Towards a holistic approach to the conservation of dalle de verre glazing

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This paper presents the preliminary results of a research project on the conservation of dalle de verre glazing. The project is a collaboration between the Vitrocentre Romont, the University of Applied Sciences Rapperswil and Geotest SA in Le Mont-sur-Lausanne, Switzerland. The dalle de verre technique, which consists of thick slabs of coloured glass set in a matrix of reinforced concrete, was particularly important in the second half of the 20th century because it was closely linked to the development of concrete architecture. In Switzerland, Alexandre Cingria was one of the first of several artists to create windows using this technique. The heyday of this monumental art form was between the 1950s and 1980s. After around 70 years, many of these works of art are in a very poor condition. The various problems affecting dalle de verre – such as concrete degradation, structural problems, and physical and chemical interactions between the reinforced concrete and the glass – call for specific conservation approaches that must be determined on a case-by-case basis. So far, research has mainly focused on the development of methods and materials for the restoration of historic concrete structures with little attention being paid to the deterioration processes typical of dalle de verre glazing. The initial focus of the project therefore is to develop a procedure for the systematic surveying and documentation of defects and the identification of the causes of damage of the dalle the verre within their larger structural, physical and climatic settings. Using two reference objects, the dalle de verre windows by Fernand Léger in Courfaivre and those by Alexandre Cingria at the Franciscan monastery in Fribourg, we are testing and evaluating various practical methods such as georadar, ultrasound and surface potential measurements and trying to create a 'toolkit' with which one can reliably and cost-efficiently map and classify damage specific to dalle de verre in situ. In a second step, we will test the practicality and efficiency of the approach we have developed on other dalle de verre examples in collaboration with national and international heritage institutions and research partners. Ultimately, the procedure is intended to serve as the basis for condition monitoring and the preparation of preservation concepts that take into account the historical, material and technical integrity and authenticity of these works of art in their historic architectural setting and therefore favour holistic approaches over intervention-oriented conservation.