

# Adaptive Façades for Residential Buildings



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Residential buildings are often overlooked when it comes to implementing advanced building performance technologies; innovative systems are more likely to feature in high-end commercial facilities.

One of the most important building systems for human comfort is the façade of the building. Depending on the geographical location, climate and specific weather, and socio-economic conditions heating and cooling demand can prove to be a challenge for the residents and the façade of the building especially adaptive facades can play a significant role in that aspect in improving the performance of the building for better thermal performance, acoustics, and indoor air quality. The thesis aims to explore adaptive façade systems for implementation in residential buildings and test their results.

## Supervisors

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Adaptive façade Technologies	Adaptive façade Function																						
	Control daylight radiation	Thermal insulation	Heat flow	Ventilation	Sound insulation	Generate energy	Store Energy	Energy efficiency	De-/humidification	Electricity	Indoor air quality	Outdoor air quality	Environmental barrier	Solar shading	Light deflection	Glare protection	Visual comfort	Biodiversity	Heat retention	Privacy	Reduce heating load	Reduce cooling load	
Concrete walls																							
Brick walls																							
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Double skin facade																							
Electrochromic glass																							
Thermochromic Glass																							
Photochromic Glass																							
Electrochromic Glass																							
Photovoltaic window with adjustable transmission																							
Blinds/roller shades																							
Acoustic insulation																							
Adaptive Insulation components (AIS)																							
Window blinds																							
Coloured fluid window																							
Reflective external panels																							
Light filtering coatings																							
Photovoltaic thermoelectric window																							
Photovoltaic Windows																							
Photovoltaic powered blinds																							
Photovoltaic thermal solar collector																							
Adjustable opaque wall insulation																							
Adjustable translucent wall insulation																							

