The aim of this paper is to assess the state of the art of the facade building technology, in order to investigate the possibility of future retrofits achieving nearly ‘Zero-Energy Building' in existing non-residential buildings. The assessment was based on the published literature in the field of ‘smart' facade retrofits for energy performance upgrades on existing buildings and the benefits and challenges therein. It also investigates the available technologies, which can increase energy performance efficiency. This can be used as a possible retrofit tool for implementation on existing office buildings, aiming at an increase of the building's energy performance. It was concluded that near ‘Zero-Energy Building' status was not achievable solely through facade retrofits. Retrofit schemes can, however, succeed in the reduction of greenhouse gas emissions, in correlation with environmental goals of many countries worldwide and the European Union. Furthermore, the climate in south-eastern Europe and in the Mediterranean region presents a set of challenges for all forms and types of passive facade technologies, especially during the summer.