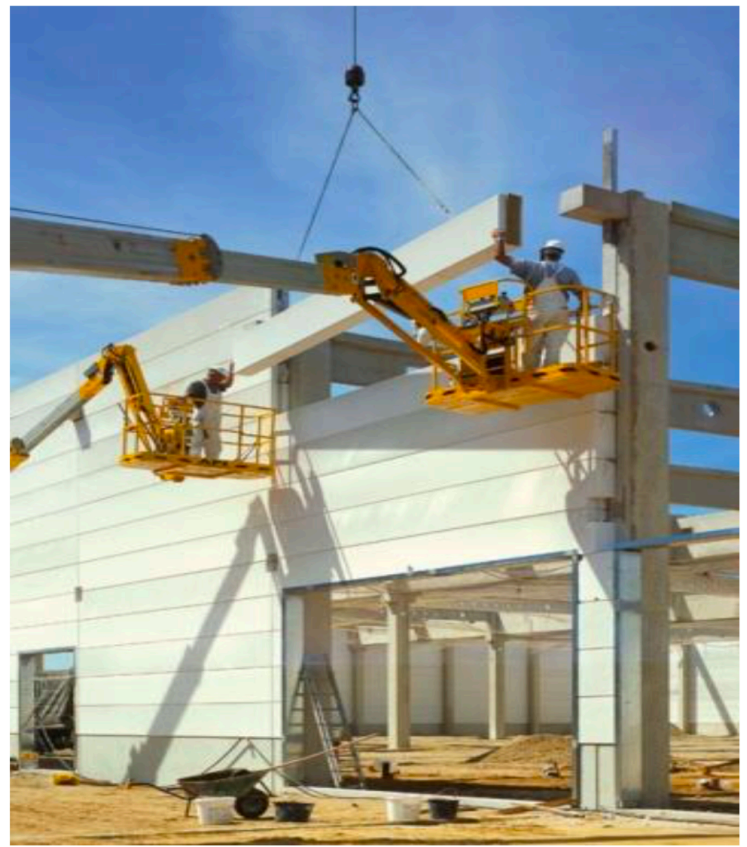


Basic Facts – AAC Project

4. Trend Facts – Panel Projects



AAC panel solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Panel Projects

AAC Projects

- Multi Story
- Panel Projects



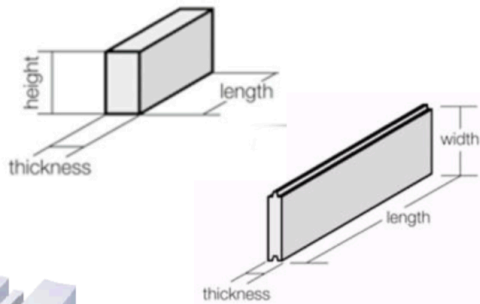
Basic Facts – AAC Project

3. AAC Product Facts

Strength Class	Nominal Dry Bulk Density kg/m ³	Density Range kg/m ³	Compressive Strength MPa min	Average Drying Shrinkage (%)	Thermal Resistance (8 in. wall thickness)** R-value equivalent (hft ² °F/BTU)
AAC-2	400	350 - 450	2.0		21 - 24
	500	450 - 550			
AAC-4	500	450 - 550	4.0	≤ 0.02	20 - 23
	600	550 - 650			
	700	650 - 750			
	800	750 - 850			
AAC-6	600	550 - 650	6.0		< 20
	700	650 - 750			
	800	750 - 850			

Ref. ASTM: C1386-07

Blocks	
- length	up to 625 mm
- height	200 - 400 mm
- thickness	50 - 400 mm
Megablocks	
- length	625 - 1250 mm
- height	625 mm
- thickness	100 - 400 mm
Panels	
- short	< 3,5 m
floor-high/wall-high as vertical wall panels	
- long	up to 6.00 m
for horizontal or vertical walls, roofs or floors	
- width	≤ 625 mm
- thickness	50 - 300 mm



Fire rating average

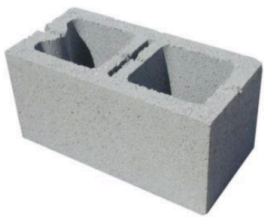
Wall thickness	25mm	50mm	75mm	150mm	200mm	250mm
Non-load bearing	1 hrs	1-2 hrs	2 hrs	3 hrs+	4 hrs+	4 hrs+
Load bearing			1-3 hrs	1-3 hrs	2-3 hrs	3 hrs



**AAC: Excellent heat insulation, Fire resistant
Noise absorption, Easy workability**

Basic Facts – AAC Project

4. Trend Facts – Block Projects

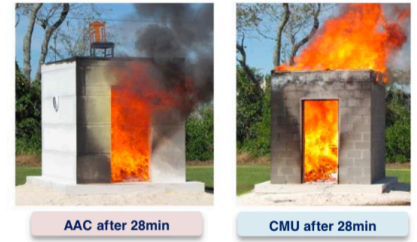


VS.



AAC is a One Stop Solution!
 Identified saving AAC vs. CMU
 25% to 35%

CONCRETE MASONRY UNIT ("CMU") vs. AUTOCLAVED AERATED CONCRETE ("AAC") SOFT FACTS			
#	Item	CMU Facts	AAC Facts
1	Subcontractors/Suppliers Needed	4	1
2	Days Needed For Construction Phase (185m ² Building)	15	5
3	Termite Proof	NO	YES
4	Fire Rating 6h	NO	YES
5	Sound Protection	NO	YES
6	Resist Humidity	NO	YES
7	Reach R-Value 25 w/o Insulation	NO	YES
8	Recyclable Material	NO	YES
9	One Stop Solution Material	NO	YES
10	Environment Friendly	NO	YES
11	Easy Handling	NO	YES
12	Earthquake Solution	NO	YES
13	Light Weight	NO	YES
14	Leed Qualified	NO	YES



AAC solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Panel Projects

AAC Projects

- Warehouse Wall
- Panel Projects



Basic Facts – AAC Project

3. AAC Product Facts – Basic Advantages

Fast Construction

Faster to install than other construction solutions. Requires **significantly less labor** than traditional masonry construction methods, leading to substantial savings in site costs. It also means a **cleaner, safer construction** site and less clean-up after completion.

Light weight

About **1/3 the weight of bricks**. Excellent solution for areas that are **seismically active or have poor ground conditions**. Once finished the AAC wall system is almost impossible to tell apart from existing building method.

Living atmosphere

The unique aeration provides superior insulation properties for a masonry product. The unique combination of **thermal resistance along with thermal mass**, make building with AAC a smart choice which will meet all building energy efficiency regulations. For unit and homeowners, the result is a **more comfortable home** with lower heating and cooling cost.

Fire

AAC is **non-combustible** and renowned for its **fire resistance** properties. The final AAC wall system will achieve a very high fire resistance level which is very hard to be reached by other fire solutions. AAC comes with a build in fire solution!

Sustainability

AAC products and systems are the sustainable choice and environmental friendly. Independent testing shows that overall AAC has a **30% lower environmental impact** than concrete or brick veneer. Using over **60% less embodied energy**, and producing at least **55% less greenhouse emissions** than concrete or brick veneer, AAC is the cleaner, greener choice.

AAC – the right product for the upcoming building material challenges

Basic Facts – AAC Project

4. Trend Facts – Block & Panel Projects



AAC block/panel floor solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Panel Projects

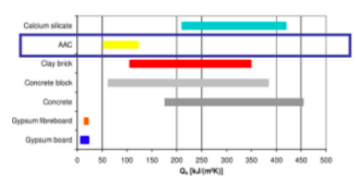
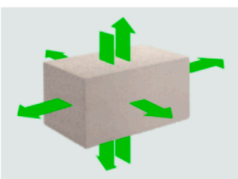


AAC panel solutions – an economic way of erecting houses that provide comfortable room conditions and minimize energy use and carbon emission

Basic Facts – AAC Project

3. AAC Product Facts – Focus Energy

1. High energy and thermal efficiency - **10 times higher than aggregate concrete and three times better than clay brick**
2. Immediate solution to **cutting the energy consumption of residential and non-residential buildings**
3. **Additional insulation materials unnecessary**. EU insulation requirements can be met by using AAC alone
4. **AAC is energy-efficient over its whole life cycle**
5. **AAC construction solutions will boost** the speed of construction
6. **Monolithic AAC masonry** with marginal additional layers are among the common exterior in internal wall solutions
7. **A single solid AAC element** can be used to meet all the requirements for the **cost optimal house wall design**
8. **AAC will avoid or/and reduce the energy demand** for cooling and can provide a strong contribution to meet the goals of **CO2 reduction**
9. **Thermal bridging causes a higher amount of thermal transmission**. AAC is the perfect fit to this design issue by providing solutions developed to **reduce the cooling/heating loss**
10. **AAC** leads to a comfortable and **healthy internal environment**
11. Compare to other construction solutions **AAC buildings will have approximately 4-6 °C temperature difference**



AAC – the right product for the upcoming building material challenges

Basic Facts – AAC Project

4. Trend Facts – Block Projects



AAC block solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Panel Projects



AAC panel solutions – an economic way of erecting houses that provide comfortable room conditions and minimize energy use and carbon emission

Basic Facts – AAC Project

4. Trend Facts

AAC - Green Building

A green building must meet the guidelines of sustainability and energy efficiency

AAC qualifies as “natural” and „GREEN“

Water, sand and lime are the primary ingredients used in manufacturing AAC. Though only a very small amount of cement is used in the process, the end result is a highly stable product with an average density one-fifth the level of typical concrete. AAC has lower embodied energy per m³ than concrete alternatives. AAC buildings are characterized among other things by high resource efficiency in the fields of energy, water and materials, while at the same harmful effects on health and the environment are reduced.

AAC buildings will be much more energy efficient than a traditional building structure.



ENERGY STAR: Benefits for AAC homeowners

AAC qualifies for ENERGY STAR projects



According to the U.S. Department of Energy: Buildings account for 71 % of America’s electricity use and 38 % of all greenhouse-gas emissions.

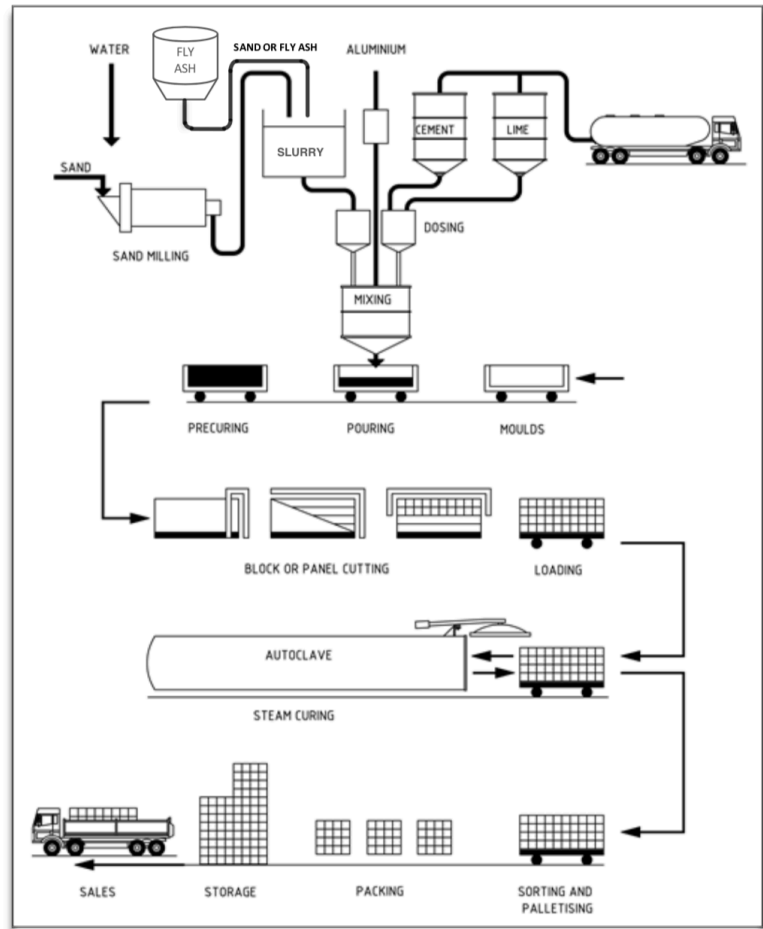
Any home up to three levels can earn the ENERGY STAR label if it has been verified to meet the Environmental Protection Authority (EPA) guidelines.

ENERGY STAR qualified homes offer energy-efficient improvements that deliver better quality, better comfort, better durability performance and greater comfort. **The use of AAC building material will reduce maintenance costs and lower monthly utility bills.**

Basic Facts – AAC Project

2. Rough Production Process

- The basic materials are natural materials like sand, cement, lime and water plus a trace of aluminum powder
- AAC is the result of a unique chemical process. Sand slurry is basically mixed with selected raw materials
- The slurry mixture is poured into moulds for precuring. The mixture rises like a “cake” and forms extremely small, finely dispersed air spaces due to the hydrogen development from the aluminum reaction. Finally it stiffens due to the reaction of the binders
- After reaching the hardness (approx. 1-2 hours) the cake is removed from the mould and runs on a precision trolley into the cutting machines. The cutting machines wire-cut the cake into desired blocks, panels or slabs dimensions. All fresh cut-offs are 100% recycled
- After cutting, the fresh cut cake is steam-cured in autoclaves at a temperature of 190 °C corresponding to a pressure of approx. 12 bar. High-pressure steam curing forms the unique crystal structure giving AAC outstanding qualities
- After steam-curing the blocks or panels are packed and ready for sale



Basic Facts – AAC Project

4. Trend Facts – Block Projects



AAC block solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Panel Projects



AAC panels – cladding solution

Basic Facts – AAC Project

4. Trend Facts

Energy saving through AAC

LEED – a green standard?

LEED = **L**eadership in **E**nergy and **E**nvironmental **D**esign is the Green Building Rating System.

LEED provides various standards for environmentally sustainable construction.

LEED rating system and AAC

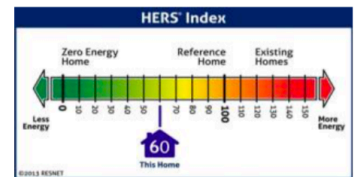
Using AAC can help increase the number of points awarded to a building in the **LEED** system.

LEED is designed to promote design and construction practices that increase profitability while reducing the negative environmental impacts of buildings and improving occupant health and well-being.

The **LEED** rating system addresses six major areas to evaluate the environmental performance of a building and encourage market transformation towards sustainable design:

- **Energy and atmosphere**
(reduce harmful greenhouse gas emissions)
- **Materials and resources**
- **Indoor environmental quality** (healthier and safer for occupants)
- **Innovation and design process** (lower operating cost and increased asset value)
- **Water efficiency**
- **Sustainable Sites**

As a masonry product AAC can account for all these **LEED** credits.



HERS® Index: AAC will reduce the index number

HERS (Home Energy Rating System) index score can tell you so much about a home. Heating, cooling and water heating constitute the largest cost of homeownership outside of the mortgage/investment loan. The HERS index score will tell you how well the home performs energy-wise. The HERS report will outline the energy features of the home and the expected cost of utility bills.

Some of the variables included in an energy rating are:

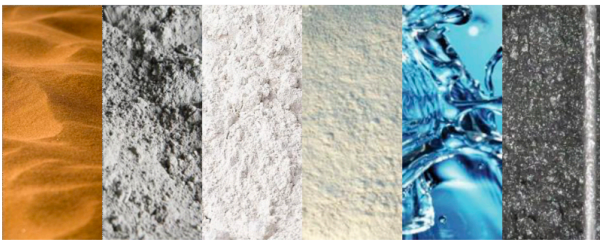
- **All exterior walls (both above and below grade)**
- **Floors over unconditioned spaces (like garages or cellars)**
- **Ceilings and roofs**
- **Attics, foundations and crawlspaces**
- **Windows and doors, vents and ductwork**
- **HVAC systems, water heating system and your thermostat**

As a masonry product AAC can account for the **highlighted** variables – cost driver of utility bills.

Basic Facts – AAC Project

2. Rough Production Process

What's in AAC?



**Sand + Cement + Lime + Gypsum + Water
+ Trace Aluminum Powder**



**Strong Light Weight Closed Cell
Porous Structure**

1 m³ raw material mixture
=
3 m³ finished AAC product

Basic Facts – AAC Project

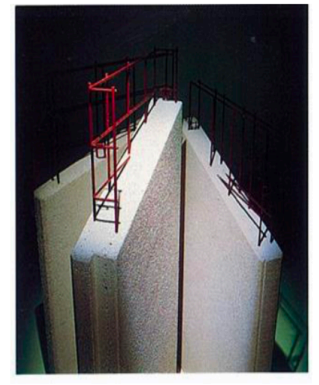
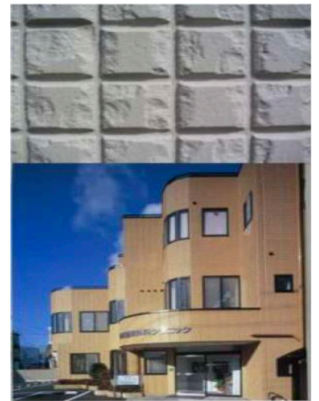
4. Trend Facts – Block Projects



AAC block solutions – an economic way of construction

Basic Facts – AAC Project

4. Trend Facts – Façade Panel Projects



AAC panels – cladding solution

Basic Facts – AAC Project

4. Trend Facts – Panel Projects

AAC panels for external or internal walls have been designed for homes built using either timber or steel framing including home extensions or re-cladding of existing homes (an interesting new business idea).

AAC panels of (50mm – 75mm) thickness, **simple steel-reinforced**, can be fixed to battens attached to the load-bearing frame as a outstanding façade/decoration application.

AAC panels provides an attractive, modern exterior with a **huge choice of rendered finishes and colors or fibre cement solutions** for a contemporary and aspirational look that new home buyers are looking for.

Panels provide a **low mass cladding solution** which is also **highly fire resistant** and has **excellent acoustic and thermal insulation** properties that contribute to **higher energy efficiency and reduced heating and cooling costs**.

Single Houses

AAC brings building new homes into the 21st century by providing panels for walls that look and feel solid like brick and then adding comfort, environmental and acoustic benefits that only a AAC home can deliver.

Multi Family houses / Apartments

AAC can be used for internal and external facade walls. This lightweight panel product provides substantial cost savings compared to traditional masonry but provides significant energy, fire and acoustic benefits other systems cannot.

Commercial buildings

AAC is the perfect fit for internal and external walls for commercial applications ranging from low rise industrial/commercial developments to high rise offices or medium/high density residential buildings.

AAC – the right product for the upcoming building material challenges

Basic Facts – AAC Project

3. AAC Product Facts – Perfect Fit

AAC is ideal for:

- ✓ Wall
- ✓ Roof
- ✓ Floor/Ceiling
- ✓ Partition wall
- ✓ Cladding
- ✓ Decoration

**AAC – Monolithic
building material for
all kinds of design
and application**



Basic Facts – AAC Project

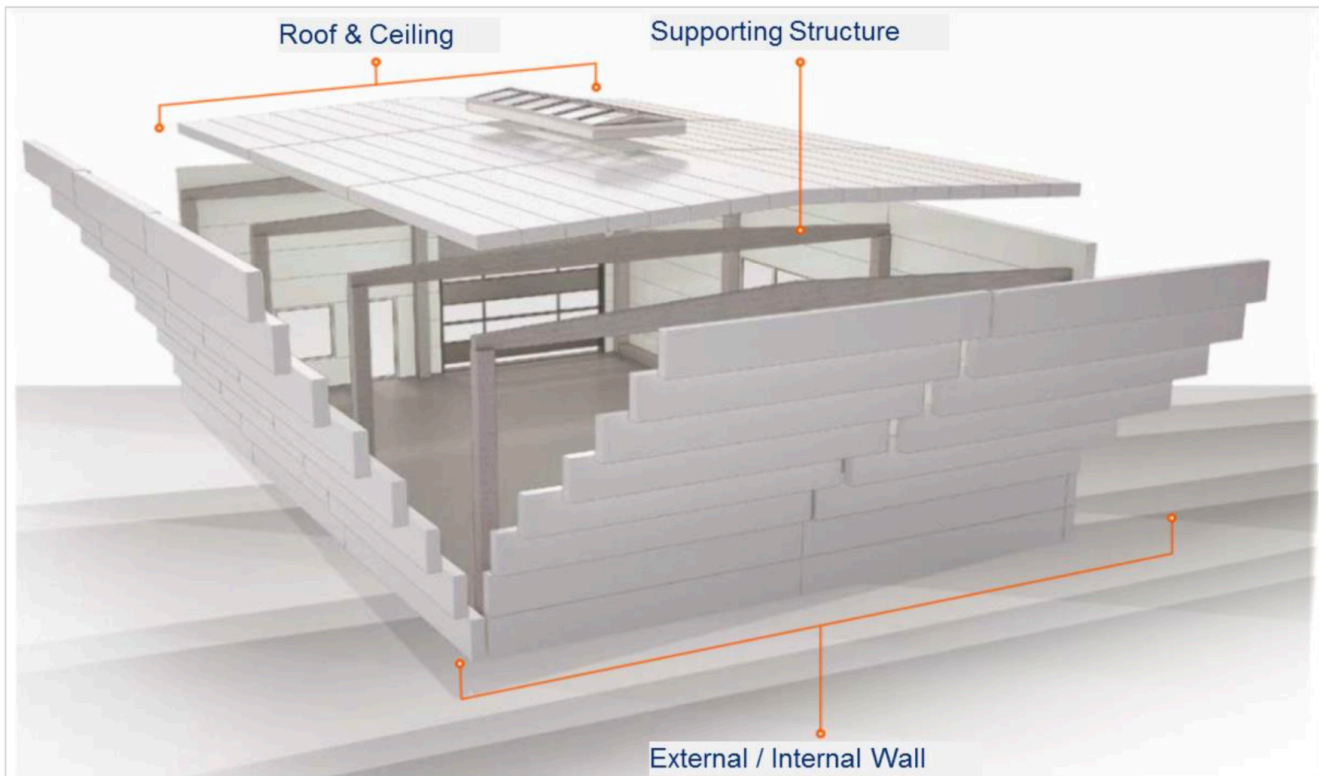
3. AAC Product Facts – Selection Of Challenges



Goal: Design a customized market strategy for your local market

Basic Facts – AAC Project

4. Trend Facts – Panel Projects



AAC panels – most commonly used building materials

Basic Facts – AAC Project

4. Trend Facts – Panel Projects

