Summary

The exterior wall, which is made of glass and metal in-fill panels on metal frames, is defined as Metal curtain wall system. The design of metal curtain wall system is complex that it has to perform as a filter to exclude the undesirable environmental elements such as heat, noise, rain, air pollution and electromagnetic radiation; as a component on its own, shall be structurally stable, durable and aesthetically appealing. It is also an economic asset and shall be sustained throughout the expected life.

The performance approach for the evaluation of metal curtain wall system design requires the basic knowledge of ‘Total building performance concept’. An overview of the literature provides a step by step approach for the integrated system design and the definitions for related terminologies. The various mechanisms involved in the design of the metal curtain wall system with respect to acoustical, thermal, visual, indoor air quality, building integrity and spatial performances have been discussed. Contributions have been made in establishing the hierarchy of performance needs and criteria relevant to Singapore and a performance evaluation matrix for physical design decisions. The importance of metal curtain wall system integration with the other three systems namely structural, mechanical and interior have been provided in the form charts and illustrations to highlight the critical decisions for two or three system connections.

Findings have been made as some of the present problems in the integrated design approach and the absence of single standard specific to Singapore context. Recommendations have also been made for the professional training towards ‘Total building Performance’ and further research towards establishing a single standard and performance specification for the design of metal curtain wall systems.