

SAUDI ARABIA

Saudi Standards, Metrology and Quality Organization (SASO)

Reducing carbon emissions in the building sector

Overview

The building sector represents about 29 % of the primary energy consumed in the Kingdom of Saudi Arabia. Buildings use the majority (more than 75 %) of the total electric energy consumption in the country, a figure that is partly attributed to the low energy efficiency of the electrical appliances employed. In a bid to address the issue, the Saudi Standards, Metrology and Quality Organization (SASO) worked in conjunction with the Saudi Energy Efficiency Program (SEEP), which operates under the stewardship of the Saudi Energy Efficiency Center (SEEC), to implement a series of secondary programmes to rationalize electricity consumption.

SEEP has been focusing on the three main energy-consuming sectors (industry, buildings and transportation), which account for over 90 % of the country's energy consumption. Among its initiatives for the construction sector, SEEP worked on updating and developing standards for small-capacity air conditioners and other household appliances, as well as developing standards for energy efficiency in lighting and large-capacity air conditioners.

The task was facilitated by the use of International Standards as a reference source for determining requirements and test methods that had worldwide consensus. This also made setting new requirements that could be different from one country to another redundant. The initiative resulted in the publication of more than 26 energy efficiency standards and regulations for the building sector, designed to rationalize the industry's production and consumption of energy. Based on these standards, SEEC, the entity responsible for the development of energy efficiency and conservation policies, has formulated energy efficiency labels for air conditioners and other appliances that have been in enforcement on imported and locally manufactured products.

The building sector contributes for a large part to carbon emissions. One method of reducing these emissions is through the implementation of national energy efficiency programmes. To this end, SASO and SEEC, along with the relevant authorities involved in the Saudi Energy Efficiency Program, contributed to the development of standards and regulations for an electronic system to register all electrical/electronic products against the minimum energy performance requirements of the relevant standard. This will provide a clear mechanism for allowing and monitoring their entry to the market.

Outcomes and benefits

Based on an integrated work methodology, the Saudi Energy Efficiency Program is one of the most effective government programmes ensuring monitoring and adherence to the specific standards launched under the programme. Cooling is the major driver of building emissions and the initiative has led to a number of insulation standards for air conditioning (AC) units. The specification for small- and large-capacity air conditioners was updated in 2012 to increase the energy efficiency rating (EER) requirements for AC units to the levels in International Standards. This has driven a 57% improvement in minimum EERs required for split units, for example, compared to pre-2012 levels.

Energy efficiency standards are now also in place for refrigerators and freezers, washing machines, water heaters, clothes dryers and lighting products. The publication of a standard for home and street lighting, for example, has contributed to raising the efficiency of home lighting products by up to 80%. The standards for washing machines and refrigerators were also updated while a new standard was released for clothes dryers and heaters that comply with existing International Standards. These efforts have brought down the energy consumption of refrigerators by 22% and of washing machines by 60%.

Lastly, the technical regulation for thermal insulation has been made mandatory for all new buildings since 2014 as it is expected to reduce electricity use in air conditioners by up to 40%. Fifteen specifications for thermal insulation materials have also been issued.

Partners involved

The standards for energy performance requirements and labelling are a joint effort between SASO and the Saudi Energy Efficiency Center (SEEC), through its Saudi Energy Efficiency Program (SEEP), to improve the energy performance of buildings in Saudi Arabia.

Timeline

The Saudi Energy Efficiency Program (SEEP) was launched in 2012 with the objective of developing sustainable energy policies for the Kingdom of Saudi Arabia by designing and implementing initiatives and their enablers. Work began that year on specifications for air-conditioning appliances. Almost a decade later, many standards have been revised and new ones developed. As the programme's activities unfold, the plan is to reduce energy levels by 20% in construction, industry and land transport by 2030.

References

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- SASO 2874:2016, *Air conditioners – Minimum energy performance requirements and testing requirements*
- SASO 2883:2017, *Electrical clothes dryers – Energy performance requirements and labelling*
- SASO 2884:2017, *Water heaters – Energy performance requirements and labelling*
- SASO 2885:2018, *Electrical clothes washing machines – Energy and water performance requirements and labelling*
- SASO 2892:2018, *Refrigerators, refrigerator-freezers and freezers energy performance, testing*
- SASO 2893:2018, *Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE code)*

- SASO 2902:2018, *Energy efficiency, functionality and labelling requirements for lighting products – Part 2*
- SASO 2927:2019, *Energy efficiency functionality and labelling requirements for lighting products – Part 3: Street lighting*
- SASO GSO ISO 5151:2010, *Non-ducted air conditioners and heat pumps – Testing and rating for performance*
- SASO GSO ISO 13253:2011, *Ducted air-conditioners and air-to-air heat pumps – Testing and rating for performance*
- Saudi Standards, [technical regulations](#) for energy efficiency in construction and buildings
- Saudi Standards, *Technical regulation for building materials – Part 2: Insulation and building cladding materials*