

BT Italia: benefiting the environment



The state-of-the-art building features an innovative energy efficient water-cooling system

The new I.NET Business Factory data centre taps underground water for sustainable cooling

Client

I.NET was established in Milan in 1994 and merged into BT Italia in 2008. It is a market leader in security and business continuity solutions for Italian internet-oriented businesses. Its service portfolio includes managed security services, server and application hosting with IT managed services, storage management, network management, multimedia content distribution, and business continuity consultancy.

Challenge

Hardware generates heat and needs cooling to keep its operating temperature within a manufacturer-specified range. When equipment is co-located in a confined area such as a data centre, the problem is multiplied. Even more so when the weather's hot – like during the summer months in Milan – but providing chilled air from conventional air conditioning has both cost and environmental implications.

Enrico Campagna, Head of Marketing at I.NET, says: “We believe that there is a strong connection between sustainability and market success. So when we decided to construct the I.NET Business Factory – a brand new data centre in Milan – we took every opportunity to minimise the environmental impact of the project.

We have a lot of relevant experience – this was a fifth generation facility for us – so to minimise carbon emissions we took a critical look at everything from building location and design to cooling options.”

Working with local architects I.NET identified a site near Milan that offered excellent seismic stability, was free from flood risk, and had no potentially hazardous industrial activity nearby. Andrea Marini, Head of Business Factory Development and Management, adds: “A big attraction was a naturally replenished waterbed 40 metres beneath the surface, which opened sustainable cooling possibilities.”

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Roberto Mancini
Managing Director
I.NET (a Business Unit of BT Italia)

Case study

I.NET

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Solution

Water can absorb roughly four times as much heat as air, but electronic equipment and water is never a good mixture. The innovative answer was to use the natural water to lower the temperature of the data centre. Four wells were drilled and immersed pumps installed to bring the underground water to a specially constructed reservoir beneath the data centre floor.

The walls of the data centre were designed to conceal the pipework and to house a heat exchanger, as well as to completely isolate the water from the equipment. The heat exchanger has both an open and a closed circuit. The open circuit is fed from the reservoir and chills the water in the closed circuit. In the closed circuit, cold water is pumped vertically into horizontal rings of pipework serving cooling units on each floor of the building. Fans blow air through the cooling units, which enters a network of ducts leading to the equipment rooms.

This process sees the temperature of water in the open circuit rise from around 15° to 18° Celsius. That warm water is not wasted because it is piped away to farms in the

Offices worldwide

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Cold water is pumped into horizontal rings of pipework serving cooling units

region for the irrigation of crops. In the cooler winter months fresh-air cooling supplements the water-based cooling process, adding to the sustainability benefits.

The I.NET Business Factory offers many other state-of-the-art features to support customer business continuity projects. The building itself is a virtual fortress, designed to withstand both terrorist attack and natural disasters, with features such as reinforced concrete panels to shield the exterior, and an internal moat to safeguard against flooding. Physical security includes biometric-based triple access controls, anti-climb barriers, and CCTV. There is a fully autonomous electricity generating system that can sustain the supply for more than 50 hours without refuelling, as well as fully diversified and redundant connectivity to the wide area network.

Value

By implementing the water-based cooling system at its Milan data centre using natural resources, I.NET has demonstrated environmental thought leadership. Under normal operating conditions power is now only used for the pumps that raise and circulate the water, and for the fans. This has reduced energy consumption by nearly one megawatt over powering a conventional air conditioning system.

Andrea Marini says: “We are saving some €800,000 a year, which we can pass on to our customers through attractive service pricing. As well as the cash benefits there are strong sustainability dividends too. Lower power consumption has reduced CO₂ emissions by 4,200 tonnes a year, equivalent to around 1,500 small cars on the road.”

The I.NET Business Factory is proving to be a great success, with many clients selecting the facility to mitigate operational risk by enhancing business resilience. Roberto Mancini, the Managing Director of I.NET, concludes: “The I.NET Business Factory enables us to manage the more complex ICT needs of the business market. It provides our customers with the assurance that their mission critical data and applications are securely protected in an environmentally friendly fashion.”

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Andrea Marini
Head of Business Factory Development and Management
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Core BT services

- Business sustainability thought leadership and design services
- Data centre and business continuity consultancy services provided by I.NET (a business unit of BT Italia) located near Milan, Italy

