Analysis of Adaptive Facade Systems and Evaluation of Their Applicability in Turkey

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Abstract : Approaches towards sustainability and energy efficiency are significant topics of our era. These approaches need to be addressed across various fields and are relevant to multiple disciplines. Building facades, as the first surface encountering external weather conditions, should be considered and analyzed within this context. Current seasonal changes due to global warming and the influence on climates have highlighted the necessity for building systems to adapt to these changes, emphasizing the need for long-lasting solutions. Therefore, this study aims to examine adaptive system applications using examples from similar climatic regions and buildings of different functions, classifying them according to adaptive system criteria. It also aims to explore and evaluate the current stage of such systems in Turkey and the potential for their implementation. In this study, six building examples with different functions, including two examples for each adaptive type, were analyzed from regions with climates similar to those in Turkey, with detailed examination sheets prepared. The purpose of this study is to contribute to ongoing developments by presenting findings on current concepts and analyses and proposing a distinct approach for the characterization of these elements at the scale of Turkey. From this perspective, there is a considerable amount of literature on adaptive facade designs, and while application examples exist, adaptive approaches have been developed and partially implemented. It is expected that innovative solutions in this field will find a place in Turkey in the near future, following the increasing number of examples globally.