STEPS TOWARD A SUSTAINABLE FUTURE

Now is the time for a renewed focus on district heating and cooling technology for a more sustainable future, says Richard Zambuni

The transformation of our global economy has led to an increased focus on improving our impact on the environment. Many energy providers now have a renewed determination to reduce greenhouse gases, reduce their dependency on fossil fuels and provide reliable and sustainable energy to their consumers. Utilities are currently reassessing their existing infrastructure – often pressured by public opinion – and they are searching for ways to deploy more sustainable energy delivery systems.

Much of the world's energy demands are met using business practices that are unsustainable in the longer term. Many utilities have begun to develop programmes to reduce their carbon emissions. However, larger-scale programmes are now needed to successfully reduce their impact on the environment.

The world is now recovering from the economic downturn, and addressing these unsustainable business models becomes possible as investment programmes provide an opportunity to re-evaluate, replace and re-engineer our ageing energy infrastructure. One of the areas that show the greatest promise in terms of energy efficiency is district heating and cooling.

District heating and district cooling. Today, many societies waste substantial amounts of energy. More than half of energy generated is lost on its way to the customer. Unlike traditional forms of electricity generation, which produce tremendous waste in the form of excess heat, district heating systems recycle surplus heat. The source of recycled heat can include electricity production through co-generation, refining and other energy-intensive industrial processes. Furthermore, district heating can make use of many forms of renewable energy sources such as biomass, geothermal, and solar thermal power.

District heating is a convenient and sustainable way of providing space heating for residential buildings and workplaces. It is also an efficient way to deliver hot water in urban and suburban areas. District cooling is a sustainable alternative to conventional electricity or gas-driven air conditioning systems. Both district heating and district cooling use existing local resources that otherwise would be wasted or difficult to use. Common resources used in district cooling and heating include: natural cooling from sea water, lakes and rivers; the conversion of surplus heat from industrial processes; combined heat and power (CHP) generation; and waste incineration.

Movement towards a more sustainable energy source. District heating and cooling is a relatively mature technology used throughout the world, but adoption of this technology has been slower than one might expect. When constructing or modifying electric power plants, it is still not a given that they will be capable of co-generating electricity and heat. In addition to the environmental benefits, district heating based energy networks are flexible, reliable and efficient. By modifying the source of heat based upon market prices (wood chips, solar, bio-fuel, etc.) operators are able to manage the system very cost-effectively. Capital costs are also relatively low, and even small-scale CHP systems are viable economically.

District heating offers a more sustainable approach to the provision of energy to residential and business users.

Currently Global Marketing Director for Bentley Systems, Richard Zambuni has spent all of his career in marketing and the last 15 years in hi-tech marketing, living and working in the US and Europe. He has covered a broad range of technology from network hardware, to telecommunications inventory and provisioning software, to geospatial and infrastructure engineering software. For more information, visit: www.bentley.com/DistrictHeating

A complete solution for designing and managing district heating and cooling infrastructure. Bentley is one of the few infrastructure software vendors that offer products specifically designed for managing the complete lifecycle of district heating and cooling network infrastructure. Bentley's solution for district heating and cooling includes interoperable products for network design, analysis, documentation and operations. This is a solution that has been adopted by many progressive utilities including Kelag Wärme, E.ON Hanse, Essent Warmte and Fernwärme Wien. The foundation of this solution is a GIS-based asset and facilities management platform (Bentley sisNET) and support for the thermal-hydraulic calculations needed to optimise the network (Bentley sisHYD).

Now is the time for renewed interest in district heating and cooling infrastructure. District heating and cooling technologies offer tremendous near-term opportunities to reduce the waste of scarce energy resources. Bentley will be in the vanguard of providing a comprehensive solution for managing the lifecycle of this class of infrastructure. ■