

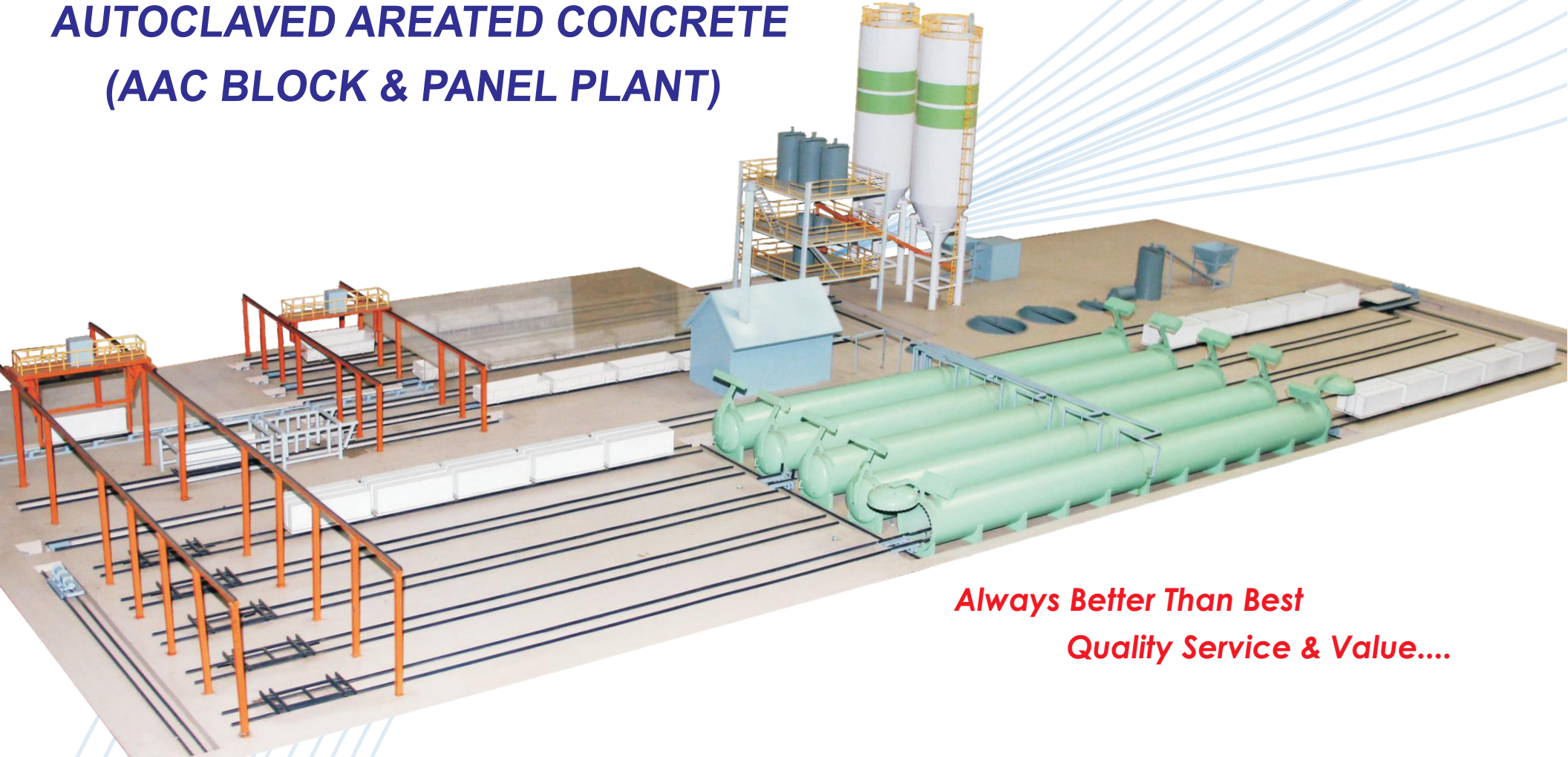


# LAXMI EN-FAB PVT LTD.

Mfg. of Plant & Machinery

ISO 9001 : 2008

## AUTOCLAVED AREATED CONCRETE (AAC BLOCK & PANEL PLANT)



*Always Better Than Best  
Quality Service & Value....*



## COMPANY PROFILE

Laxmi En-Fab Pvt. Ltd. is a high-tech and global engineering Company with work strength of more then 200 employees with a strong commitment to enhancing customer productivity, profitability and safety.

Our operations are based on unique expertise in materials technology, extensive knowledge about industrial processes and close customer cooperation. This combination, coupled with continuous investments in research and development (R&D), has Enable us to achieve leading positions in the following areas:

AAC Plant  
Dry mix mortar Plant  
Crushers (Aggregate Plant)

- Sand making Plant
- Mining Projects. Etc.

# FACILITY



- Our State-of-the-art Manufacturing Plant is based at Ahmedabad, Gujarat, spreading over an area of about 2,00,000 sq.feet.
- Company has latest technology machinery for manufacture High Tech- High Quality Equipments. Quality is the life of the enterprise and the root of the clients. Our company holds strong Quality Management System as per ISO 9001:2008.





# AAC BLOCK

Autoclaved Aerated Concrete or AAC blocks, is a steam-cured cementitious product manufactured from a mix of fly ash(Sand), cement, lime, gypsum and aluminum powder giving it its unique lightweight internal structure. Its attributes like its light weight nature, excellent thermal insulation, acoustic properties and energy efficiency make AAC an intelligent building solutions system.

As a revolutionary precast building material, AAC blocks offer a unique combination of high durability and strength, low weight, unprecedented build ability and superior ecological green features and is fast replacing ordinary red clay and fly ash bricks. AAC blocks is the preferred choice for all building applications and is used for all kinds of walls, be it external or internal, non-load bearing walls etc.

## STANDARD BLOCK



Standard Blocks offer a fast, convenient and versatile solution for most walling requirements. Each block is equivalent to 7 pieces of common brick. AAC blocks are easy to work with and can be cut to size with a tungsten carbide-tipped handsaw.

This allows maximum flexibility and minimizes wastage.

Length x Height (mm)	Thickness (mm)	Quantity Per CM
600 x 200	50	156
	100	83
	150	56
	200	42
	225	37
	250	33
	300	28

## INTERLOCKING BLOCK



Construction gets easier and neater with the introduction of Interlocking Blocks. Block edges are profiled with tongue and groove interlocking joint system that does not only make wall construction much easier but also produce a more stable wall.

Length x Height (mm)	Thickness (mm)	Quantity Per CM
600 x 200	150	56
	200	42
600 x 250	150	45
	200	33

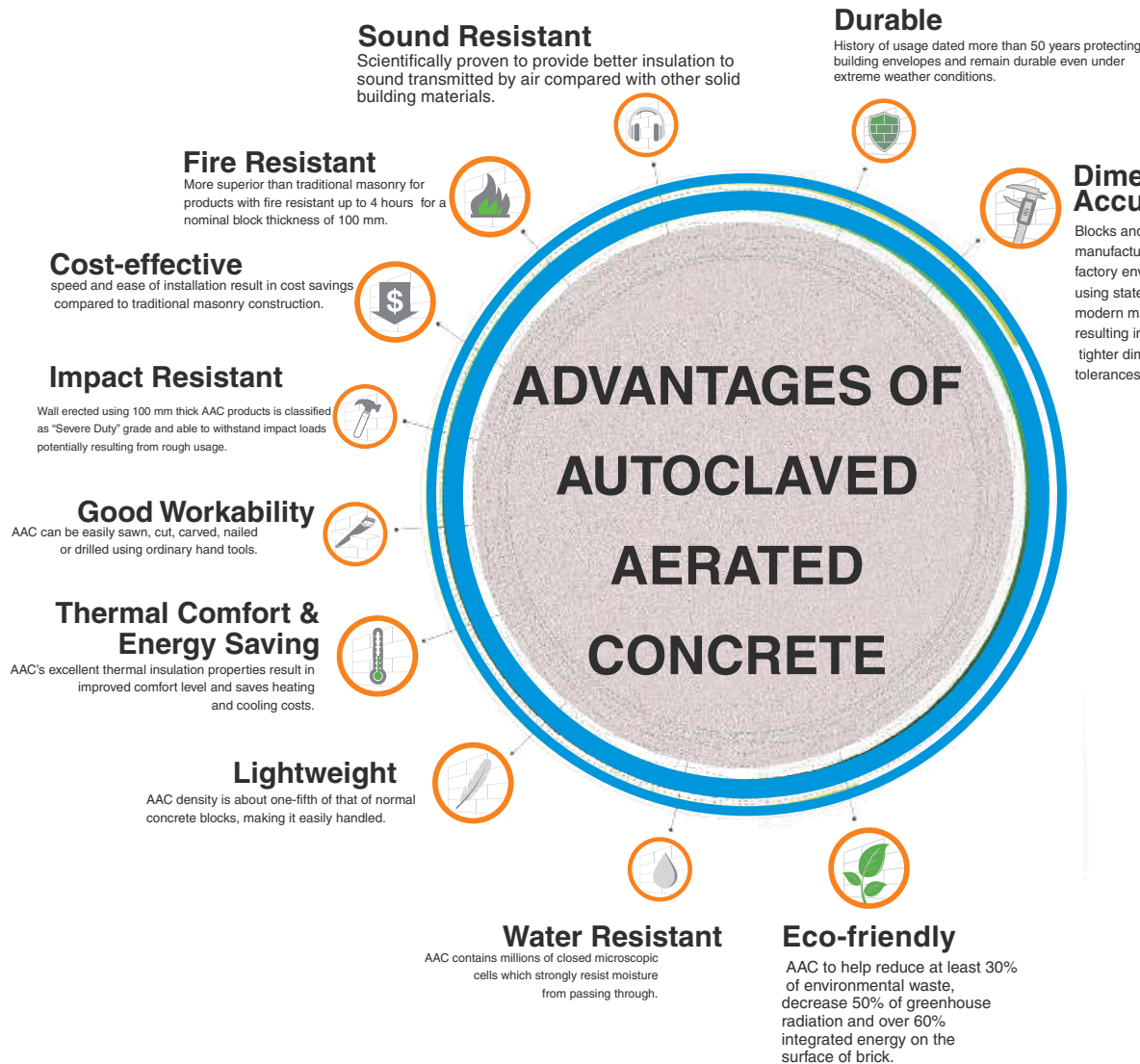
## APPLICATIONS:

- General internal & external walls
- Party, compartment & separating walls

## SPECIFICATION :

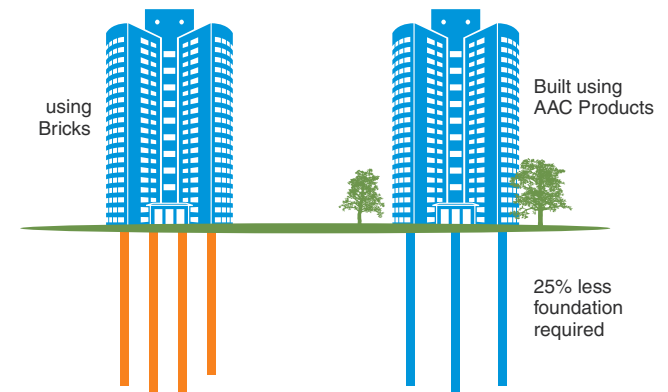
Properties	Value
Density (Oven Dry )	550-650 kg / m <sup>3</sup>
Compressive Strength	>4 N/mm <sup>2</sup>
Thermal Conductivity	~ 0.16 w/moK
Water Absorption	10 % -12 %
Drying Shrinkage	0.013%
Fire Rating	4 - 8 Hrs. (for 200mm thickness)
Sound Absorption	45 Db - 50Db
Color	Greyish White

# COST SAVING BENEFITS



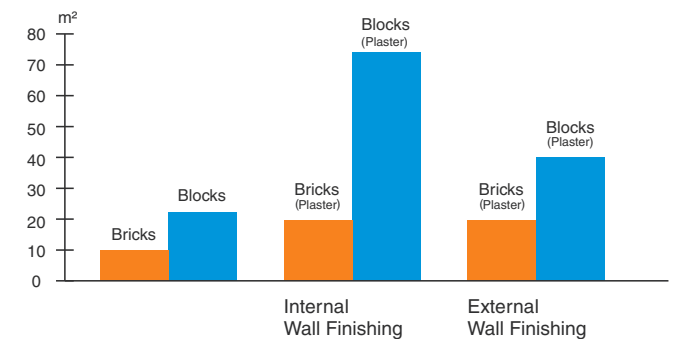
## Save up to 25% of Foundation Cost

### Brick vs AAC Block

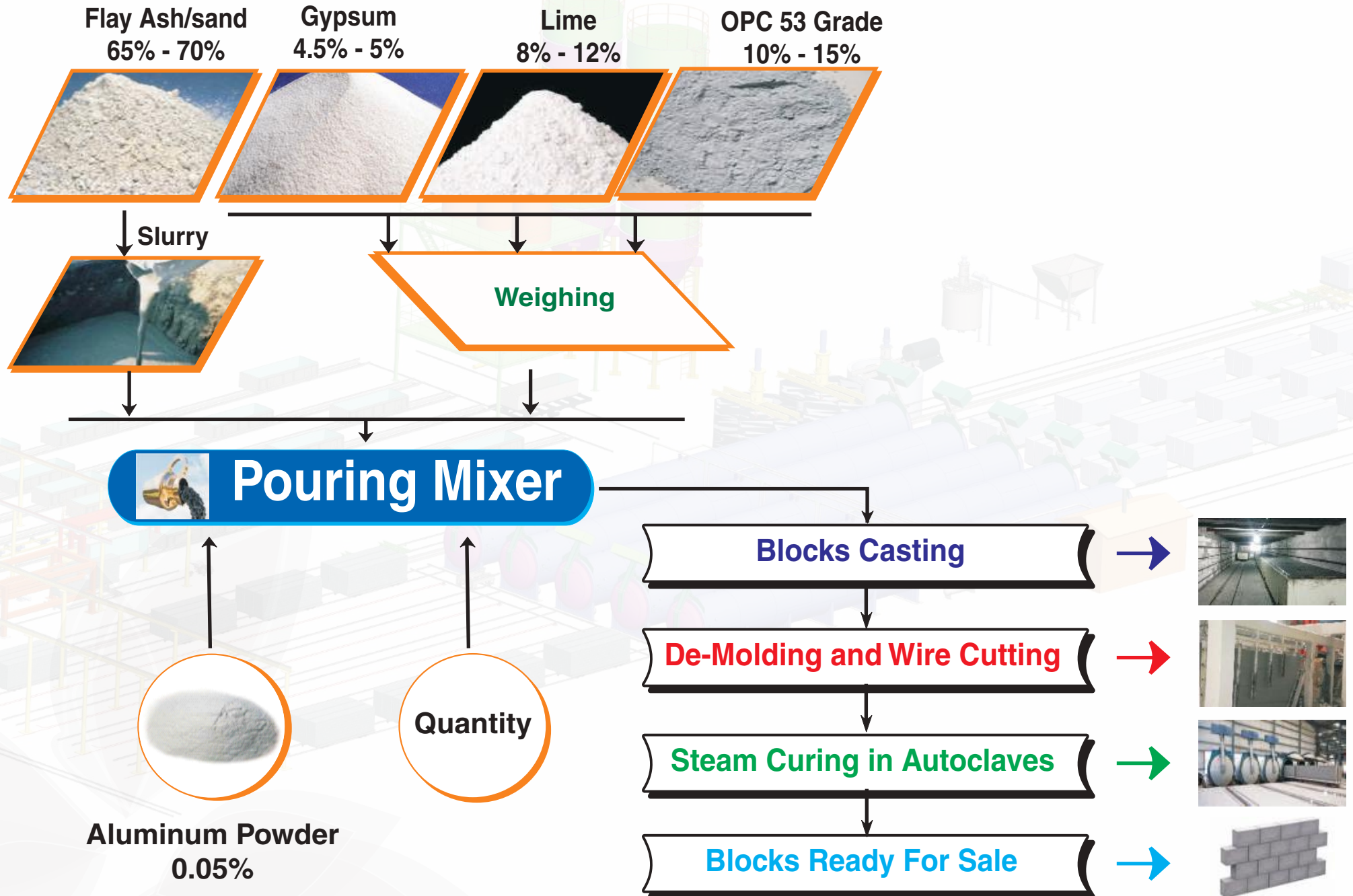


## Wall Installation Speed

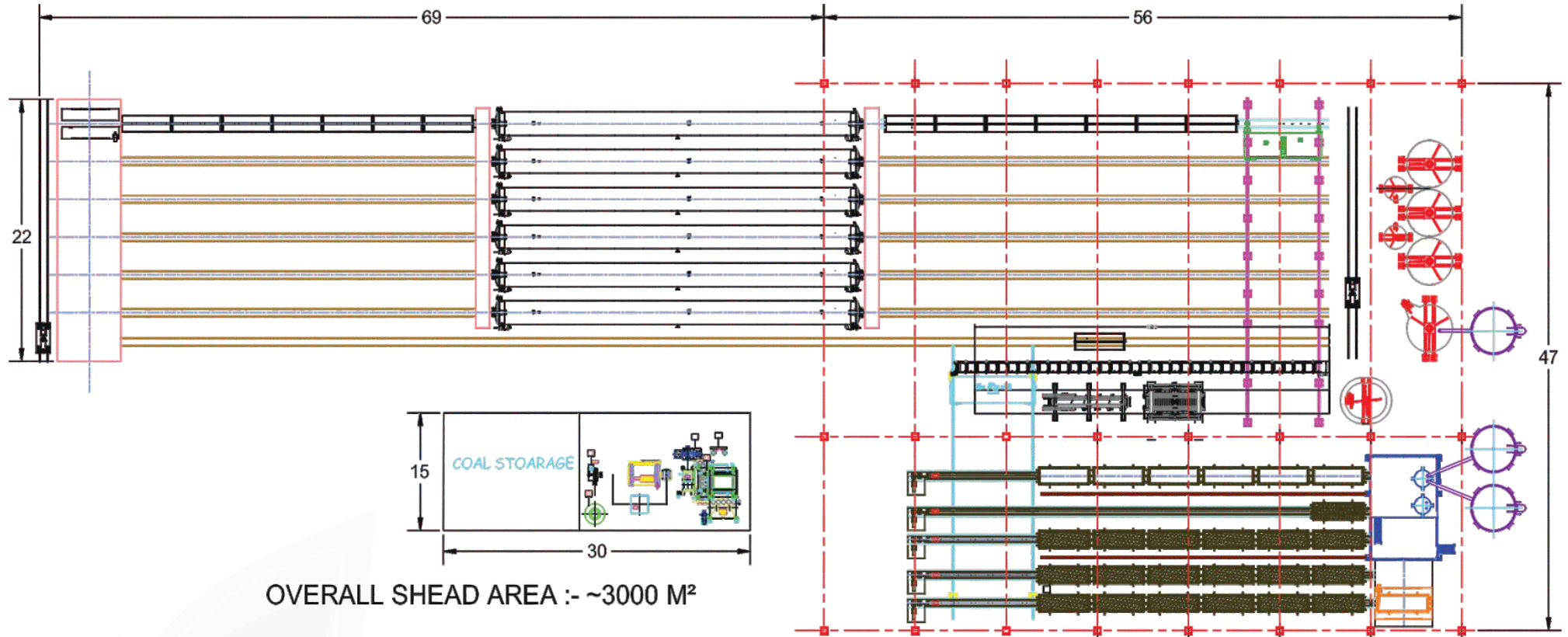
### AAC Block Vs Brick (m<sup>2</sup>/Worker/Day)



# PROCESS CHART



# 2,00,000 CM AAC PLANT



NO	DESCRIPTION	LENGTH IN MTR	WIDTH IN MTR	AREA IN SQ MTR	NO	DESCRIPTION	LENGTH IN MTR	WIDTH IN MTR	AREA IN SQ MTR
1	POND ASH SHEAD	30	25	750	9	SLURRY PREPRATION AREA	30	8	240
2	RAW MATERIAL GODOWN	20	10	300	10	BOILER AREA	30	15	450
3	BATCHING SECTION	16	10	160	11	TOTAL PLANT AREA			5080
4	PRECURING SECTION	40	15	600	12	FINSH GOODS YARD	50	100	5000
5	CUTTING SECTION	32	5	160	13	COMMERCIAL & ADMIN BUILDING	20	10	300
6	GREEN CAKE HOLDING AREA	43	20	860	14	TOTAL			11070
7	AUTOCLAVE SECTION	35	20	700	15	MINIMUM REQUIRED LAND INCLUDING ROAD, OTHER SPACE FOR FACTORY			12000 - 15000
8	DRY CAKE HODING AREA	43	20	860					

# AAC BLOCK PROCESSING

## RAW MATERIAL PREPARATION

The key ingredient to manufacture AAC blocks is fly ash or pond ash. Fly ash is mixed with water to form fly ash slurry. Slurry thus formed is mixed with other ingredients like lime powder, cement, gypsum and aluminium powder in quantities consistent with the recipe.

## DOSING AND MIXING

A dosing and mixing unit is used to form the correct mix to produce Autoclaved Aerated Concrete (AAC) blocks. Fly ash/sand slurry is pumped into a separate container. Once the desired weight is poured in, pumping is stopped. Similarly lime powder, cement and gypsum are poured into individual containers using screw conveyors. Once required amount of each ingredient is filled into their individual containers control system releases all ingredients into mixing drum.

## CASTING, RINSING AND PRE-CURING

After thorough mixing, slurry containing fly ash (or sand), lime powder, cement, gypsum and aluminium is poured in moulds. Moulds can be of various sizes depending upon installed capacity. Before casting, moulds are coated with a thin layer of oil. This is done in order to ensure that green-cake does not stick to moulds.

## DEMOULDING AND CUTTING

Demoulding and cutting are very critical processes in AAC blocks manufacturing. These two processes play a major role in defining amount of rejection as well as dimensional accuracy of the final product. Once a mould is out of pre-curing room, it is lifted by a crane or rolled on tracks for demoulding operation. Two types of cutting are carried out: horizontal and vertical cutting.

## ENTERING AUTOCLAVE

The cut blocks then enter the autoclave and the semi-finished products are handed over to the trolley. In the autoclave, hardening takes place. Once it hardens, it leaves the autoclave. After which, hanging and stacking of finished products takes place.



# AAC PANEL

Panels are a perfect solution to construct large scale commercial and industrial buildings. The AAC panel are With Increased load bearing capacity due to use of embedded steel reinforcement, the need of additional bond beams and staff columns can be eliminated.

The AAC panels are large in size compared to traditional building materials and come customized according to building requirements which results in substantial reduction in construction time. AAC panels of 3000 mm are equivalent in area to approximately 93 standard bricks ,making them faster to install than other masonry products.

## APPLICATION

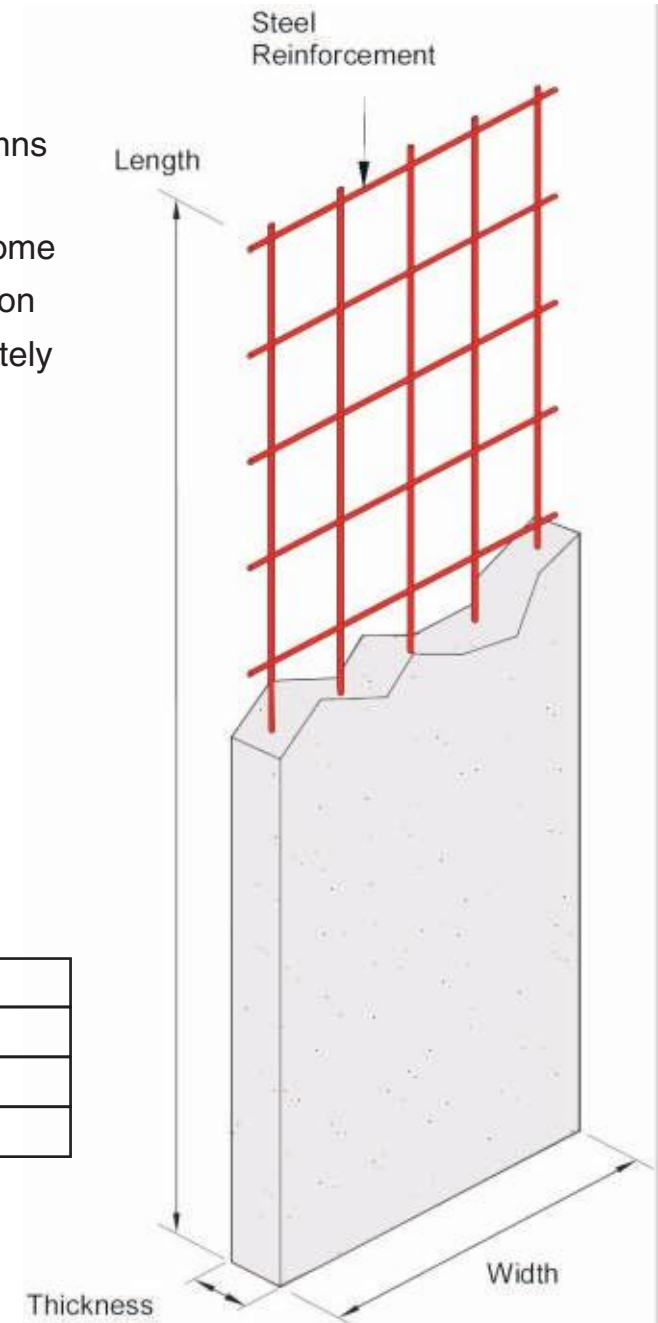
With its multitude of advantages, reinforced AAC Panels can be used for all kinds of modern-day construction. Along with suitability for versatile needs of the building process like...

- Residential / Commercial Units
- Hospitals
- Factories
- Schools / Universities
- Hotels

## SPECIFICATION

<b>Load bearing capacity</b>	5.0 –6.5 kN/m <sup>2</sup>
<b>Dry density</b>	550-580 kg/m <sup>3</sup>
<b>Working density</b>	780–820 kg/m <sup>3</sup>
<b>Heat conductivity</b>	0.13 W/mK
<b>Dry shrinkage</b>	< 0.09 %
<b>Modulus of elasticity</b>	2190 KN/m <sup>2</sup>

<b>Size specification</b>
Width:600mm
Length:2400-6000mm
Thickness of 75-200mm per 25mm interval.

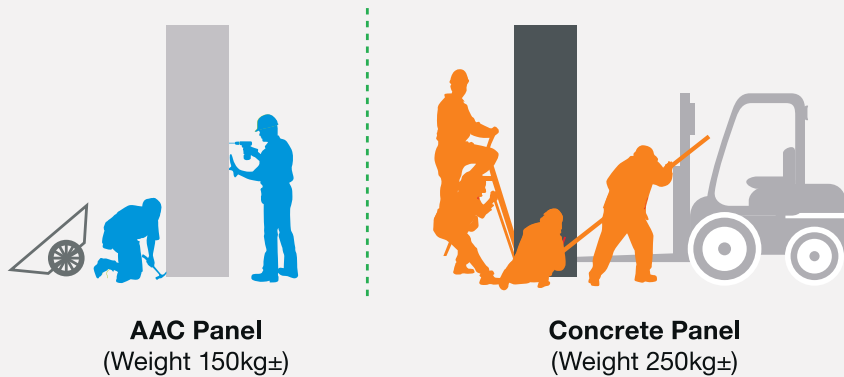


# KEY BENEFITS OF AAC PANEL

## COST EFFECTIVE BENEFITS

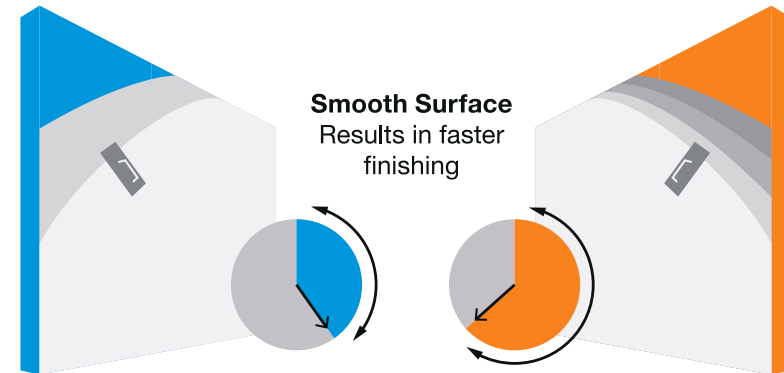
### Manpower Efficiency

AAC Panel vs Concrete Panel



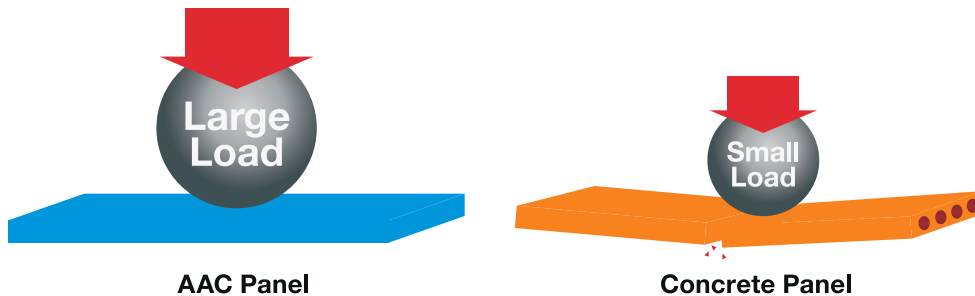
### Wall Installation & Finishing Speed

AAC Panel vs Concrete Panel



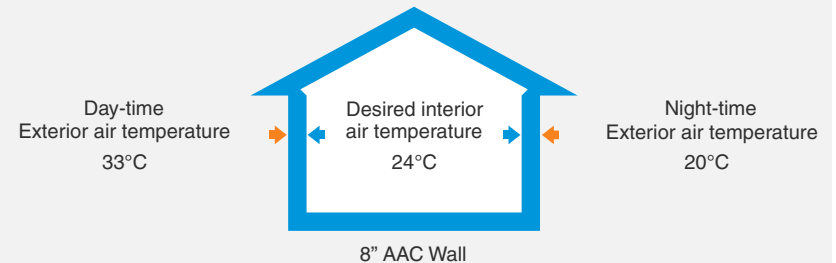
### Reinforcement Strength

AAC Panel vs Concrete Panel



### Thermal Control

insulation 6 times superior than clay brick



Note : Building uses approximately 30% less energy for cooling and heating the interior air

## OTHER BENEFITS

### Fire resistance



### For 200 mm thickness panel

Weight	120 Kg/m <sup>2</sup>
Thermal property	1.54 m <sup>2</sup> k /W
Fire rating	4 Hr.
Acoustic performance	40 db

# TYPE OF AAC PANELS



## AAC FLOOR & ROOF SLAB

AAC ROOF PANELS are intended for using in ceiling and roofs in dwellings as a load bearing and heat-proof element. By using AAC FLOOR PANELS A floor area up to 40 ft<sup>2</sup> can be easily installed with one crane lift utilizing. The panels have suitable reinforcement, which provides the load bearing capacity of the panels.

Product	Length	Width	Thickness
Floor & roof panel	2000–5200	600	75, 100, 125, 150, 175, 200, 225
Wall panel	2000–6000	600	50, 75, 100, 125, 150, 175, 200



## WALL PANEL

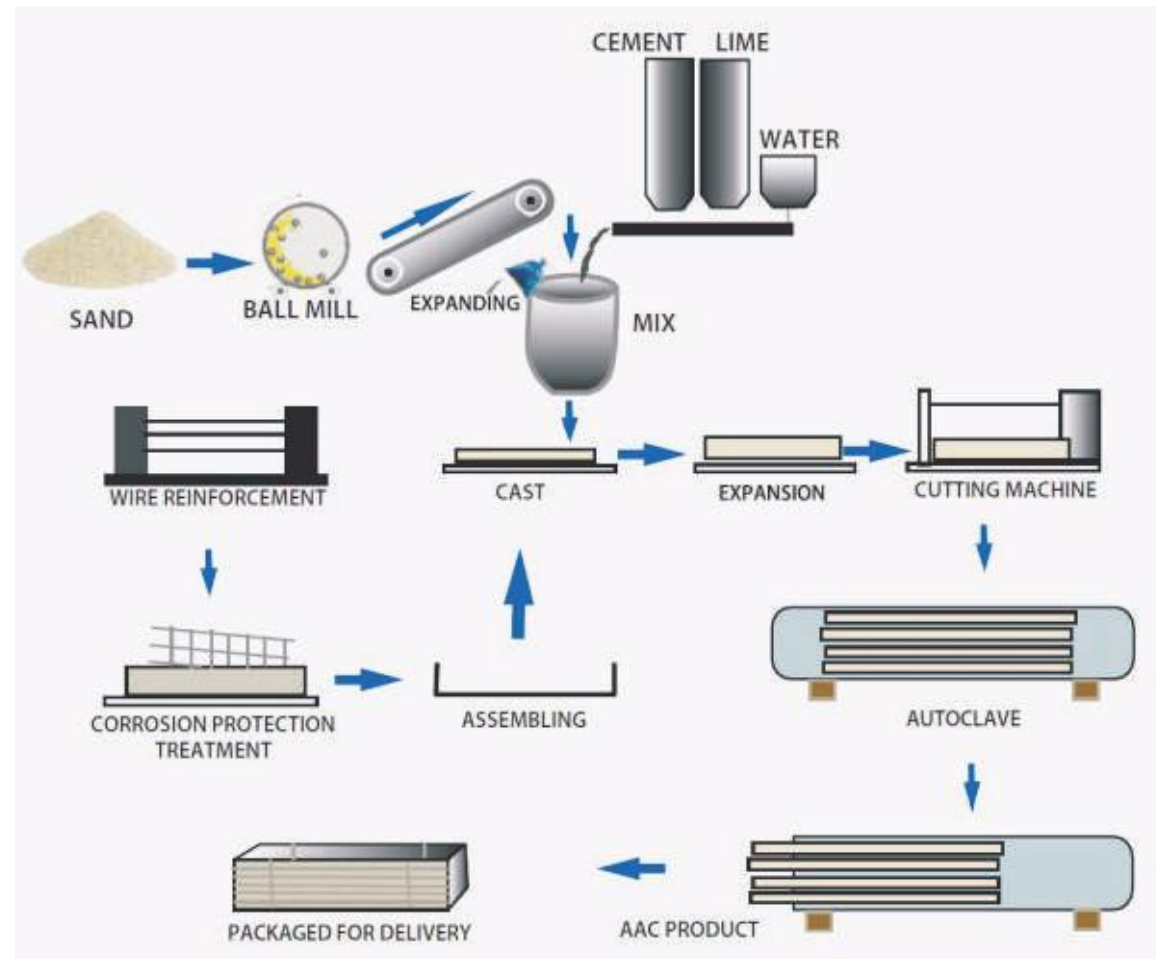
AAC wall panels are internal non-load bearing partition panels. The steel reinforcement wires allow excellent dimension accuracy. They are cured in a high pressure and temperature autoclave which renders high compressive strength to them. It is ideal for wall systems and sound barrier systems.

# AAC PANEL MANUFACTURING PROCESS

Reinforced AAC Panels are larger in size AAC Blocks with reinforced steel cages embedded inside. Therefore, most of the AAC Panel manufacturing process is same as that of AAC Blocks. Fly Ash, lime, cement, gypsum and aluminum powder in measured and controlled quantity are mixed in a wet mixer and then cast into mould. Before the mould is parked in the rising bay, reinforced steel cages are inserted inside the poured mass in the mould with the help of cage holding frame.

Steel cages are manufactured from high tensile steel bars in net and spot welding machines. The cages are then coated with anti-corrosive paints. The mould, after the insertion of cages is taken to the rising bay. After semi-solidification of the mass, it is taken for retraction of the cage holding frames from the mould. The cake, embedded with the steel cages is then taken through the cutting machine where the cake is

cut into desired sizes of panels. After cutting, panels are autoclaved in high pressure steam autoclave for 12 –14 hours. Cured panels coming out of the autoclaves are then strapped in desired pack loads and stored / transported for end-users.



# AAC PANEL PROCESSING



Ball Mill



Slurry Making



Batching



Wire Reinforcement



Cutting



Tilting



Precuring



Insert Drill



Corrosion Protection Treatment



Grouping Crane



Autoclave



Separator



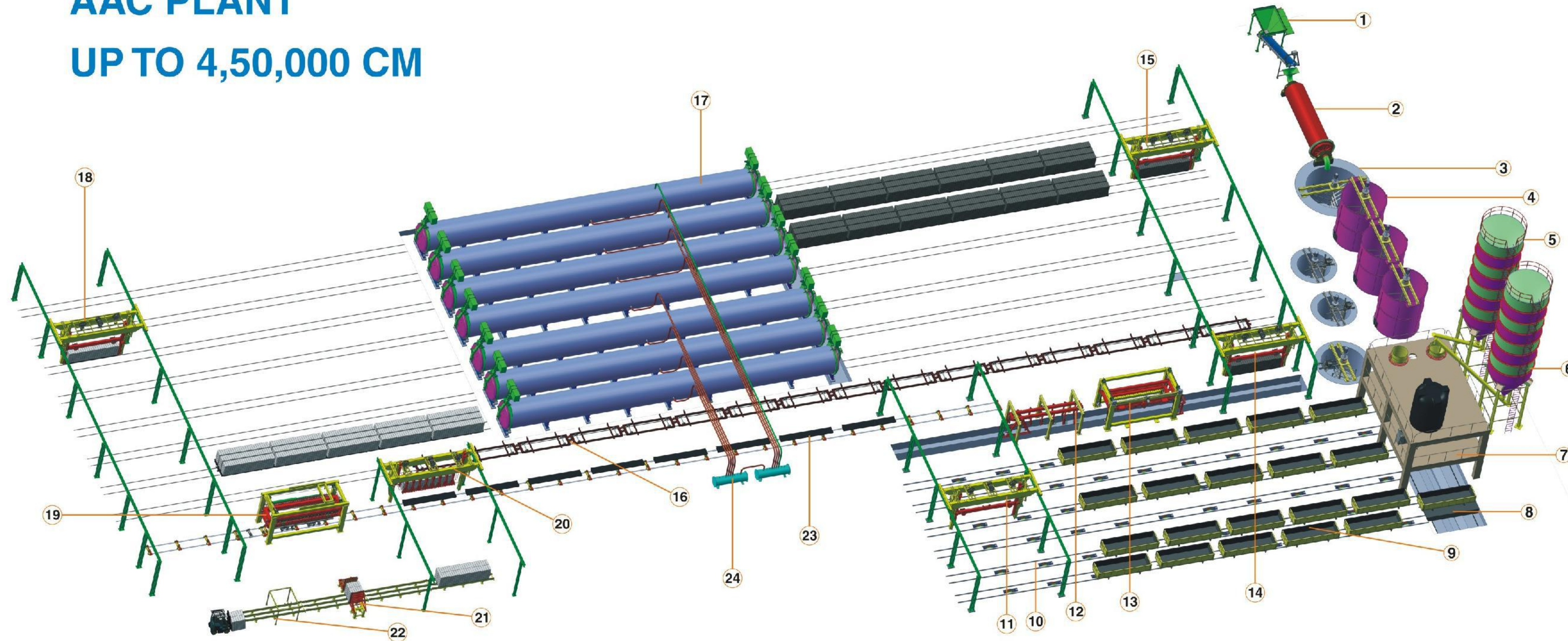
Clamping Crane



Panel

# AAC PLANT

## UP TO 4,50,000 CM



DESCRIPTION	
1	SAND HOPPER
2	BALL MILL
3	SLURRY MAKING PIT
4	SLURRY STORAGE TANK
5	LIME SILO
6	CEMENT SILO
7	BATCHING TOWER
8	FERRY CART
9	MOULD BOX
10	FRICTION WHEEL
11	TILTING CRANE
12	HORIZONTAL CUTTING MACHINE
13	VERTICAL CUTTING MACHINE
14	BOTTOM REMOVAL CRANE
15	GROUPING CRANE-1
16	STEAM CART
17	AUTOCLAVE
18	GROUPING CRANE-2
19	SEPRATOR
20	CLAMPING CRANE
21	ALIGN MACHINE
22	PACKING MACHINE
23	SIDE PLATE RETURN SYSTEM
24	STEAM DISTRIBUTION HEADER

# EQUIPMENT

## BALL MILL

### Function :-

Sand will be ground at around 180 mesh size and converted in to slurry after adding water.



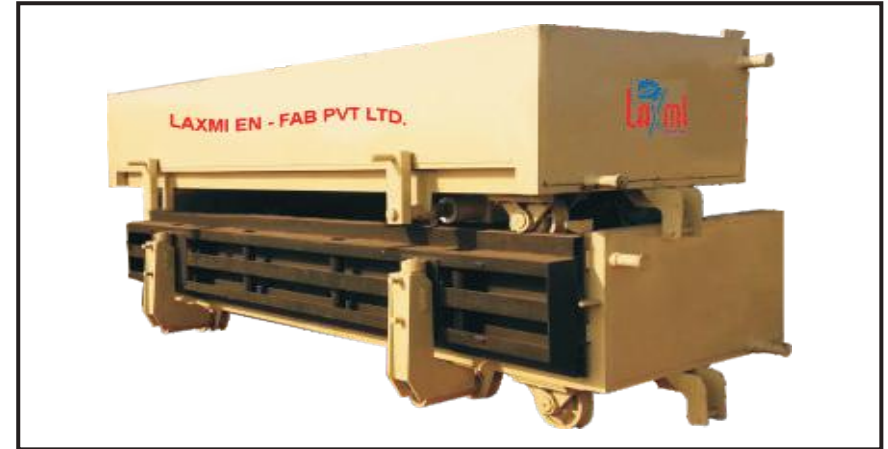
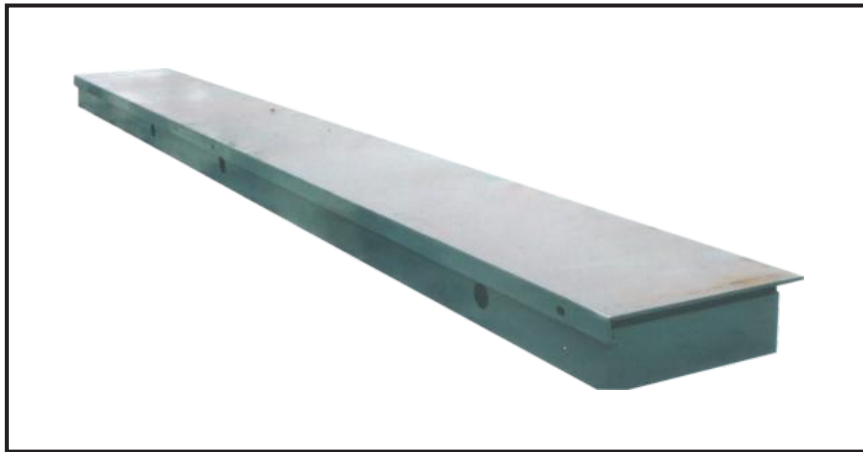
## POURING MIXER

### Function :-

Mixing of slurry, cement, lime, gypsum and Aluminum powder at pre set cycle.

## MOULD BOX

Mould is the key equipment for producing AAC. Foaming takes place within mold and the pre curing is also happens within the mold.



## SIDE PLATE

Side plate is one that match with mould for pouring & pre-curing process. This plate will carry the molded AAC in to cutting and Autoclaving department

## STEAM TROLLEY

The Steam trolley is the tool carrying the mould box side plates as well as the block body out of the autoclave. Steam trolley hold in high temperature & pressure so required high temperature bearing as well as heavy structure.





## TILTING CRANE

Tilting crane turns the block (with mould and side plate) by 90 degrees in air, then hanging on cutting platform or cutting car, to de-mould and cut. In addition, group moulds after de-moulding and side plates of returning back. After grouping, they are hung to pouring return line to carry cycle pouring.

## GROUPING CRANE

Grouping crane : After cutting operation, this crane makes a group for accommodating maximum numbers of cake in Autoclave. Grouping crane transfers cakes, steam trolleys and side plates at proper required position without damaging the cake.



# CUTTING MACHINE

Cutting machine is the key equipment in the AAC Production line, the working Principle is the tiling hanger turns the mould 90 degrees in the air, open the mould and takes block onto the cutting cart together with the side plate. The cutting car is driven by the motor. The block would be driven for horizontal and vertical cutting. The cutting cart will move to semi-finished product hoister, and the hoister loads the cut block to trolley in front of the autoclave for grouping. The cutting cart will back for new round cutting.

## Horizontal Cutting Machine



## Vertical Cutting Machine



# AUTOCLAVE



# AUTOCLAVE

The Main Parts are made by Autoclave Body, Cover, Hand-Operated reducer, Safe Blocking Device, Support Saddle, and Valve Meter etc.  
The body is a principle and cylindrical device made of BQ Plate 516-60/70 Grade.

## Safety Measures

- Hand speed reducer installs mechanical interlocking, and it don't move when there's pressure in kettle.
- Equip with manual limited safety interlocking device, stuck kettle manually, and when it opens, then we can open the door.
- Provide pressure safety valve 2no.

## Welding Quality

- Shell joints welding are done by **(SAW) Submerged Arc Welding Process** (Auto Welding Procedure) because blow will not create in joints.
- Welding Quality is checked by **X-Ray Test**.
- Shell Legs had been MIG Welding and it is not merging in R.C.C. Column.

## Autoclave Features

- Corrosion Resistant
- Leak and Scratch proof
- Sturdy Construction
- Easy to Install
- Door Safety Interlock
- Low maintenance cost
- Rust Proof finishing
- Eliminates opening unit under pressure
- High limit Safety

We Provide the material Test Certificate , X-Ray Test Certificate , In form at Pneumatic Testing In Form at Hydro Testing given Hydro Test Certificate.

## Autoclave Accessories

- Pressure safety Valve
- Temperature Meter
- Gear
- Door Locking System

## Valve

- Steam Inlet Valve
- Steam Outlet Valve
- Drainage Valve with Globe Valve
- Ball Valve and Globe Valve

## Door System :

- Single Door Open System
- Double Door Open System

## Door Opening System :

- Manually Opening System
- Gear Operated Opening System

## Fabrication

- Construction and fabrication according to IS - 2825 and Indian Standard regulations.

## Autoclave After Post Sales & Service

- It is an imposing sight when an autoclave with the longer length leaves the company premises on a heavy goods vehicle heading for a destination somewhere worldwide. Operational schedules and logistics are precisely planned right down to the very last detail. And when the product reaches its destination, our professionals are already on-site to supervise and ensure a professional installation

**Rubber Gasket is of special quality for longer Life.**

# AUTOCLAVE SAND LIME BRICK

Sand lime brick consists of natural raw materials such as sand, quicklime and water.

Sand lime bricks can be used for exterior and interior walls. They can be also used with other building materials, for example wood, to build a variety of facing brickworks. Sand lime brick is a massive building material with good sound insulation, high robustness and resistance.



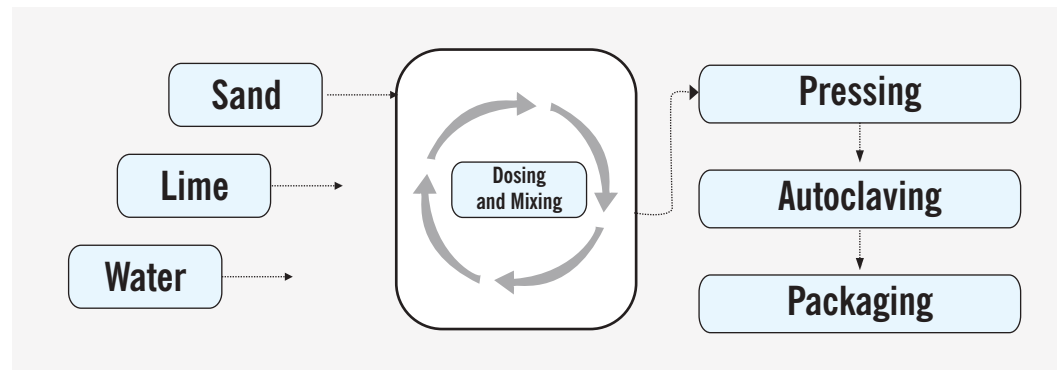
## RAW MATERIAL

- Sand
- Lime
- Water
- Color Particles (in case of production of colored bricks)

## ADVANTAGES

- Robustness
- Sound Insulation
- **Fire Resistance**
- **Healthy Indoor Climate**

## PRODUCTION PROCESS OF SAND LIME BRICKS



### Batching and Mixing

Every raw material is stored separately. According to the production recipe sand / fly ash and lime are weighted in weighing containers and forwarded to the mixer. Here the raw materials are mixed to a homogeneous mixture in short time. According to the sand moisture and the recipe some water can be added to the mixture. One mixing cycle lasts for ca. 3 minutes. Furthermore, the sand lime mixture is conveyed into the reactor. After the reaction time some water is added to the mixture in the remixing plant to have the required moisture for pressing. After that the mixture is forwarded to brick press machine.



## Green Brick Forming

The mixtures inside the hopper of the block molding machine will be fed to the mould, and the green bricked is formed. On average, the molding cycle will be 13 to 17 seconds. Via the articulated robot, belt pulley, and automatic stacker crane, the green brick will be piled onto the autoclave trolley.

## Autoclaving and Storage

The mixtures inside the hopper of the block molding machine will be fed to the mould, and the green bricked is formed. On average, the molding cycle will be 13 to 17 seconds. Via the articulated robot, belt pulley, and automatic stacker crane, the green brick will be piled onto the autoclave trolley.



## LIME GRINDING UNIT



Quick lime plays very important role for making AAC block & Sand lime brick. One can make superior quality quick lime in same unit.

After transported to the factory, the lime stone will be poured into the receiving hopper by the loader. It will be smashed by the jaw crusher before delivered into the storage. From storage, the lime will be fed into the milling equipment for fine grinding. Then, you can use the lime powder to make blocks.

# DRY MIX MORTAR PLANT



**LAXMI EN FAB PVT. LTD.** has specially developed Dry Mix mortar plant with greater mixing accuracy, highly efficient sand dryer, accurate dosing system, Rigid structure with automatic conveying system and Storage system.

## Plant Range

- 40 Ton to 400 Ton production capacity
- Automatic and manual system.



## AAC BLOCK JOINTING MORTAR

Colour	Grey
Main Binder	Ordinary Portland Cement
Fine aggregate	Processed, Graded Sand (Max, Size of Aggregate : 600 micron)
Polymers	Special Polymers Having a) adhesion and b) Self Curing Properties
Bulk Density	1400 Kg/CuM
Coverage"	1.5 kg/Sqm/mm on plain surface
Compressive Strength	6.00 - 8.00 N/mm <sup>2</sup>
Mixing Ratio	13-14 liters of clean water / 40kg bag



## ECO PLASTER



Colour	Grey
Main Binder	Ordinary Portland Cement
Fine aggregate	Processed, Graded Sand (Max, Size of Aggregate : 3.00mm)
Polymers	Special Polymers Having a) adhesion and b) Self Curing Properties
Bulk Density	1500 Kg/CuM
Coverage"	1.6 kg/Sqm/mm @ 1.50Kg/Sq ft area considering 10 mm thickness
Compressive Strength	8.00 - 10.00 N/mm <sup>2</sup>
Mixing Ratio	7 - 8 liters of clean water / 40kg bag

## WALL PUTTY WHITE

Colour	White
Main Binder	White Cement
Fine aggregate	Graded Limestone Powder (240 Mesh)
Polymers	Special Polymers having a) adhesion and b) self Curing Properties
Bulk Density	1150 Kg/CuM
Coverage"	1.2 kg/Sqm/mm i.e. 10/Sq ft area considering 1.00 mm thickness
Compressive Strength	8.00 - 10.00 N/mm <sup>2</sup>
Adhesion Strength	0.90 - 1.00 N/mm <sup>2</sup>

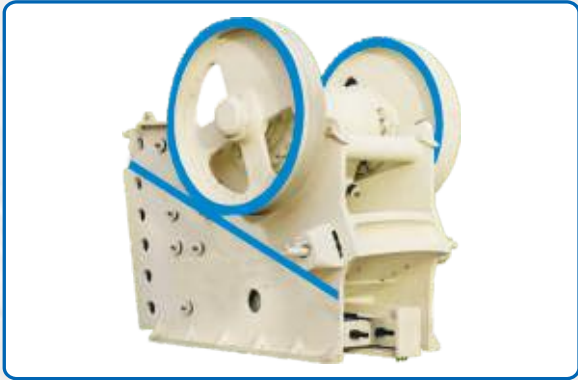


## TILE ADHESIVE



Main Binder	Ordinary Portland Cement (Grey/White)
Fine aggregate	Processed, Graded Sand (Max Size of agregat : 600 micron)
Polymers	Special Polymers having a) adhesion and b) Self Curing Properties
Bulk Density	1450 Kg/CuM
Coverage	90 Sq ft per 40 kg bag for a bed thickness of 3 mm
Tensile Adhesion, Dry	1100 -1200 N
Tensile Adhesion Wet	950 - 1050 N

# CRUSHING, SAND MAKING & SCREENING EQUIPMENT



Laxmi En Fab engaged in developing technologies to suit Indian operating conditions with reliable machineries from concept to commissioning approach.

Capacities manufacturing from 100TPH to 1200TPH, crushing and screening plant with two/ three/Quadra stages with Jaw Crusher, Cone crusher and vertical shaft Impactor, Sand crushers for both concrete and plaster sand, Energy efficient circular, linear and high speed vibrating screens, Grizzly and vibro feeders, Sand classification with Wet type and dry type classifiers.

There is no development with out construction. Ancient forts to modern buildings need quality aggregates and sand are main ingredient in the mix. Earlier days aggregates are produced by crushing rock and natural sand from river beds was used. The good natural sand quarries depleted with enormous growth in constructional activities.

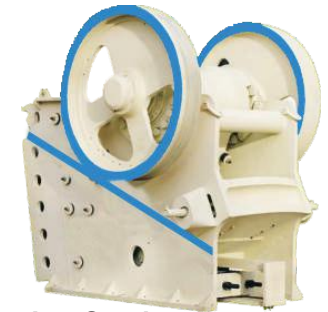
# FLOW CHART OF SAND MAKING & AGGREGATE MAKING LINE



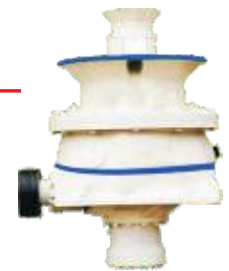
Hopper



Grizzly Feeder



Jaw Crusher



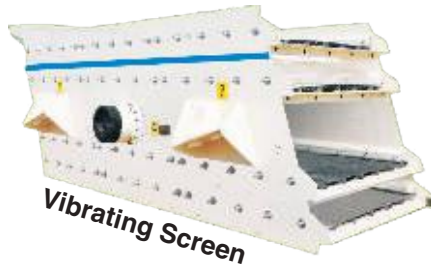
Cone Crusher



Vibrating Screen



VSI



Vibrating Screen



Hydra Sand Wash



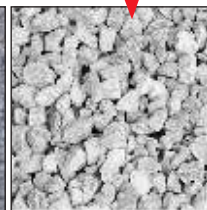
OR



Dry Sand Classifier



10mm



20mm



32mm



Sand (0-4.75 mm)

# DRY SAND CLASSIFIER

Dynamic Air separator / Classifier is a simple equipment having two cone /cylinder (inner & outer and an impeller with vanes built with wear resistant material to generate whirling air circulation action. The fines from the crushing plant is fed through feed inlet and dropped by gravity on the Auxiliary fan. The Auxiliary fan is connected to the drive motor through a housing. The Rpm of fan can be throttled through VFD fitted to the motor to control the amount of fines to be separated. The main fan creates continuous circulating air into which the distributor disperses the fines.

Material acted upon the distributor plate is subjected to the following forces namely, Centrifugal force, Ascending air force, Gravity force. Fine particles below 150

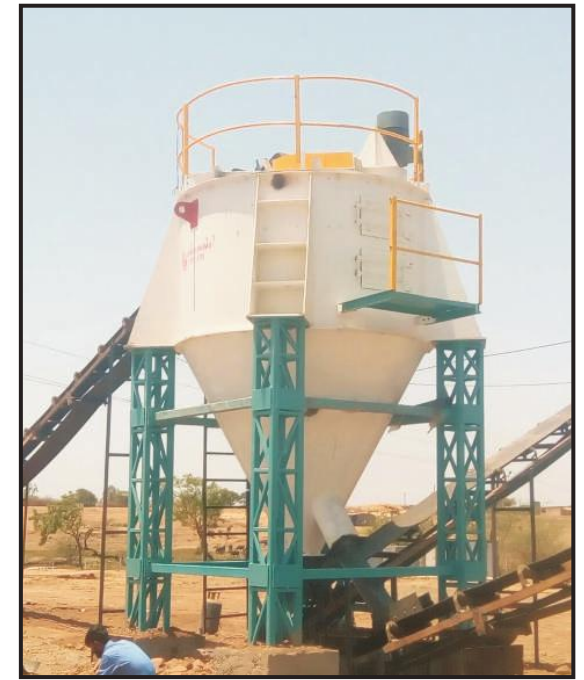
size are lifted by the ascending air current and pass between the blades of auxiliary and Main into the outer cone of the separator. The (-) 150 microns transferred into the outer cone are discharged from the unit bottom in to a conveyor and transferred into a closed tank through a conveyor.

Underneath the separating zone there is return air vanes are located, the main fan moves the air to separating zone from the return air vanes. The separation of fines can be attained by reduction in descending air velocity and also by adjusting the direction of return air vanes.

Heaviest particle mainly + 150 microns - 5mm not ascending will fall to the bottom of the inner cone and on to a chute and stock piled on the ground through a conveyor belt. which is classified Sand conforming to the standards prescribed in IS 383.

## ADVANTAGES

- Conserves water – As no water is required.
- Ease of operation & economical as low operating cost.
- As a closed system – no Pollution.
- Quality - With variable speed can monitor the fines content.



## CRUSHING SAND MAKING & SCREENING PLANT



# OTHER MAIN EQUIPMENTS



**GRINDING MILL**



**ROTARY KILN**



**ROTARY DRYER**



**AIR CLASSIFICATION  
SYSTEM**



# LAXMI EN-FAB PVT LTD.



एन. एस. आई. सी.  
**NSIC**  
ISO 9001: 2008



**-: Contact Us :-**

## AAC BLOCK PLANT & EQUIPMENTS

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**+91 8980800839**

**Website :-** [www.aacplant.co.in](http://www.aacplant.co.in)

## SAND / STONE CRUSHING PLANT & EQUIPMENTS

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