References

Quality of living all year round with underfloor heating and cooling



Uponor involvement

- undefloor heating and cooling, Uponor Smatrix Base PRO

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Spacious living areas, sauna facilities with cooling balconies, utility rooms and own storage rooms – in Modena Condominium, in Kauppi, Tampere, the apartment building has brought appreciative quality factors familiar from living in detached houses to the apartment building. In both winter frosts and summer heat, living comfort is also ensured by water-circulating underfloor heating and cooling connected to building automation.

Project Facts:

Location	Completion
Tampere, Finland	2020
Vrsta objekta	Product systems
Multi story homes	Heating & Cooling

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Located next to the Kauppi Sports Park, about three kilometres from Tampere city centre, Modena Condominium was completed in late 2020.

Modena is the eighth completed project of Tampere-based construction company Asuva Ltd, and continues the company's ideology, which is based on high-quality architecture, good design and high-quality construction. The results of the work have

been rewarded, for example, with an honourable mention for Good Construction granted by the City of Tampere.

"Our goal is to develop apartment building housing and make it a genuine alternative to high-quality single-family houses," says CEO Ville Kaseva.
"Studies show that Finns want to live in a detached house. This is not possible for everyone – but it is possible to bring into an apartment building the quality factors that make living in a detached house valuable. These include, for example, the apartments' own sauna and cooling facilities, as well as proper storage and utility facilities. On the other hand, an apartment building can also offer things that may not be possible to build in a basic detached house, such as a high-quality gym," Kaseva says.

Many features familiar from detached houses can also be found in the six-storey Modena. All 18 apartments have utility rooms, spacious living areas, high-quality kitchens, spa areas with cooling balconies and apartment-specific storage rooms next to the apartment. Living in detached houses is also reminiscent of spaciousness: the average size of the apartments is 110 m² and they open in several directions. Luxury brought to living in an apartment building, on the other hand, includes, for example, the sports cellar of the house with its ski and bike maintenance points, as well as the lounge area crowning the entrance.

"In each individual design solution, we have tried to consider the smoothness of everyday life and the quality of living. In our opinion, this should be the starting point for building the apartment buildings of the future," Kaseva says.

Cooling is an essential part of living comfort

Living comfort in the apartments is also ensured by Uponor's underfloor heating and cooling.
Water-circulating underfloor heating is by far the most popular heat distribution method in detached houses today, and it has become more common in apartment buildings in recent years. Kaseva would have expected usage to grow even faster.
"In terms of living comfort, it is unsurpassed. The aesthetics of the solution are also important to us. Underfloor heating is hidden in structures and leaves more possibilities for interior decoration and window sizes. Even in Modena's apartments, many of the windows extend from floor to ceiling," says Kaseva.

According to him, in today's energy-efficient buildings, the possibility to cool the apartment is absolutely essential. Jarmo Kuitunen, CEO of Engineering office Jarmo Kuitunen Ltd, which was responsible for the HVAC design of the site, agrees. He believes that in the next few years, the sites will no longer be implemented without active cooling solutions.

"With passive ways, such as sun protection solutions, it is possible to achieve summertime room temperatures and degree hours in accordance with current building regulations, but this may no longer be enough to meet the growing demands of residents. Regulations will also become stricter further, as we must prepare for increasingly warm summers and hot spells brought on by climate change.

Energy-efficient heating and cooling

Kuitunen has decades of experience in designing various heating and cooling systems for residential and commercial buildings. However, Modena was the first project for him to add cooling to the underfloor heating system.
"There were no problems with design and dimensioning, and cooling was easy to add to the system. Of course, it is important that the dimensioning, coordination and possible specifications are still discussed with the system supplier. We have worked with Uponor since the 1980's, and co-operation has always been excellent.

According to Kuitunen, it is a significant advantage that the same system can be used for both heating and cooling.
"Separate cooling solutions can be bulky and expensive equipment that also causes draught and noise. Underfloor heating and cooling is a draught-free, silent and completely inconspicuous system inside the structures. As with heating, cooling can be adjusted room-specific with room thermostats. For example, when using a fan coil unit, the cooling power may be limited in the apartment if the interior doors are kept closed.
He points out that, especially in properties that use geothermal heat – such as Modena – underfloor heating and cooling is also a very energy-efficient system.

"In this case, the cool source can also be obtained as free cooling at low pumping costs. Correspondingly, at the same time, excess heating energy in apartments is transferred to charge heat wells.
In Modena, technical building services such as underfloor heating manifolds and central units are located in the storage and technical space attached to each apartment, which has a separate entrance from the stairwell.
– The solution is excellent, I would like to see more of these. The equipment does not take up space in the apartments and is easy to maintain and adjust without disturbing the residents.

Control room in the cloud

The underfloor heating of the house is controlled by the wired Uponor Smatrix Base PRO control system, which is freely integrated into the programmable building automation system via the Modbus RTU router. The data collected by the control system is transmitted to a cloud-based online control room, through which the system can be monitored and controlled remotely using a web browser. The data is also stored, so it can also be viewed afterwards.

"Room thermostats collect data on, for example, room-specific temperatures and humidity values in apartments. We are able to monitor how the equipment and controls work and, for example, control the change of heating and cooling modes. Any alarms are forwarded to the property manager and maintenance company," says Production Manager Reijo Jokisalo from Automaatio-Center AS Ltd, which was responsible for the building automation at the site.

"It is a significant cost advantage that all the necessary data can be obtained directly from the heating and cooling system, and no separate sensors are needed. Each room in the apartments can be monitored remotely centrally, which facilitates use, maintenance and servicing, Jarmo Kuitunen points out.

According to Jokisalo, the Smatrix Base PRO control system was easy to connect to the Modbus RTU router.
"I wasn't familiar with Smatrix before, so I spent some time getting to know the interfaces and fitting them. However, the connection proved to be effortless and Uponor's technical support was also excellent. I received clear, good instructions and all the necessary clarifications quickly," he says.

Project details
Developer: Asu Oy
Building contractor: Asu Oy
Architectural design: BST-Arkkitehdit Oy
HVAC design: Insinööritoimisto Jarmo Kuitunen Oy
HVAC contractor: LVI-Lipsonen Oy
Building automation: Automaatio-Center AS Oy