



HELSINKI

news

2 / 2014

Smart and eco-friendly Helsinki

Kalastama Smart City
 New districts to rely on renewable energy
 Low-energy housing
 Intelligent public transport

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The Finnish capital builds new energy solutions, smart grids and a city relying on urban innovations that promote sustainable neighbourhoods.

The cozy and green Esplanade Park in the Helsinki city centre accommodates much more than relaxed summer picnics on the park's wide lawns and crowds of leisurely residents and visitors: the park's attractive surface hides a vast underground water reservoir holding 35,000,000 litres – close to 9 million gallons – of cold lake water to be used for district cooling as part of Helsinki's rapidly expanding district cooling network. The reservoir tank lies at the depth of 100 metres at its lowest point. The tank is 40 metres deep, 100 metres long and 8 metres wide.

The water will be used to cool properties connected to the Helsinki district cooling network once the system is fully operational in summer 2015, mostly office and commercial space but some public buildings and increasingly apartments as well – altogether approximately 260 properties to date.

Having released its cooling energy, the water returns to the tank to be cooled with heat exchangers over the night, to be ready for another cooling round during peak hours the next day. Cooling energy, charged to the tank, is produced at the Katri Vala heat pump station. Katri Vala is a unique and the world's

The Esplanade Park and, 100 metres below, an underground water tank waiting to be filled with cold water for use in district cooling.

largest heat pump station, placed 25 metres deep in Helsinki's bedrock.

The district cooling tank represents the latest innovation in Helsinki's renewable smart cooling solutions. District cooling in Helsinki is provided by the Helsinki energy company *Helsingin Energia*, which produces it in a combined heat and cooling (CHC) process (1) by absorption – waste thermal energy is converted into cooling energy in summer – and (2) with heat pumps – thermal energy from return district cooling water is recovered, to be used as district heat, and the re-cooled cooling water returns to the network. Combined heat and cooling is supported by free cooling in winter, produced with cold sea water.

According to the EU project RESCUE (Renewable Smart Cooling for Urban Europe), the overall energy efficiency of district cooling in Helsinki is approximately 5 times higher than that of building-specific cooling systems, calculated by primary energy demand. Because of the low use of primary energy, district cooling in Helsinki emits 80 percent less carbon dioxide and other greenhouse gases compared with conventional, building-specific cooling systems.

Case Kalasatama: A Helsinki Smart City district in the making



The new Kalasatama district of Helsinki, under construction on former harbour and industrial land, is the site of a spearhead project in Finland to develop new solutions for the Smart City. Under the umbrella of the *Fiksu Kalasatama* (Smart Kalasatama) project, the City of Helsinki develops an ecologically sustainable district that serves residents in smart ways in their everyday lives.

Kalasatama is already served by *Fisuverkko* (The Fish Net), an online service network and community for residents. The system recognises each dwelling and tailors information and services accordingly. As registered users of the network, residents can, for example, join discussions; browse and add to an image gallery; buy, sell, exchange and donate items; help manage joint facilities such as the parking hall; and make fault reports.

Plans under development for Kalasatama Smart City envision a sharing service for electric cars and bicycles available for residents. According to another plan, an individual or organisation could announce and find out about any space available for rent for any length of time. In the future, building roofs could be equipped with solar thermal collectors, and the windows and walls of dwellings with solar photovoltaic systems. Residents could buy shares in solar energy production and either use the energy produced at their buildings or units, or sell the energy to their neighbours. Residents could even share their recreational boats moored at the Kalasatama marina and so divide the costs for boats among many users.

Kalasatama's Smart City project is developed comprehensively on target to turn Kalasatama into a Smart City district on a broad basis with the help of both high-tech companies and citizen participation. In comparison with smart city districts outside Finland, the project is unique for its close proximity to the mature city centre and location on the seafront. Kalasatama Smart City strives to become so resource efficient that it saves res-

Kalasatama once completed

idents one hour per day from conventional chores.

Today home to about 2,000 residents, Kalasatama will eventually be a dense, partially high-rise, urban district that will house 20,000 residents and accommodate offices, commerce and all key services for residents.

Car ownership to become unnecessary in Helsinki?

Helsinki envisions a dramatic reduction in the number of private cars in the city with an ambitious plan for a new type of mobility services ecosystem. The system would rely on private, competing "mobility operators" – modelled after telecommunications service providers – who would create and sell tailored packages of transport services for citizens. These mobility packages would integrate all forms of shared and public transport in a single usage and payment network – buses, trams, the metro, trains, taxis, car sharing, car pools, rental cars and new forms of transport such as the Kutsuplus minibus service.

"The new system for mobility services provision would ease the use of multiple transport modes, flexibly meeting all mobility needs of customers in any situation. Furthermore, mobility services would improve, the prices would be competitive, and the system would promote the creation and provision of new services," says **Sonja Heikkilä** of Helsinki Traffic and Transport Planning. "The system would not abolish cars and driving in Helsinki but would make car ownership unnecessary. Use of mobility service packages would be more attractive than car ownership."

A school's renewable energy project points to the future of the larger district

The Sakarinmäki School in Östersundom is a test ground for energy solutions based on renewable energy. The school will produce more than 80 percent of its heating energy from renewable sources.

The heating solution for the school, located far from the existing district heating network, is a hybrid method integrating geothermal energy, solar energy and a heat plant. The school's gravel fields hide 21 geothermal wells each about 300 metres deep. Solar thermal panels will be installed next to the school to produce 5 percent of the school's annual heating energy. There will also be a heat plant for the coldest days of winter. The plant will

initially burn light fuel oil but can shift to biofuels.

Östersundom is a new, eastern district of the Helsinki Metropolitan Area. The district is envisioned as the most eco-efficient neighbourhood in the Nordic countries. Östersundom is projected to become an urban area featuring low consumption of natural resources and a small carbon footprint, meeting this goal with solar energy and other renewable energy sources utilised in competitive ways. Once completed by the 2050's, Östersundom will be home to 70,000 residents and hundreds of businesses, offering jobs for thousands.



Sakarinmäki School in Östersundom

Intelligent public transport

Helsinki Region Transport, the provider of public transport services in the Helsinki Metropolitan Area, is testing a new, smart mode of public transport that provides the comfort of a minibus and the flexibility of a taxi ride. Kutsuplus is one of the innovative services in Helsinki that could make the private car unnecessary in the city.

Riders on the Kutsuplus minibus book and pay for their rides on a smart phone or computer, specifying their pick-up point and destination. The riders share the minibus with others going in the same direction. Their ride requests are combined by an app calculating an optimal route that most closely satisfies all riders.

Riders can choose their departure time from *Now* to a further point in time.

The service can offer several trip options at different prices. The normal price of a ride comprises a basic price of EUR 3.50 plus an additional charge of EUR 0.45 per kilometer, according to the direct route.



Kutsuplus minibus letting passengers off at a bus stop

With the order confirmation, the riders receive a travel code, which serves as their ticket, as well as the time when the minibus will pick them up from the nearest bus stop. Riders also receive a walking route on their mobile devices or computers drawn on a map from the departure address to the bus stop.

Helsinki public transport tops European customer satisfaction ranking

Helsinki Region Transport is the top provider of public transport services in the Helsinki Metropolitan Area according to the European BEST survey. Helsinki is in first place in traffic supply, reliability, value for money and customer loyalty in public transport. In Helsinki, 78 percent of those surveyed

expressed satisfaction with the service, up from a similar survey last year. The survey also included Geneva, Stockholm, Vienna and Oslo. The Helsinki Metropolitan Area has come out on top in the BEST survey since 2010. BEST stands for Benchmarking European Service of Public Transport.

Helsinki develops low-energy housing

Simo Karisalo / City of Helsinki



Hernepellontie 26 low-energy apartments

The City of Helsinki steers a shift toward increasingly low-energy housing through an apartment building development programme in which the City invites ideas for low-energy housing from construction companies and allocates land for development against workable, good ideas. The City owns the majority of land for new development in Helsinki, so it is in a position to steer housing development systematically.

A recent site completed within the programme in Helsinki's new Viikinmäki district, *Hernepellontie 26* low-energy apartments, consumes half the amount of energy compared with conventional apartments built in Helsinki in the 2000's. These low-energy apartments achieve this level of energy efficiency with good thermal insulation, quadruple-pane windows and floor heating with circulating hot water produced with district heating. Heat from outgoing air is retrieved efficiently. The total construction cost of the apartments was only 3-4 percent higher compared with conventional apartments, and the difference pays itself back in just a few years.

The *Hernepellontie 26* apartments have paved the way for low-energy housing regularly developed in Helsinki's new districts. Low-energy standards will soon be the norm in new housing in Helsinki.

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Design competition for Guggenheim Helsinki under way

The Solomon R. Guggenheim Foundation and Helsinki City officials launched a design competition on 4 June 2014 for a new Guggenheim museum to be built in the Finnish capital. This open, international, two-stage competition welcomes anonymous submissions from firms and individuals from around the world. The competition is the Guggenheim Foundation's first open international design competition.

After Stage One of the competition closes in September 2014, the jury will select six submissions for Stage Two, and the winner will be announced in June 2015. The building would be constructed at a prominent waterfront site in Helsinki's South Harbour close to the historic city centre. The final decision on the construction and development of Guggenheim Helsinki would be made by Helsinki City Council.

Helsinki is ranked the world's 8th best place to live

The Economist Intelligence Unit places Helsinki in 8th place in its annual Global Liveability Ranking 2014. Helsinki places 2nd in Europe after Vienna, and it is the only Nordic city among the Global Top 10. The top three cities are Melbourne, Vienna and Vancouver. The Global Liveability Ranking provides lifestyle scores for 140 cities worldwide.

MTV and Helsinki sign multi-year partnership

MTV announced in July 2014 a brand new multi-year partnership with the City of Helsinki to showcase the best of the Finnish capital's music and cultural scene to international youth audiences. The partnership comes into effect with a two-day festival - MTV Push Helsinki - taking place in multiple locations across the city on 11-12 September.

This is the first event globally of its kind staged using the MTV PUSH brand, which is MTV International's on-air strand designed to promote the hottest emerging artists from the world of popular music. The highlight of the Helsinki festival will be a live MTV PUSH concert featuring up and coming international PUSH artists as well as local talent.

The MTV PUSH event is filmed and edited into a 30-minute TV special that will broadcast across MTV's international channels.

Helsinki News is an international bulletin published by City of Helsinki Executive Office Communications Unit three times a year.

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