Dear Sir/Madam

(A) IMPLEMENTATION DATE FOR NEW SS 530:2014 – CODE OF PRACTICE FOR ENERGY EFFICIENCY STANDARD FOR BUILDING SERVICES AND EQUIPMENT AND NEW SS 553:2016 – CODE OF PRACTICE FOR AIR-CONDITIONING AND MECHANICAL VENTILATION IN BUILDINGS

(B) NEW REQUIREMENT IN THE APPROVED DOCUMENT ON AIR FILTRATION STANDARDS AS STIPULATED IN NEW SS 553:2016 AND ADVISORY FOR EXISTING BUILDINGS TO RETROFIT AIR DISTRIBUTION SYSTEMS TO MEET AIR FILTRATION STANDARDS

This circular is to:

a) Advise the industry the implementation date for:

   a. SS 530:2014 – Code of Practice for Energy Efficiency Standard for Building Services and Equipment and
   b. SS 553:2016 – Code of Practice for Air-conditioning and Mechanical Ventilation in buildings

b) Inform the industry of the new requirement in the Approved Document on air filtration standards as stipulated in SS 553:2016 and encourage the industry to retrofit air distribution systems of existing buildings to meet air filtration standards
CURRENT REQUIREMENTS

Approved Document

2 Currently, the (i) efficiency of air-conditioning system\(^1\), (ii) maximum artificial lighting power budget and (iii) switching control for artificial lighting, in building works, have to comply with requirements under SS 530 - Code of Practice for Energy Efficiency Standard for Building Services and Equipment. Building works are also required to meet the ventilation requirements set out under the SS 553 - Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings.

Building Control (Environmental Sustainability) Regulations 2008

3 Further, building works that are required to meet the minimum Green Mark Score under the abovementioned regulations, are required to comply with the Code for Environmental Sustainability of Buildings. The Code makes references to SS 530 and SS 553 in the computation of Green Mark Score.

REVISIONS TO SS 530 AND SS 553


5 The latest versions of SS 530 and SS 553 will apply to all projects under the Approved Document and Building Control (Environmental Sustainability) Regulations 2008. The changes will take effect on projects whose first set of plans is submitted to the Commissioner of Building Control for approval on or after 1 April 2017.

NEW REQUIREMENT IN THE APPROVED DOCUMENT ON AIR FILTRATION STANDARDS AS STIPULATED IN NEW SS 553:2016 AND ADVISORY FOR EXISTING BUILDINGS TO RETROFIT AIR DISTRIBUTION SYSTEMS TO MEET AIR FILTRATION STANDARDS

SCOPE OF NEW REQUIREMENT

6 Under the revised SS 553:2016, launched by SPRING Singapore in August 2016, Section 7.5 – Air filtration, the Minimum Efficiency Reporting Value (MERV) for cleaning the air in all air-handling units and fan coil units shall be equivalent to MERV 6 or better, and MERV 14 when the outdoor pollution level is in the unhealthy range in accordance with MOH’s guidelines.

7 To mitigate infiltration of fine haze particles into buildings when haze returns and exceeds unhealthy levels for an extended period of time, the

\(^1\) Air-conditioning system with cooling capacity exceeding 30 kW only.
acceptable solution specified in the Approved Document, Section G would be expanded to include a new requirement – air-conditioning systems for ventilation of non-residential buildings shall need to comply with the Minimum Efficiency Rating Value (MERV) for cleaning of air given in the SS 553:2016. This is in addition to the requirement on ventilation rates.

- **CHANGES TO THE APPROVED DOCUMENT**

8 The amendment to the Approved Document, Section G – Ventilation, as shown in Annex A will be effective from 1 April 2017.

9 This new requirement on air filtration standard will apply only to new erection of non-residential projects where the first set of plans is submitted to the Commissioner of Building Control for approval on or after 1 April 2017.

- **OWNERS OF EXISTING BUILDINGS ARE ADVISED TO RETROFIT AIR DISTRIBUTION SYSTEMS**

10 Owners of existing buildings are encouraged to retrofit the air distribution systems to meet the air filtration recommendations in SS553:2016. Adopting the air filtration recommendations helps a building to be protected from the adverse impact of poor outdoor air quality during periods of heavy haze, thus alleviating tenants’ concern and minimising disruption to business activities.

11 Please refer to Annex B on the good practices that may be considered in the design and installation of the air distribution systems of air conditioning and mechanical ventilation systems in buildings.

**FOR CLARIFICATION**

12 We would appreciate it if you could convey the contents of this circular to the members of your organisation. For clarification, you may call our Hotline at 1800-221-9001 or email to bca_enquiry@bca.gov.sg.

Yours faithfully

DARREN LIM
DIRECTOR
BUILDING PLAN & MANAGEMENT GROUP
for COMMISSIONER OF BUILDING CONTROL
G.3 ACCEPTABLE SOLUTION
G.3.1 The requirement in paragraph G.2.1 is deemed to be satisfied if –

(a) natural ventilation that complies with paragraphs G.3.2.1 and G.3.2.2; or

(b) mechanical ventilation that complies with the ventilation rates given in SS 553 - Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings; or

(c) air-conditioning system that complies with –

(for new erections of non-residential buildings)

(i) the ventilation rates in SS 553 - Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings; and

(ii) the Minimum Efficiency Reporting Value (MERV) for cleaning the air given in SS 553 - Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings

(for all other types of building works)

the ventilation rates in SS 553 - Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings,

is provided.
Recommended good practices for the design and installation of air distribution systems

BCA recommends that as a good practice, the industry should consider the following when retrofitting the air distribution system to meet the air filtration recommendations in SS 553:2016:

a. The fan static should be sufficient to sustain the required air flow rate in the event that a MERV-14 filter is deployed. The fan motor may thus need to be upsized.
b. Fan motor should be run efficiently. When a MERV-6 filter is used, the fan speed should be modulated with a variable speed drive (VSD) or other means to reduce energy consumption.
c. Provision of air filter housing or slot to accommodate the chosen filter and space to facilitate equipment maintenance and filter replacement.

Building owners may want to consider engaging the service of a Professional Engineer (Mechanical) for the design of the ACMV system.

The corresponding considerations are indicated in the depiction of an AHU/FCU below,

MERV (Minimum Efficiency Reporting Value) is a measurement scale designed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to rate the effectiveness of air filters. The MERV rating ranges from 1 to 16, with a higher MERV rating corresponding to a greater percentage of particles captured on each pass.
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