Progress of carbonisation of existing concrete facades and balconies as well as indoor structures

An extensive condition research project on facades and balconies was executed in the Jakomäki area of Helsinki in 1994. The project, which was related to the planning of the renovation programme for the area, covered structures in 31 buildings. The house at 6 Jakomäentie Road, which has since been demolished, was one of the buildings in which thorough examinations were carried out. The building had been completed in 1968.

The examinations carried out in 1994 showed that the progress of carbonisation of the facades was slightly faster than with exposed aggregate concrete on average. The corrosion risk was at its highest on the painted precast balcony units instead of the exposed aggregate concrete facades. The corrosion risk was also realised in the balcony units to the extent that a ban to use the balconies was considered at the end of the 2000’s.

According to the studies of Tampere University of Technology, the exposed aggregate concrete facades that are now being demolished in Jakomäki still boast good corrosion protection. However, clear shortcomings, which were the reason for the demolition, were found in frost resistance as well as in the building services and energy efficiency of the buildings. The studies focused on the durability properties of concrete as well as on the progress of damage in the buildings that had reached the end of their service life. The results were compared with the previous condition study of facades carried out in 1994.

The studies were conducted as part of a research project on the modelling of corrosion damage currently under way in the Department of Civil Engineering at Tampere University of Technology. The aim of the project is to develop a more precise method for the calculation of the service life of concrete structures based on a wider consideration of all service life factors.