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Successful growth of AAC market in Turkey

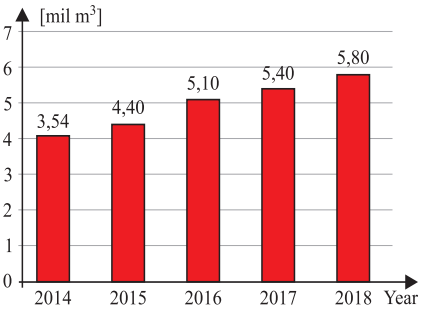
Since its start in 1965, production of Autoclaved Aerated Concrete (AAC) in Turkey has reached a total of 70 million cubic meters used in approximately 5.5 million modern and healthy buildings. The cumulative energy savings arising from usage of AAC in these buildings during the last half of the century, are over 28 billion USD. AAC's excellent inherent thermal insulation properties does not only reduce energy need for heating and cooling, but also cuts carbon dioxide emissions and combats against climate change.

AAC production

Test of AAC blocks

Turkey — one of the biggest AAC producers in the world

Turkey is one of the biggest AAC producers worldwide sharing the first place with Poland in Europe. Production capacity and consumption of AAC have increased by 2.5 times in Turkey within the last decade. The usage of AAC is preferred by a high rate of architects and builders in modern building, housing and shopping mall projects because of the advantages in energy efficiency, fire safety, earthquake safety and environmental aspects. In Turkey, as of 2018, there are in total, 14 AAC production facilities belong to 8 companies and having an installation capacity of 5.8 million cubic meters annually. These factories are located in the western, southern and southeastern regions of the country.



AAC production capacity in Turkey

Product range of AAC is composed of blocks (95%), reinforced panels (4%) and thermal insulating boards (1%) the most innovative product. Consumption patterns of the product range in the last 5 years (between 2014 and 2018), reveals the increase rates of 73% for AAC blocks and 91% for AAC reinforced elements in the market. Another recent development regarding AAC is that the new Earthquake Regulation of Turkey came in force on 01.01.2019. A building constructed with AAC panels only, without any need of another structural systems, called the **AAC Structure System** has been placed in the Chapter of Masonry Construction of the new Earthquake Regulation.

Example of AAC buildings

What is the AAC Structure System?

The new Earthquake Regulation of Turkey in Part 11.1.2.d defines the AAC Structure System as: system that covers the buildings which have the high ductile level in multi-storey masonry constructions. In this system, AAC load bearing vertical wall panels are used as both interior and exterior walls and the reinforcement bars between the grooves of wall panels are fixed to the reinforced concrete horizontal beams on basement and floor level. In a similar vein, floor deck elements are fixed to RC beams too. The panels used in this system have to be designed and produced in accordance with EN 12602 (Part. 11.2.5).

The floor deck panels of the buildings composed of load bearing panels should be designed and checked for serving as rigid diaphragm both in two directions (Part 11.3.8). Height limita-

AAC block | reinforced AAC panel | thermal insulation plates

Product range of AAC

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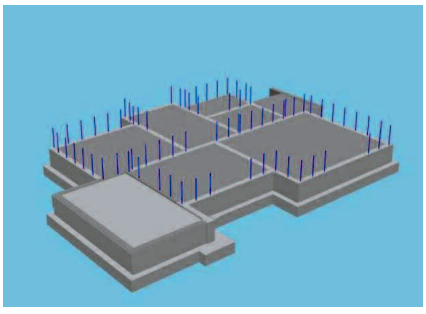
AAC Structure System

tions for the buildings constructed by AAC Structure System in the new Earthquake Regulation is changing due to seismic risk regions of the country. If the construction takes place on low seismic regions, maximum building height is 17.5 m., whereas on the areas having high seismicity maximum building height limited with 10.5 m.

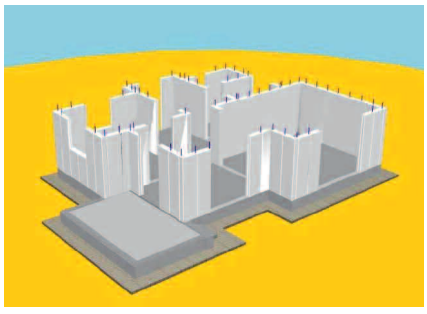
Many buildings constructed with AAC Structure System in Turkey have got hazardous earthquakes like as 1999 Marmara EQ without any damage. About 6.000 housing dweller on Marmara region constructed with this system experimented the big 1999 Marmara EQ and had performance of success and their useful life is going on. It is expected that usage of AAC Structure System and reinforced panels in the construction market will accelerate with this new Earthquake Regulation.

Usage of Reinforced AAC Panels in different structural systems

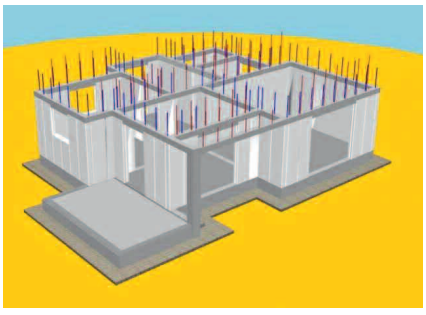
Reinforced AAC Horizontal and Vertical Wall Panels can be used as external and internal wall frame gaps formed by different type of structural systems, like as reinforced concrete, steel and timber. These panels enhance the architectural facade variety with providing various functions and designed providing necessary strength against EQ and wind forces. They can be mounted to interior or exterior surfaces of columns as well as between them.



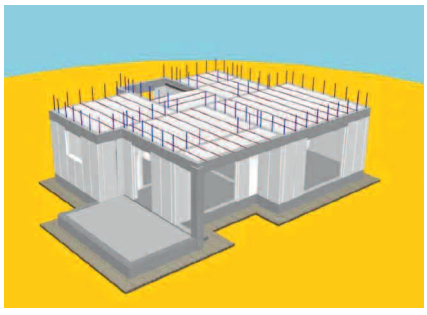
Foundation & Basement



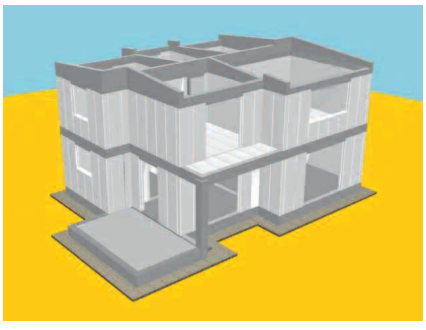
Ground floor



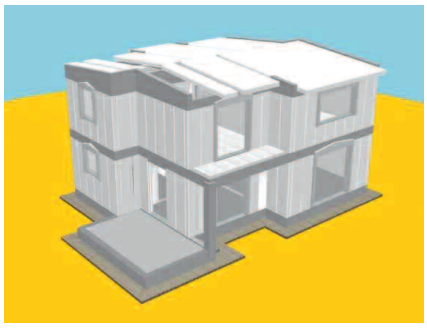
RC Horizontal Beam



1st Floor Slab



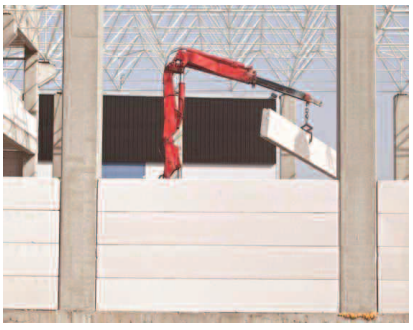
2nd Floor



Roof Panels

AAC Structure System have to be designed and produced in accordance with EN 12602 (Part. 11.2.5)

Reinforced AAC Vertical Wall Panels



Reinforced AAC Horizontal Wall Panels

Reinforced AAC Roof Panels

Reinforced AAC Roof Panels are load bearing elements for roof slabs especially for industrial and residential building types. AAC Roof Panels can be used in various types of roof such as flat, pitched and vaulted. In combination with reinforced AAC wall, floor and roof panels form a complete construction system.

Reinforced AAC Floor Panels are used for intermediate slabs and terraces. They can be easily assembled by means of crane and apparatus like as AAC wall and roof panels.