more of the deficiencies/limitations of the conventional arts mentioned above. It is against this background that the present invention has been developed.

SUMMARY

According to a first aspect of the present invention, there is provided a mobile test chamber for testing environmental performance of an interchangeable façade system in a test environment, the test chamber comprising:

a testing enclosure having one or more side frames configured for releasably securing one or more façade specimens for testing,

a plurality of sensors arranged in the testing enclosure for measuring multiple environmental parameters associated with the testing enclosure in the test environment when the testing enclosure has the one or more façade specimens releasably secured thereto, and

a mobility system disposed on a base structure of the test chamber configured for allowing mobility and rotatability of the test chamber;

wherein the side frame comprises a securing mechanism for releasably securing the façade specimen for testing, the securing mechanism comprising a plurality of sliding bars, each adjustable between a lock position for securing the façade specimen in the side frame during testing and a release position for allowing the façade specimen to be removed from the side frame.

Preferably, the testing enclosure is configured to be enclosed by a ceiling structure, the base structure, and a plurality of side structures, and wherein said one or more façade specimens form one or more of the plurality of side structures, respectively, when releasably secured to said one or more side frames.

Preferably, the ceiling structure, base structure, and one or more of the side structures which are not formed by any of the one or more façade specimen are thermally insulated.

In an embodiment, at least one of the ceiling structure and the base structure has a securing mechanism formed therein configured for securing one or more secondary objects in the testing enclosure for testing together with the one or more façade

specimens for determining the environmental performance of the façade system with the one or more secondary objects.

Preferably, the securing mechanism comprises an arrangement of guiding channels for receiving a corresponding engaging member of the one or more secondary objects for releasably securing the secondary objects in the testing enclosure.

Preferably, the one or more secondary objects comprise shading devices configured for reducing environmental exposure in the testing enclosure from the outside test environment.

Like stated aboveIn an embodiment, the side frame comprises a securing mechanism for releasably securing the façade specimen for testing, the securing mechanism comprising a plurality of sliding bars, each adjustable between a lock position for securing the façade specimen in the side frame during testing and a release position for allowing the façade specimen to be removed from the side frame.

In an embodiment, the mobile test chamber further comprises a processing enclosure having one or more information handling devices located therein processing data, including data received from the plurality of sensors.

In an embodiment, the mobile test chamber further comprises a wireless network device for communicating with one or more other mobile test chambers testing environmental performance of one or more other façade systems so as to utilize the mobile test chamber in a wireless test chamber network for testing environmental performances of façade systems at multiple locations.

In an embodiment, the mobile test chamber further comprises one or more systems configured for setting conditions in the testing enclosure, the conditions include heating, ventilation, air conditioning, humidity and lighting.

Preferably, the plurality of sensors are selected from a group consisting of a thermal sensor, a humidity sensor, a lux sensor, an infra-red sensor, a radiant thermometer, a rain sensor, a wind sensor, an air-quality sensor, a sound sensor, a dust sensor, a solar irradiance sensor, an environmental sensor, a chemical sensor, a power sensor and a GPS sensor.

CLAIMS

1. A mobile test chamber for testing environmental performance of an interchangeable façade system in a test environment, the test chamber comprising:

a testing enclosure having one or more side frames configured for releasably securing one or more façade specimens for testing,

a plurality of sensors arranged in the testing enclosure for measuring multiple environmental parameters associated with the testing enclosure in the test environment when the testing enclosure has the one or more façade specimens releasably secured thereto, and

a mobility system disposed on a base structure of the test chamber configured for allowing mobility and rotatability of the test chamber;

wherein the side frame comprises a securing mechanism for releasably securing the façade specimen for testing, the securing mechanism comprising a plurality of sliding bars, each adjustable between a lock position for securing the façade specimen in the side frame during testing and a release position for allowing the façade specimen to be removed from the side frame.

2. The mobile test chamber according to claim 1, wherein the testing enclosure is configured to be enclosed by a ceiling structure, the base structure, and a plurality of side structures, and wherein said one or more façade specimens form one or more of the plurality of side structures, respectively, when releasably secured to said one or more side frames.

3. The mobile test chamber according to claim 2, wherein the ceiling structure, base structure, and one or more of the side structures which are not formed by any of the one or more façade specimen are thermally insulated.

4. The mobile test chamber according to claim 2 or 3, wherein at least one of the ceiling structure and the base structure has a securing mechanism formed therein configured for securing one or more secondary objects in the testing enclosure for testing together with the one or more façade specimens for determining the environmental performance of the façade system with the one or more secondary objects.

5. The mobile test chamber according to claim 4, wherein the securing mechanism comprises an arrangement of guiding channels for receiving a corresponding engaging member of the one or more secondary objects for releasably securing the secondary objects in the testing enclosure.

6. The mobile test chamber according to claim 5, wherein the one or more secondary objects comprise shading devices configured for reducing environmental exposure in the testing enclosure from the outside test environment.

~~7. The mobile test chamber according to any one of claims 1 to 6, wherein the side frame comprises a securing mechanism for releasably securing the façade specimen for testing, the securing mechanism comprising a plurality of sliding bars, each adjustable between a lock position for securing the façade specimen in the side frame during testing and a release position for allowing the façade specimen to be removed from the side frame.~~

7~~8~~. The mobile test chamber according to any one of claims 1 to 6~~7~~, further comprising a processing enclosure having one or more information handling devices located therein processing data, including data received from the plurality of sensors.

8~~9~~. The mobile test chamber according to claim 7~~8~~, further comprising a wireless network device for communicating with one or more other mobile test chambers testing environmental performance of one or more other interchangeable façade systems so as to utilize the mobile test chamber in a wireless test chamber network for testing environmental performances of façade systems at multiple locations.

9~~10~~. The mobile test chamber according to any one of claims 1 to 8~~9~~, further comprising one or more systems configured for setting conditions in the testing enclosure, the conditions include heating, ventilation, air conditioning, humidity and lighting.

10~~11~~. The mobile test chamber according to any one of claims 1 to 9~~10~~, wherein the plurality of sensors are selected from a group consisting of a thermal sensor, a

humidity sensor, a lux sensor, an infra-red sensor, a radiant thermometer, a rain sensor, a wind sensor, an air-quality sensor, a sound sensor, a dust sensor, a solar irradiance sensor, an environmental sensor, a chemical sensor, a power sensor and a GPS sensor.

112. The mobile test chamber according to claim 101, wherein multiple sensors from the plurality of sensors are integrated as one sensor having multiple sensing functionalities.

123. The mobile test chamber according to any one of claims 1 to 112, wherein the test chamber is rotatable about a vertical axis for adjusting an orientation of the one or more façade specimens releasably secured thereto.

134. A test chamber system comprising:

a mobile test chamber according to any one of claims 1 to 123; and

a computer device having stored therein an executable application configured for remotely controlling one or more systems in the mobile test chamber, including setting conditions in the testing enclosure, and receiving data sensed by the plurality of sensors for processing, logging and/or remotely monitoring the data sensed, via a wireless communication.

145. The mobile test chamber system according to claim 134, wherein said conditions include heating, ventilation, air conditioning, humidity, and lighting.

156. A wireless network of mobile test chambers comprising a plurality of the mobile test chambers according to any one of claims 1 to 123 communicatively coupled to one another for data communication.