HONCHA

鸿昌砖机

Concrete Block Making Machine

QT6-15 Simple Production Line

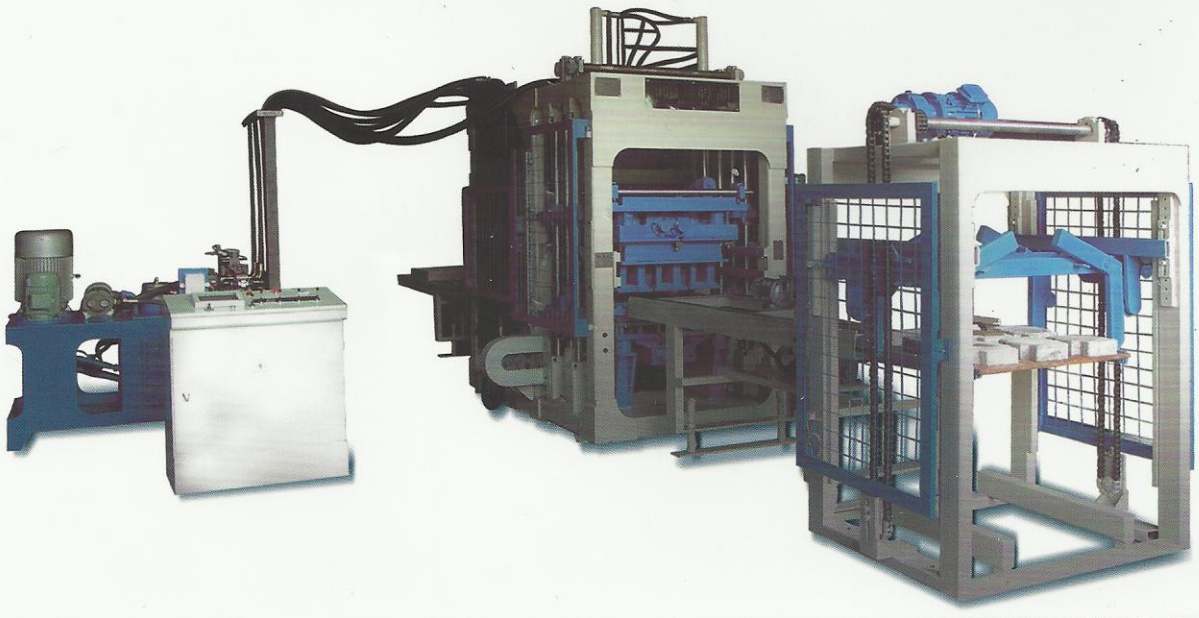
User-Friendly Touch Screen Operation

Low Investment

Low Maintenance Cost

High Installation Expediency

High Environment Benefits



Preface:

With the rapid growth of construction industry , the concrete blocks are becoming popular because it is structural stable, durable, sound and thermal insulation, weathering resistance and easy to maintain.

QT6-15 Block making machine is a multi-functional Block making machine and designed to meet the mass production of various kinds of concrete masonry blocks (C.M.U)i.e. solid pavers (as well as permeable), slabs, kerbs stones, hollow blocks, retaining wall units and so on.

HONCHA, established since 1985,has over 25 years experience in the business of manufacture and installation of concrete block making plants all over major cities of China and as well as many oversea countries.

Meanwhile, we realize that a long term co-operation is what it takes to make durable results and best advantages for customers. We do believe that only the success of our customers will bring about the success of HONCHA. Therefore, our customers' success is our goal/first priority.

Basic Production Line

- **Raw Materials Receiving And Storing System (Aggregate, Cement, Water)**
- **Batching And Mixing System**
- **Block Making System**
- **Automatic Stacker**

I.MANUFACTURING DETAIL PROCESS

1.1 Raw materials are delivered to the production site by trucks, railroads or barges.

1.2 The raw material should be properly stored, mostly in open stockpiles, however, to ensure not affected by raining, the cover area should be considered for 1 week supply.

1.3 The cement can be handled in bag or bulk package.

A. Bagged cement: Workers put the bagged cement in mixer hoist by cutting the cement bags and the quantity of the cement will be counted manually.

B. Bulk Cement: Cement is transported by bulk tankers and pumped into the cement silo for temporary storage. The quantity of cement is counted by charging scales automatically.

1.4 The aggregates/sand are fed by conveyor from stock pile or by wheel loader into the batching station. (2-3 compartments batching station)

1.5 The concrete block mix is proportioned by weight into batcher, it is electronically controlled by using electronic scales to determine their weights which can guarantee to have a consistent quality from batch to batch.

1.6 The scaled materials are dropped into the mixer, then, the required water is added, and normally mixing process last for 5-8 minutes. The blended material is relatively dry when compared with concrete, so an efficient vibration is very important to that kind of nearly zero slump concrete mixture.

1.7 After mixing process, blended material is conveyed to storage bin (feeder bin) located above the block machine, the conveying method traditionally by belt conveyor or overhead tipper system.

1.8 Fixed amount of blended material are dropped into the filling box in each cycle.

1.9 The filling box is moved forward and brings the material into the mould. As the material is dry and viscous, oscillator and vibration help filling material into the mould evenly.

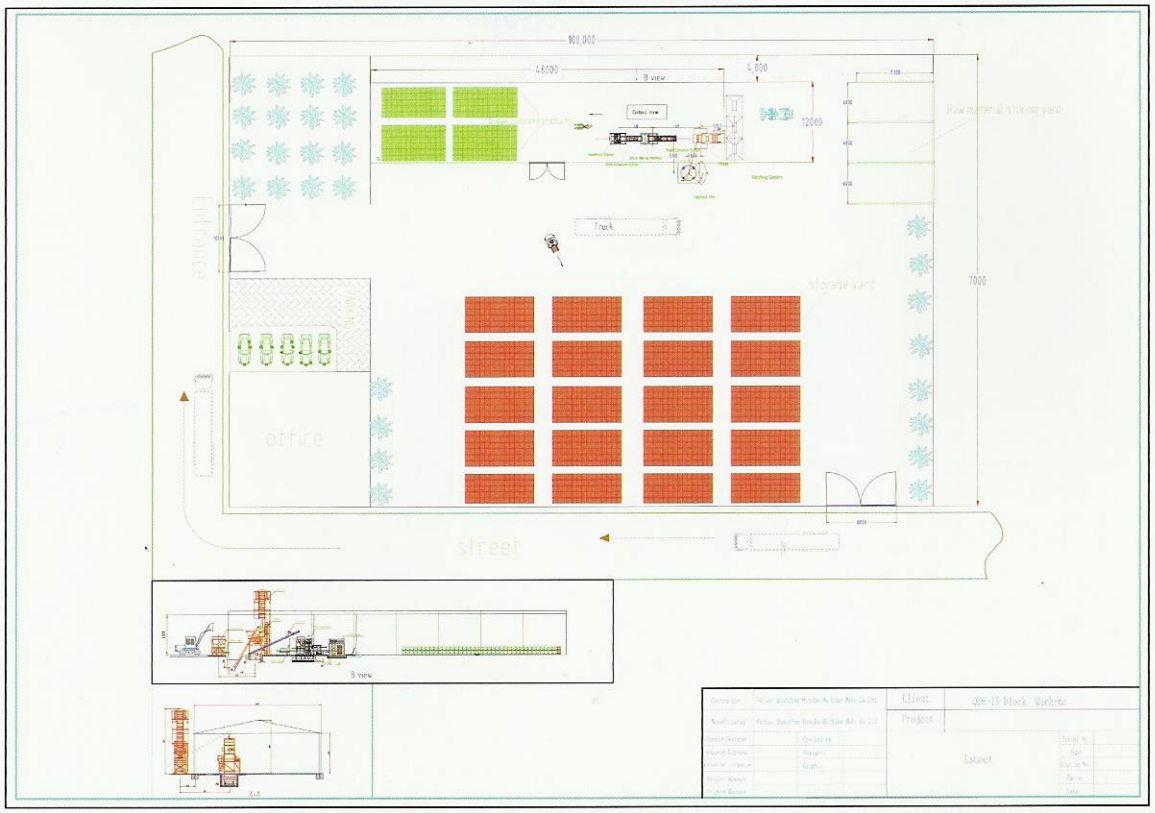
1.10 After filling the material into the mould, compression from the mould head and vibration from the vibration table are applied in order to consolidate the materials into dense concrete solid block units.

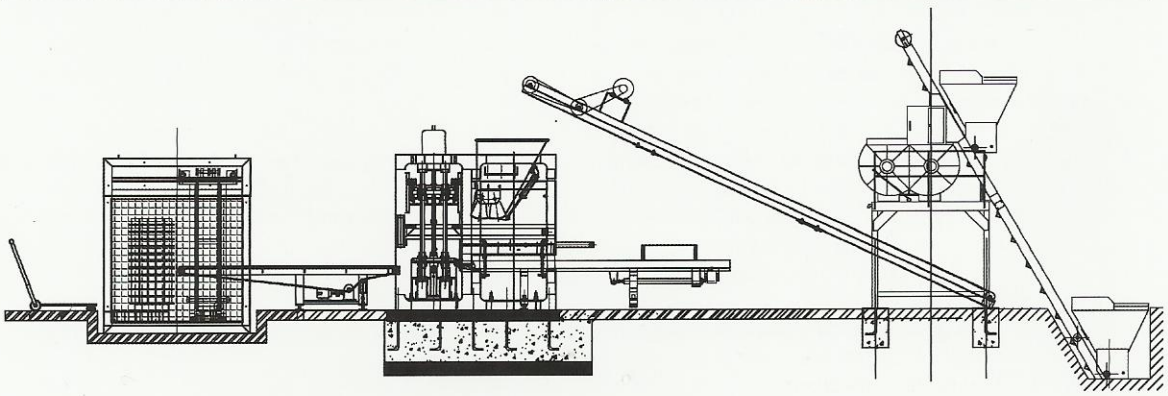
1.11 The fresh blocks lay on the pallet (E.g. bamboo, PVC and steel pallets) after releasing from the mould.

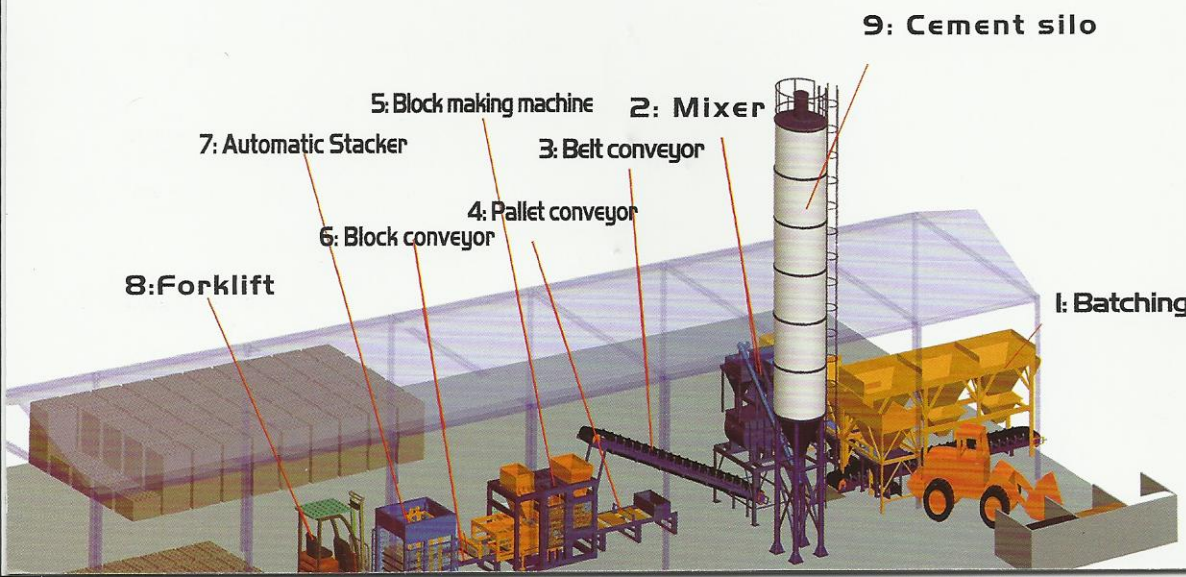
1.12 The fresh blocks with the pallets are then transported to stacker. The stacker will stack the blocks with pallets around 5-8 layers for curing, and the green biocks are transported to the curing area by a forklift.(or manual forklift to save the energy cost)

1.13 The above-mentioned process is repeated to have continuous production and the shortest cycle time is around 15s.

1.14 * A face mix device will be added if it's making double-layer pavers. Face mix could add manually by shovel or automatically by conveyer according to customer requirement.


office
street
Truck
storage yard
Raw material storing yard
Client
Project
Layout




9: Cement silo
5: Block making machine
2: Mixer
7: Automatic Stacker
3: Belt conveyor
4: Pallet conveyor
6: Block conveyor
8:Forklift
1: Batching station

2.PRODUCTION CAPACITY

max. Cycles per minute		
Hollow block (1) Rectangular pavers Rectangular pavers	- w/o face mix with face mix	4 4 3
Machine type Standard pallet size (2) Useful area-blocks max. Useful area-blocks max. Stone height max.	 in mm in mm in mm in mm	QT6-15 850×680 800×600 800×600 200
Pieces per cycle Hollow blocks Rectangular pavers	 400×200×200mm(8") 200×100×80mm	 6 21
Production capacity(3) per 8 hour shift at 85% efficiency Hollow blocks 400×200×200mm(8") Rectangular pavers 200×100×80mm	 pieces m^3 m^2 w/o face mix m^2 with face mix	 9792 157 685 514

*1)Wall thickness=30mm (2)variations available upon request. (3) The capacity data are theoretical and are dependent on machine settings, max design, aggregates used and other environmental conditions

3.CURING

The ambient temperature (surrounding temperature) plays an important role in determining the speed of the hydration process (hardening process). The warmer the air, the warmer the concrete and the quicker the concrete strength gain. There are different methods of curing as listed below;

Natural Curing

In countries where the climate is favorable, green blocks are moist cured at normal temperature of 20°C to 37°C (as in the South of China). This type of curing which at 4 days would normally give 40% of its ultimate strength. Initially, green blocks should be placed in a shaded area or enclosed chambers for about 8–12 hours (depends on relative weather conditions i.e. temperature, humidity etc). After that, the blocks can be transported to an assembly yard for further curing for about 28 days to reach 99% of its maximum strength. For optimal final products, the fresh blocks need to be sprinkled daily, for the first 7 days (morning and evening) to maintain the moisture content for higher reactivity of cement with sand.

Low pressure Steam Curing

Steam curing at atmospheric pressure at temperature of 65°C in a curing chamber accelerates the hardening process. The main benefit of steam curing is the rapid strength gain in the units, which allows them to be placed in inventory within hours after they are molded. 2–4 days after molding, the compressive strength of the blocks will be 90% or more of the final ultimate strength. Besides, steam curing produces units of lighter color than is usually obtained with natural curing.

(i). Initial temperature of the concrete shall not be raised above 48°C for a minimum of 2 hours after the units have been cast.
(ii). The rate of increase after 2 hour period shall not exceed 15°C/hr and the maximum temperature shall not exceed 65°C.
(iii). The maximum temperature shall be held for a period sufficient to develop the required strength (4–5 hours).
(iv). Rate of decrease in temperature shall not exceed 10°C/hr.
(v). Units shall be kept covered for a minimum of 24 hours after casting.

High pressure steam curing

This method uses saturate steam at pressures ranging from 125 to 150 psi and temperature of 178°C. This method usually requires additional equipment such as an autoclave (kiln). The strength of high pressure cured concrete masonry units at one day age are equivalent to the 28 days strengths of moist-cured blocks. This process produces dimensionally stable units that exhibit less volume change (up to 50% less). However, autoclave unit requires a much higher investment.

*Practical Suggestion for Curing

28-days curing to gain the full strength of masonry product is based on concrete which is slightly different when applying for the dry mix material for the block making. It is very commonly now cement is added with high quality Fly -Ash, and under the favorable conditions like the temperature and humidity, the compressive strength of the block/paver will gain up to 80% in less than 7 days curing. By using the #425 type cement and design the mix proportional at least 20% higher than the required compressive strength(Mpa), the block/paver will be qualified to be delivered to the clients.

4.LAND AREA & SHADED AREA

According to the above calculating, the space required for one days' production is around 200sq. mtrs. (max. 700sq. mtrs /6 layers=116 sq.mtrs, space for each row around 80 sq. mtrs)Following sufficient air curing, the green building units are removed from the pallets on the next day, calculation of the total curing area : 200×1.5=300 sq. mtrs. Workshop area for machine is around 250 sq. mtrs. Total shaded area is around 550 sq. mtrs.
For stocking yard the required area is around 7000 sq.mtrs. (based on 28days production)

*Note: Land Area mentioned includes the area for raw material assembly, workshop, office and assembly yard for complete products.

5.RAW MATERIAL

Constant care in proper selection and gradation of aggregate, assurance that the cement meets or exceeds specifications and a supply of clean, pure mixing water are absolutely essential to the economical production of units of uniformly high quality.
The aggregates used will consist of sand, gravel, crushed stone, slag, cinders or other inert materials or combination of them. They must be free from excessive amounts of dust, soft or flaky particles or other deleterious materials, maturely sand without salt content is widely used but very cement consuming. The binding of aggregates is performed by cement, it is therefore logical that in the production of concrete blocks, " find" and " coarse" aggregate are used.

Materials/Compositions

Structural materials:
- Sands
- Crushed fine aggregates
- Aggregates
- Cement
- Water

Surface materials:
- Sands
- Cement
- Pigment

The mixing recipe varies according to aggregate locally available. For trial purpose, the following is a guidance:

	200×100×60	200×100×80	100×150×300
Type	Pedestrian	Vehicle	Partition
Strength	>40MPa	>50MPa	>10MPa
10mm	320kg	450kg	300kg
Crushed fine aggregate	200kg	200kg	500kg
Sand	580kg	450kg	300kg
Cement	260kg	310kg	100kg

*Above proportion is based on pavers only

6.LIFETIME OF MOULD

A mould could last approximately 80,000 – 100,000 cycles. However, this totally depends on the

- **Raw Material (Hardness and Shape)**

  If raw material used are gentle to the mould (i.e. round river sand and pebbles such as round stones), mould lifespan will increase. Crush granite/ stones with hard edges will cause abrasion to the mould, thereby decreasing its lifespan. Hard raw material will also decrease its lifespan.

- **Vibration Time & Pressure**

  Some products require a higher vibration time (to achieve higher strength of products). An increase of vibration time increases the abrasion to the moulds causing the decrease in its lifespan.

- **Precision**

  Some products required high precision (i.e. pavers). Thereby the mould might not be useable within a short period of time. However, if precision of products are not important (i.e. Hollow Blocks), a deviation of 2mm on the moulds will still enable the mould to be usable.

7.MAN POWER

A simple block making production line requires approximately 12 – 15 manual labors and 2 supervisors (to operate the machine needs 5-6 employee).

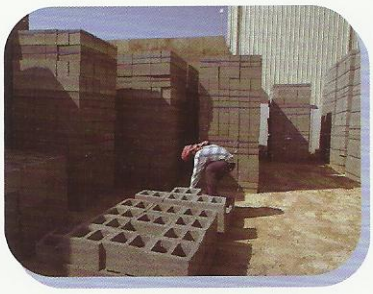
- One operator for batching station and mixer
- One operator for block making machine
- 2 operator for feeding pallets to the machine
- 1-2 operator for forklift

8.POWER REQUIRED

Simple production Line: approximately 110kW
Per hourly power usage: approximately 80kW/hr

9.APPROXIMATE CONTAINERS REQUIRED

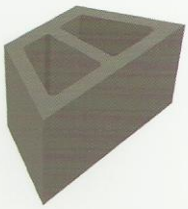
1×40ft'HQ for batching station and mixer
1×40ft'HQ for block making machine
2×20ft GP for bamboo pallets and other structures of the machine



400x200x200mm

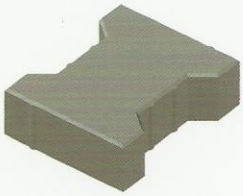
200x100x60mm

240x240x60mm



400x200x200mm

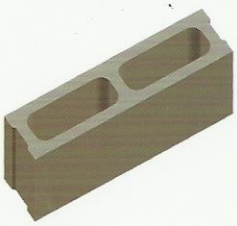
400x200x150mm



200x165x60mm

200x200x60mm

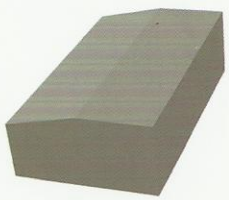
500x200x150mm



400x200x100mm

225x112.5x60mm

200x200x60mm



500x300x150mm

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