year-on-year. He is aiming at revenues of ₹300 crore by 2013/14.

Apart from ISB, Mohali, and Four Seasons, GIBSS is close to finalising deals with about a dozen other clients. "Company seriousness about going green is picking up at an exponential rate," says Vidur Bharadwaj, Chairman of the Indian Green Building Council's Delhi Chapter. The council's data shows there are now 1,300 green building projects in the country, covering over 905 million sq. ft. ♦



GREENPRENEURS
Arun Shenoy (left) and Mandar Kaprekar

COMPANY
Green India Building Systems and Services, Started in April 2010

CLIENTS
Four Seasons Hotel and ISB Mohali

FUNDING
₹2 crore from Hyderabad Angels and personal savings