



**Engineering, Design & Construction Of Brick Production Lines
Soil Processing, Drying & Kiln**

About Us

Borna Gostar Parsi, as an innovative company, was established in 2006. Consultant services, engineering, design, construction and installation of machines and equipment for brick industry is the major field of activities of this group.

Our Purpose

We intend to revive the brick industry by creative of distinctive products.

We Believe That

Truth, honesty and respect should be the most important character of our organization, managers and employees.

Seeking our profit in increasing everyone's enthusiasm, because businesses in low-motivation societies are generally stagnant and less prosperous.

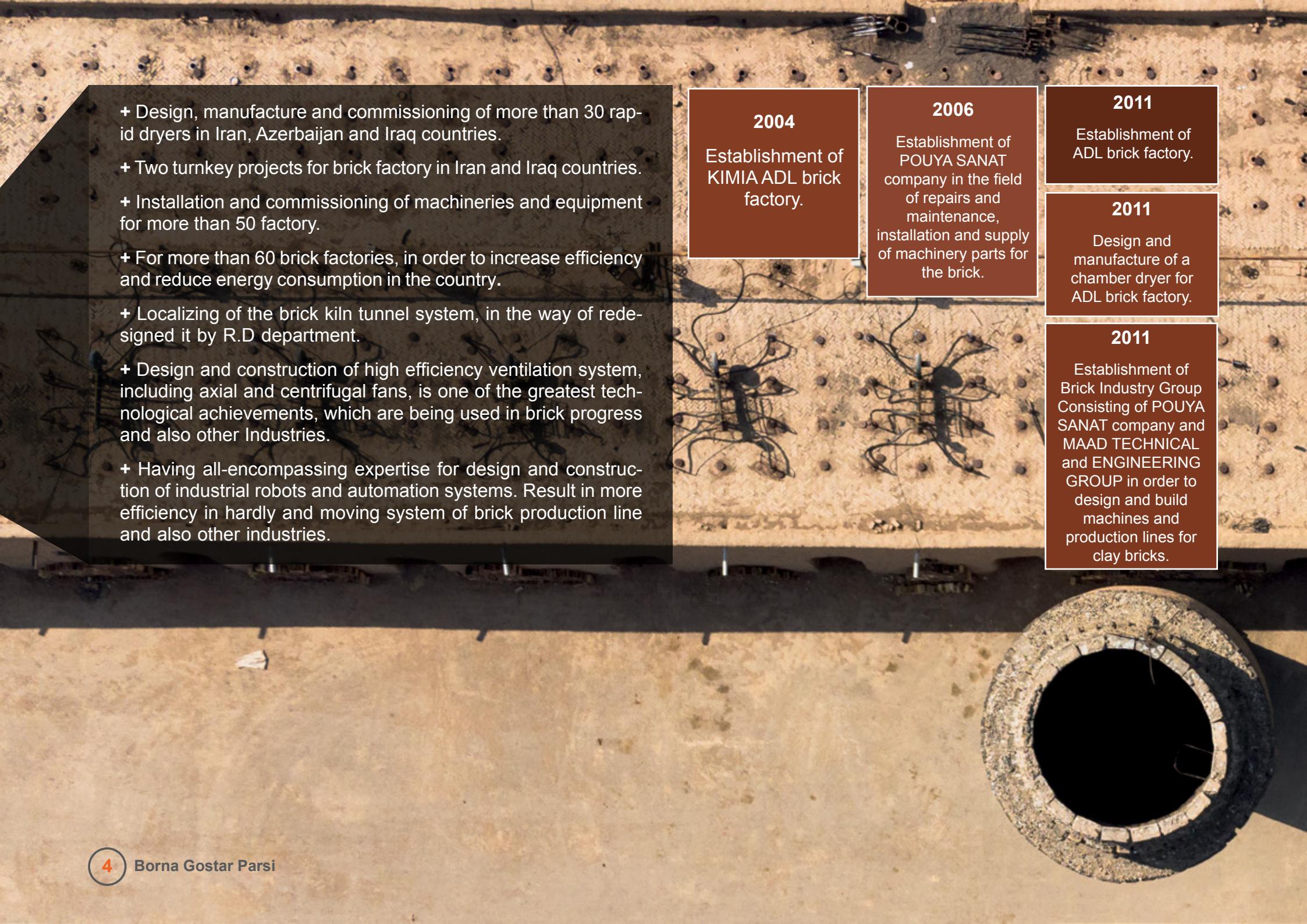
Since innovation reduce repetition and gives hope, so it should be innovation in the nature of products and services.





Borna Gostar Parsi



- 
- + Design, manufacture and commissioning of more than 30 rapid dryers in Iran, Azerbaijan and Iraq countries.
 - + Two turnkey projects for brick factory in Iran and Iraq countries.
 - + Installation and commissioning of machineries and equipment for more than 50 factory.
 - + For more than 60 brick factories, in order to increase efficiency and reduce energy consumption in the country.
 - + Localizing of the brick kiln tunnel system, in the way of redesigned it by R.D department.
 - + Design and construction of high efficiency ventilation system, including axial and centrifugal fans, is one of the greatest technological achievements, which are being used in brick progress and also other Industries.
 - + Having all-encompassing expertise for design and construction of industrial robots and automation systems. Result in more efficiency in hardly and moving system of brick production line and also other industries.

2004

Establishment of KIMIA ADL brick factory.

2006

Establishment of POUYA SANAT company in the field of repairs and maintenance, installation and supply of machinery parts for the brick.

2011

Establishment of ADL brick factory.

2011

Design and manufacture of a chamber dryer for ADL brick factory.

2011

Establishment of Brick Industry Group Consisting of POUYA SANAT company and MAAD TECHNICAL and ENGINEERING GROUP in order to design and build machines and production lines for clay bricks.



2012
Design and complete
brick production line
for the first time in
Sulaymaniyah, Iraq.

2013
Design and
construction
automatic robot for
wet brick moving in
Iran.

2014
Design and
engineering of kiln
tunnel.

2015
Design and construc-
tion of the first modern
rapid dryer of Iran in
Qazvin city.

2017-2020
Design and
construction of more
than 15 rapid dryers
in Iran with different
capacities.

2021
Construction of the
second factory of
Borna Gostar Parsi
in Mahmoud Abad
industrial zone.

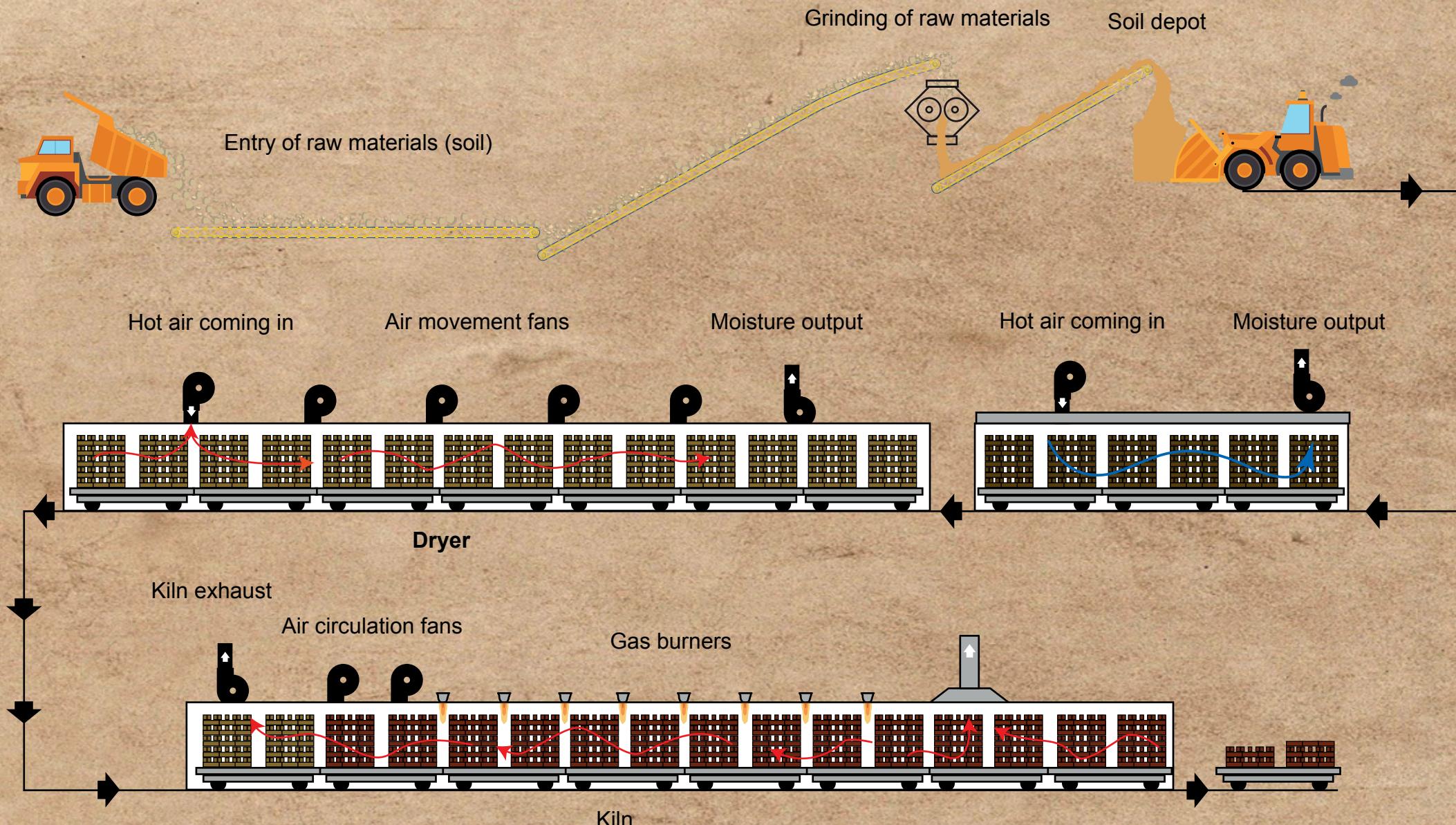
2013
Design and
construction of
automatic system for
loading and un-
loading of brick in
Iran.

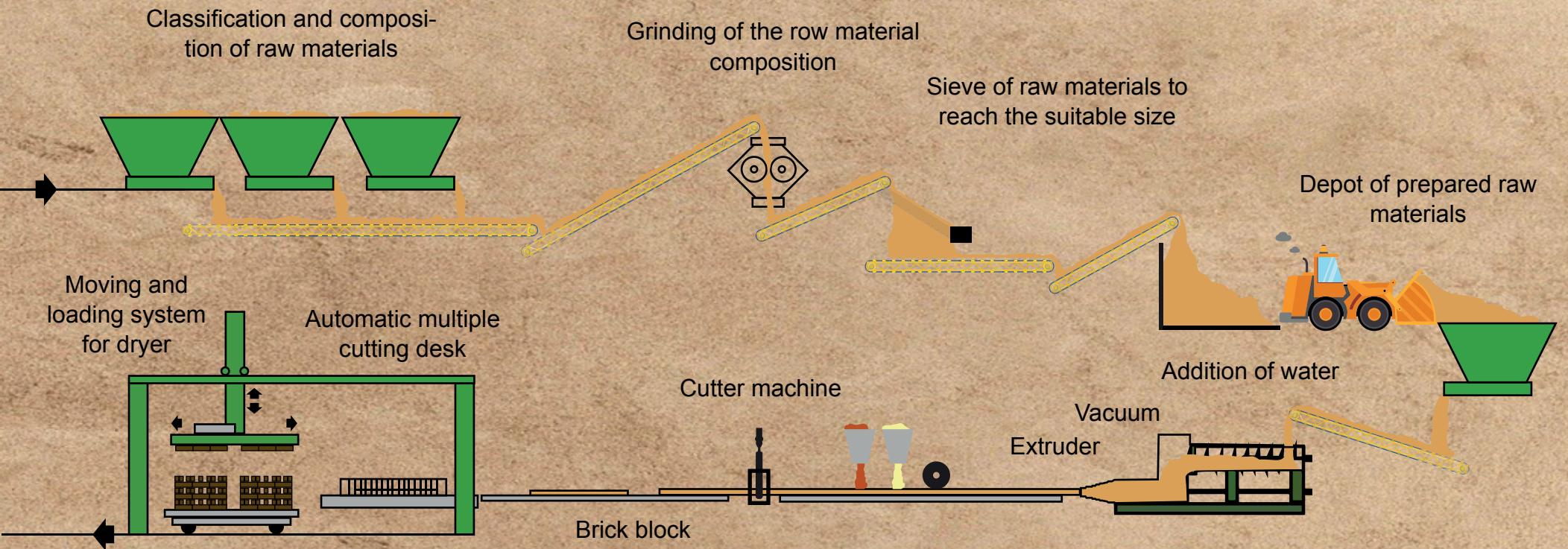
2019
Design and construc-
tion of the first modern
rapid dryer in Azer-
baijan.

2021
Design and
construction of a
rapid dryer in Iraq
Nahrawan for new
product.



Brick Production Process

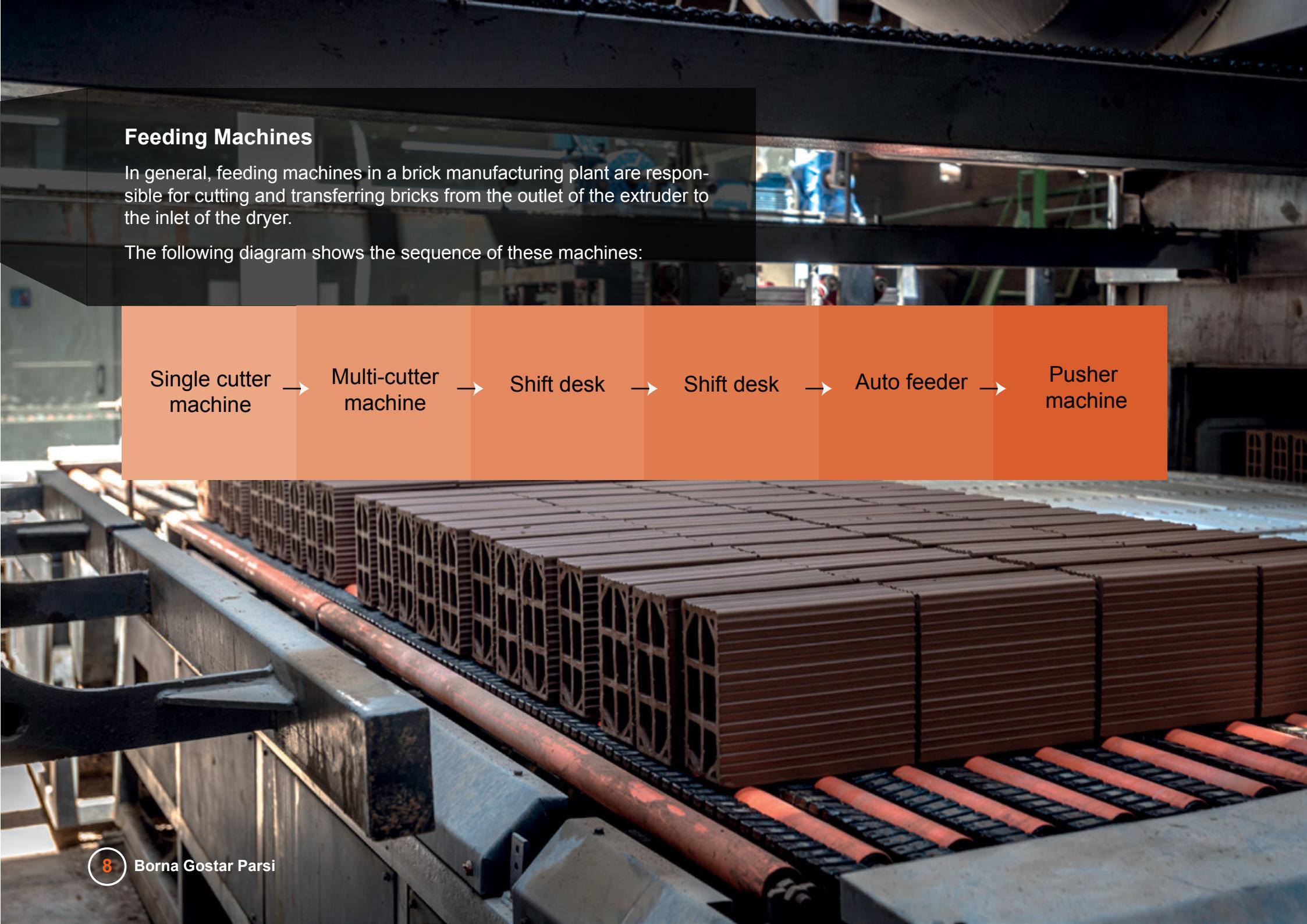
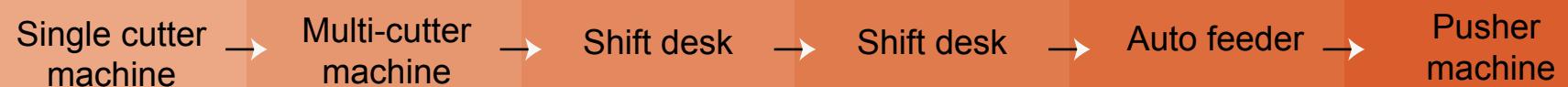


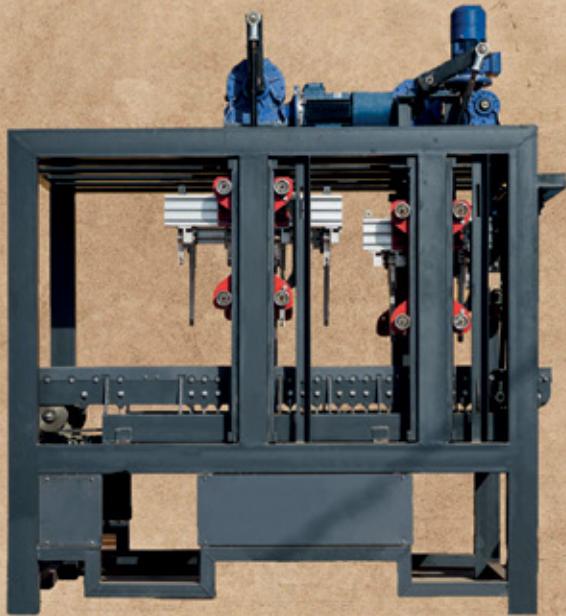


Feeding Machines

In general, feeding machines in a brick manufacturing plant are responsible for cutting and transferring bricks from the outlet of the extruder to the inlet of the dryer.

The following diagram shows the sequence of these machines:





Vertical Multi-Cutter Machine

The multi-cutter machine has the task of cutting the brick ingot pieces, that are delivered from the single cutter machine, into final dimensions and parts. This machine has 5 degrees of freedom that uses a reciprocating mechanism to cut clay ingots at the same time. The electrical energy consumption of this device is between 6 and 7 kilowatts.

	Small size	Large size
Length	2/2	1/8
Width	1/6	1/8
Degrees of freedom	5	5
Movement mechanism	Sliding crank Chain and chain gear	Sliding crank Chain and chain gear
Power consumption (KW)	6	7



Single Cutter Machine

The single cutter machine is the first machine after the forming machine (extruder) which has the task of cutting the clay in order to form ingots. This machine has two degrees of freedom and uses a reciprocating mechanism for cutting. The electrical energy consumption of this device is between 4 and 5 kilowatts.

	Small size	Large size
Length	2/5	3
Width	1	1/6
Degrees of freedom	2	2
Movement mechanism	Sliding crank Chain and chain gear	Sliding crank Chain and chain gear
Power consumption (KW)	4	5

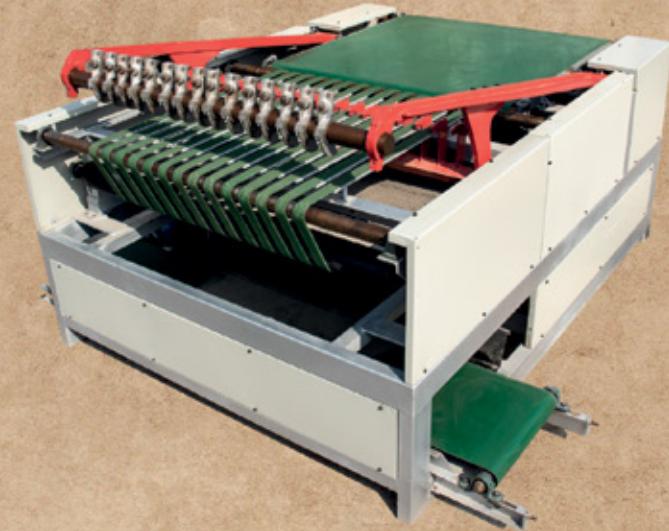




Shift Desk

The role shift desk is a device that is responsible to transfer and change the direction of brick pieces between the multi-cutter machine and the assortment desk. It has 3 degrees of freedom, whose movement mechanism is based on the use of belts, pulleys, chains and chain gears. The electrical energy consumption of this device is between 5 and 6 KW.

	Small size	Large size
Length	2	2/1
Width	2	2/7
Degrees of freedom	3	3
Movement mechanism	Belt and pulley Chain and chain gear	Sliding crank Chain and chain gear
Power consumption (KW)	6	7



Multi-Cutter Comb Machine

The multi-cutter comb machine has the task of cutting the brick ingots received, from the single cutter machine, with the help of a moving arm (comb), into the final dimensions and pieces.

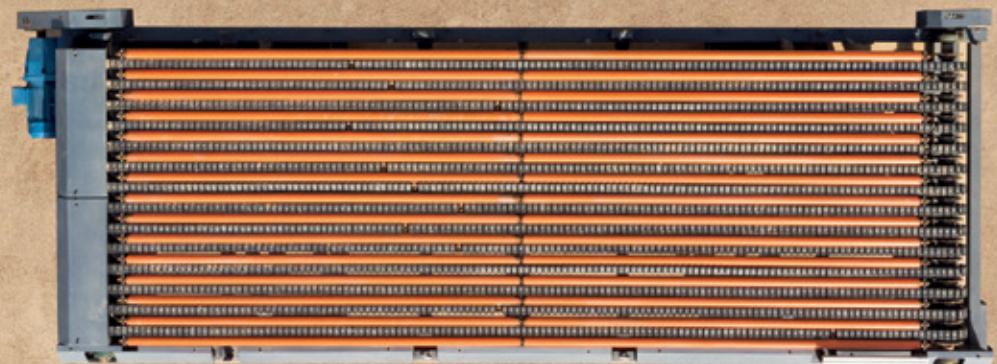
Length	2
Width	2/6
Degrees of freedom	4
Movement mechanism	Sliding crank
Chain and chain gear	Chain and chain gear
Chain and chain gear	8/5
Power consumption (KW)	6



Auto Feeder

The auto feeder is responsible for transferring the bricks from the assortment desk to the drying racks. This table is an intermediary machine and the brick on it has no movement.

	Small size	Large size
Length	2/1	6
Width	4	2/1
Degrees of freedom	1	1
Movement mechanism	Chain and chain gear	Chain and chain gear
Power consumption (KW)	2	3



Assortment Desk

The assortment desk receives the bricks from the Shift desk and arranges them in an order that it is suitable for loading on dryer racks. This device has the largest dimension and also 2 degrees of freedom. Its movement mechanism is similar to the Shift desk, using belts, pulleys, chains and chain gears. The electrical energy consumption of this device is between 4 and 5 kilowatts.

	Small size	Large size
Length	4/8	6/8
Width	1/7	1/8
Degrees of freedom	2	2
Movement mechanism	Belt and pulley Chain and chain gear	Belt and pulley Chain and chain gear
Power consumption (KW)	4	5

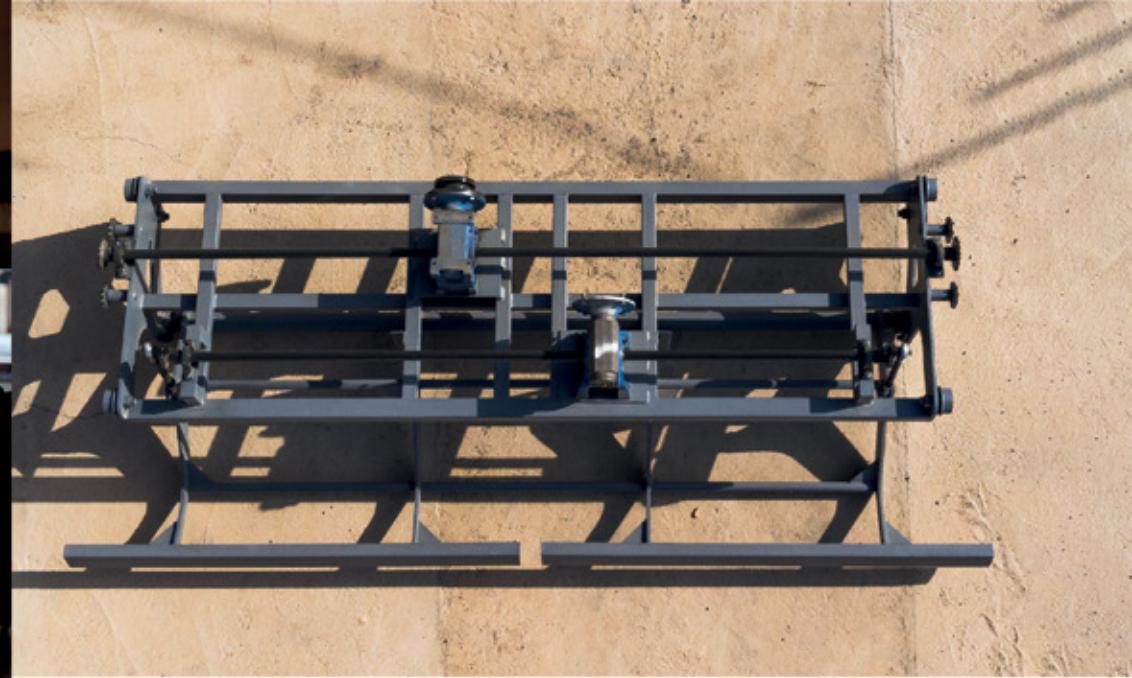




Output Conveyor

The output conveyor conveys the brick from the dryer outlet to the brick firing kiln. This device uses a tape and roller mechanism. The length of this device is between 24 and 26 meters. The electrical energy consumption of this device is between 2 and 3 KW.

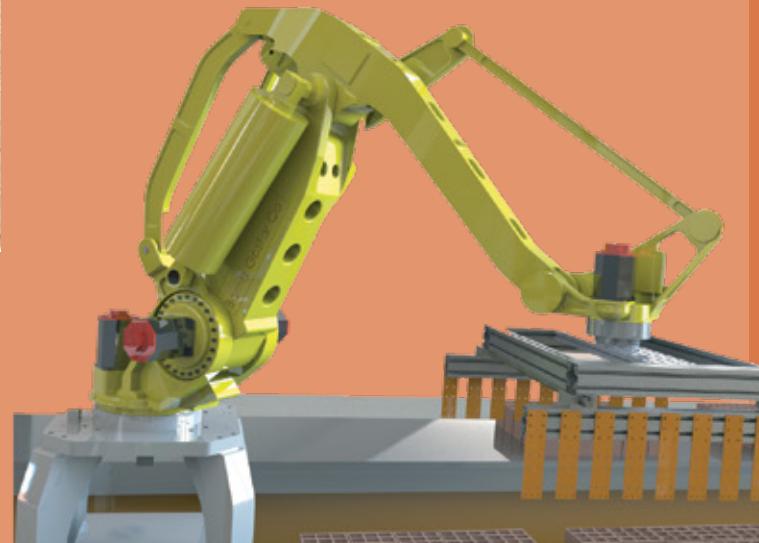
	Small size	Large size
Length	24	26
Width	1	1
Degrees of freedom	1	1
Movement mechanism	Roller and tape	Chain and chain gear
Power consumption (KW)	2	3



Pusher Machine

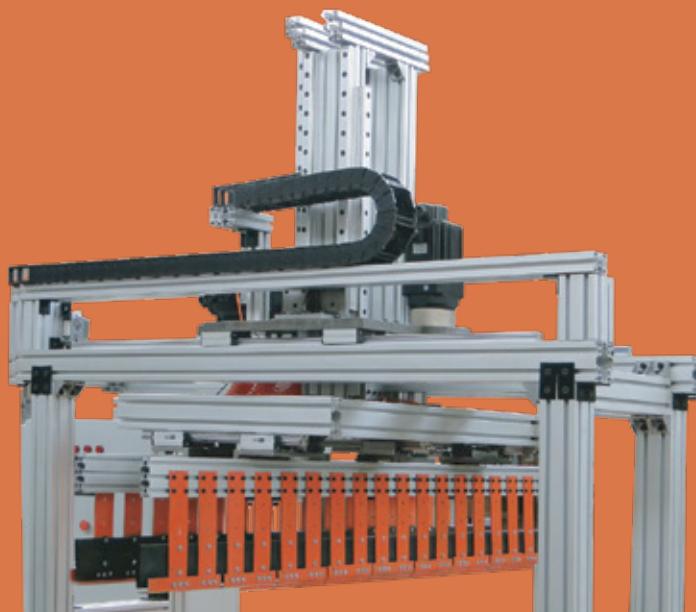
The pusher machine provides the necessary power and movement to transfer the bricks from the auto feeder to the drying racks. This device uses a reciprocating mechanism by chains and chain gears to move bricks. This device has 2 degrees of freedom. The electrical energy consumption of this device is between 3.5 and 4.5 KW.

	Small size	Large size
Length	6	6
Width	4	6
Degrees of freedom	2	1
Movement mechanism	Chain and chain gear	Chain and chain gear
Power consumption (KW)	3/5	4/5



Palletizer Robot

Un-loading bricks on a kiln cars.
The ability of loading and unloading for different layer patterns.



Gantry Robot

Un-loading bricks in the dryer tunnel.
Un-loading the bricks in the kiln tunnel.

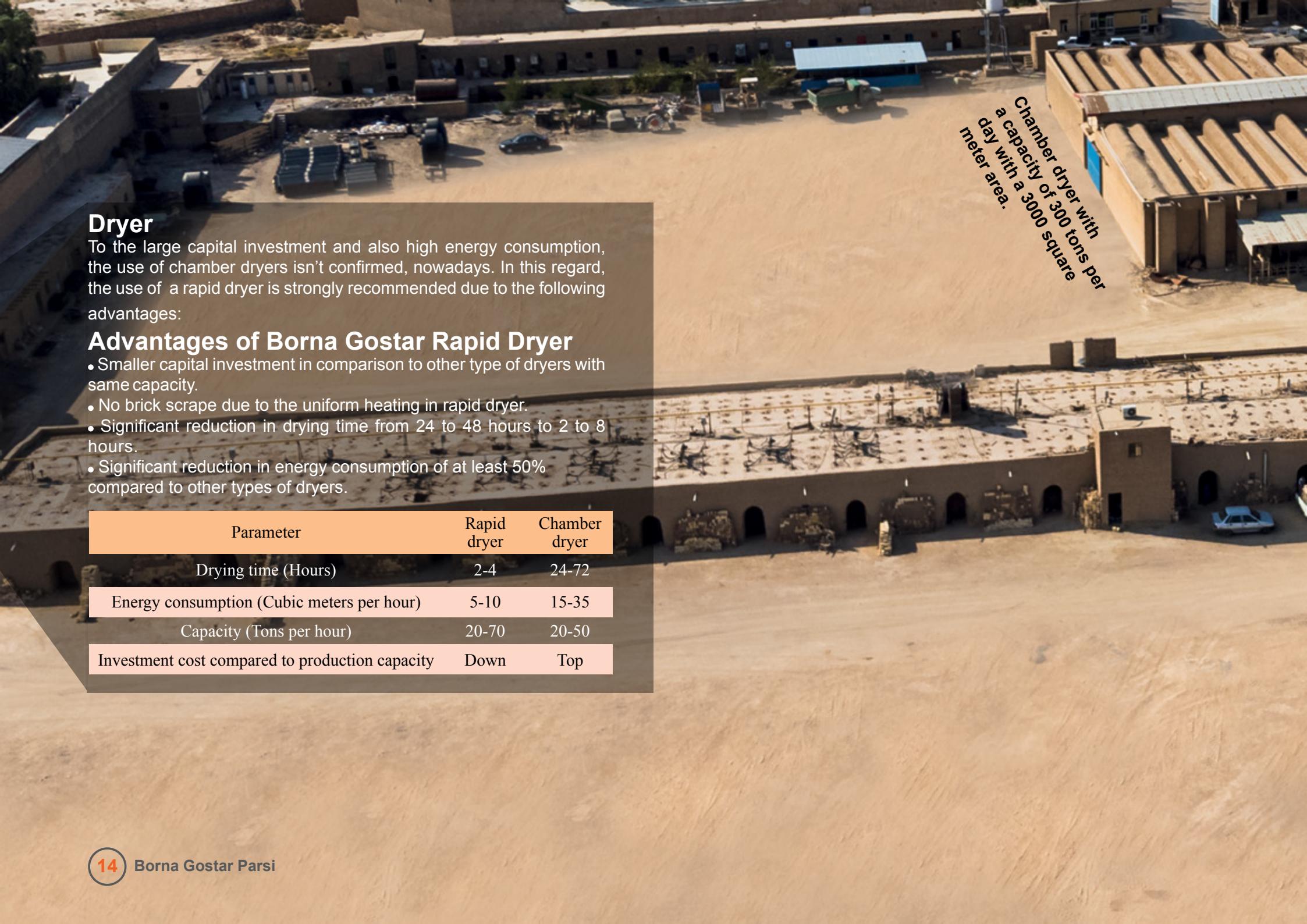


Robotics

Advantages of the robot

- Productivity and high efficiency in the operation of the production line.
- Minimum work space occupation.
- Reduce production cost.
- Reducing the manpower.
- Increase production capacity and speed.
- No vibration or extra noise.
- Low depreciation and very resistant structure.





Chamber dryer with a capacity of 300 tons per day with a 3000 square meter area.

Dryer

To the large capital investment and also high energy consumption, the use of chamber dryers isn't confirmed, nowadays. In this regard, the use of a rapid dryer is strongly recommended due to the following advantages:

Advantages of Borna Gostar Rapid Dryer

- Smaller capital investment in comparison to other type of dryers with same capacity.
- No brick scrape due to the uniform heating in rapid dryer.
- Significant reduction in drying time from 24 to 48 hours to 2 to 8 hours.
- Significant reduction in energy consumption of at least 50% compared to other types of dryers.

Parameter	Rapid dryer	Chamber dryer
Drying time (Hours)	2-4	24-72
Energy consumption (Cubic meters per hour)	5-10	15-35
Capacity (Tons per hour)	20-70	20-50
Investment cost compared to production capacity	Down	Top



Rapid dryer with a capacity of 300 tons with 350 m² area.

Rapid Dryer

A rapid dryer can be divided into the following main parts.

1) Building

The dryer racks moves in tunnel. The dimensions of this tunnel will vary depending on the production capacity of the dryer.



2) The movement system and the dryer racks

Dryer racks are carrying bricks in tunnel, by a chain and gear movement system.



3) Ventilation system

The structure of the ventilation system is divided into three parts:
3-1) Centrifugal fans: recirculation of hot air.



3-2) Axial fans:

For exhaust system of moisture.



3-3) Burner:

For warming of air.





4- Automatic Operation

The dryer and racks work fully automatically. The hot air required by the dryer is produced by the heat burners. The control system of dryer includes panels, PLC, HML.

Capacity (Tons per day)	800	600	400
Total installed power	KW 140	KW 100	KW 90
Height	5	6	7
Width	7	5	5
Length	100	90	70
Number of bricks output per hour	14000	10000	7000
Number of bricks in the dryer	28000	20000	14000
Device type	BRD-T01-C28	BRD-T02-C20	BRD-T03-C14





Hoffman Kiln

Hoffman kiln is one of the traditional methods of brick firing. The Hoffman kiln is used to kiln conventional bricks, the clays are fixed and the process works based on the continuous movement of the fire and the displacement of the fuel sprinklers.

Hoffman Smart Kiln

By using the intelligentization of the Hoffman furnace, its efficiency can be increased up to two times. This process can be implemented with minimal interference in the structure of the kiln.

Hoffman's intelligentization consists of two hardware and software parts:

- The hardware part includes sensors, communication equipment and gradual valves that are installed by the company's experts on the kilns.
- The software part includes specialized software that is installed on the computer system and placed in the kiln control room. The advantages of this system are summarized as follows:
 - Quick and easy installation.
 - Reduce fuel consumption.
 - The least amount of changes in the kiln structure.
 - Color uniformity of the product in different kiln.
 - Achieving different colors using temperature setting and kiln chart.
 - Preventing brick scraps caused by boiling or rawness of the product.
 - Remote control capability.
 - The ability to work with a simple operator instead of a professional one.
 - The investment return time is less than two years.
 - One year system warranty.



Centrifugal Fan

Designing and manufacturing modern centrifugal fans with unique blades is one of the most important achievements of Borna Gostar Parsi company. The efficiency of common centrifugal fans is usually estimated at 30-40%, while the efficiency of Borna Gostar Parsi's fans is 50-70% depending on the air flow rate.

Centrifugal fans are used for air circulation in quick dryers and Hoffman kilns. For an example of a centrifugal fan designed and built for rapid dryers with a flow rate of 33 cubic meters per second, it has an 18 KW electric motor.



Axial Fan

One of the main uses of axial fans is to create a uniform flow, which is necessary to prevent cracks in bricks and reduce brick scraps and create a uniform flow in dryers. Considering the efficiency of the axial fans available in the market (from 40 to 50 percent), Borna Gostar Parsi Company has designed and manufactured these types of fans in accordance with the modern technologies of the world, and their efficiency has increased up 80 to 90 percent.

As an example, the axial fan used in the rapid dryer with a flow rate of 30 cubic meters per second, has an electric motor of 11 KW.



Tunnel Kiln

The kiln stage is the last stage of the brick production process. Today, in modern brick production factories, this process is done fully automatically in the kiln tunnel. The design and construction of the kiln tunnel depends on the type of soil, production capacity and type of product. Usually, bake kilns consist of three sections: preheating, firing and cooling.

Some of the advantages of kiln tunnel over Hoffman kiln are as follows:

- Higher quality of manufactured bricks and result in less brick scraps.
- Reducing the energy consumption by 50%
- Eliminate significant labor costs

Borna Gostar Parsi company, with the cooperation of professional experts, has succeeded in acquiring technical knowledge, designing and localizing the kiln tunnel.







Borna Gostar Parsi

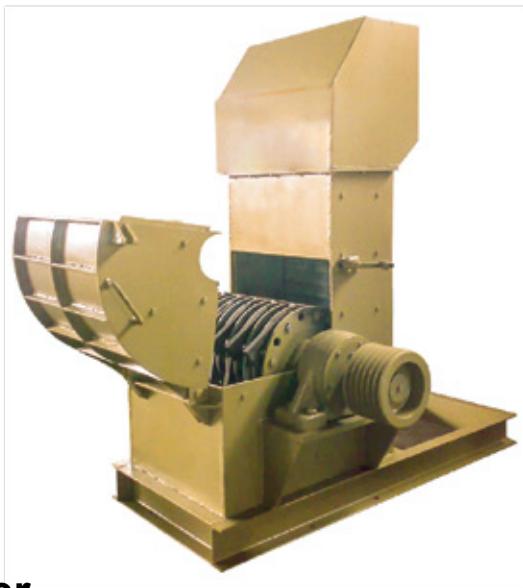


Soil Processing Machines

The first step in the brick production process is clay processing. At this stage, depending on the type of soil, it is necessary to separate the impurities from the soil and then turn the coarse particles into finer particles using a mill and a stone crusher.

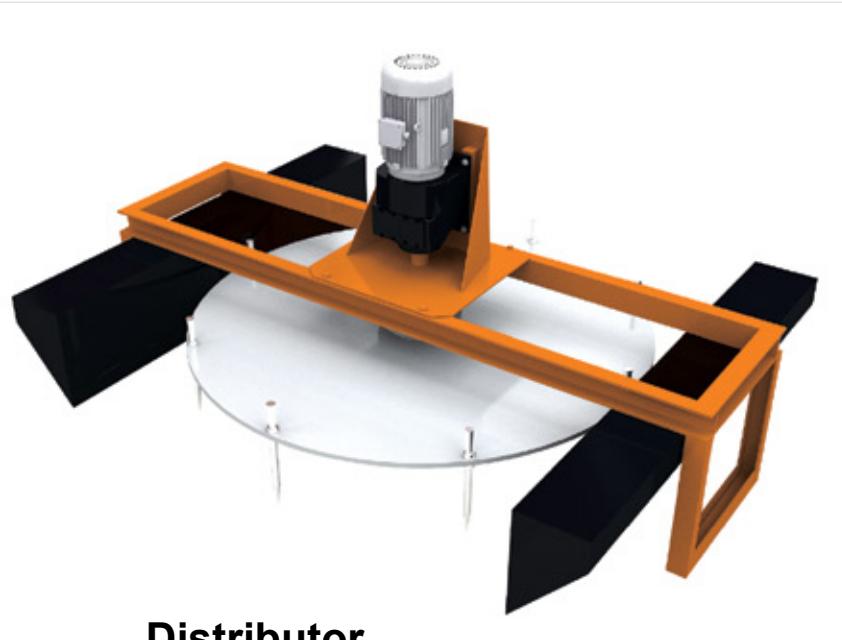
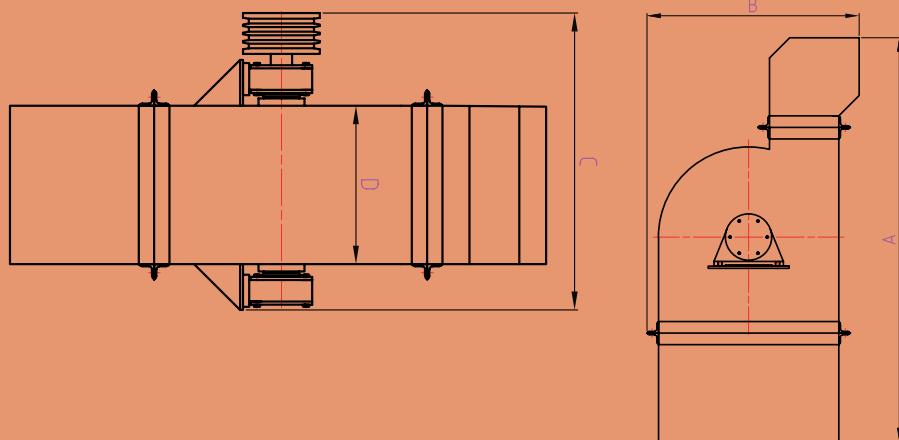
A blender is used to make the soil uniform and form the required mud, and finally, the soil becomes finer and more uniform with the use of a roller mill. Muds stored in mud silos, are used for curing muds. At the end of this process, a vacuum extruder is used to prepare brick ingot.





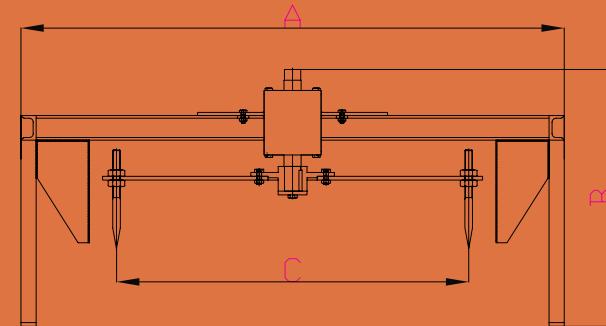
Crusher

This device is used to soften the soil to make the soil sandy.



Distributor

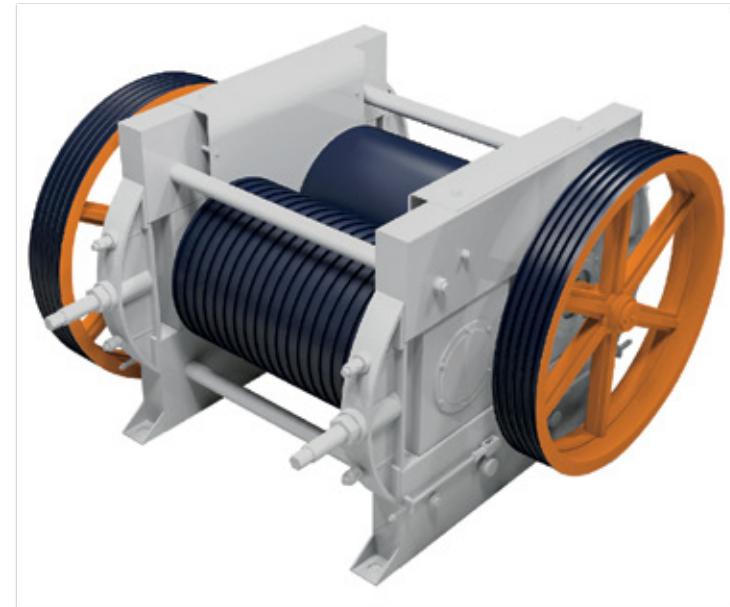
It is installed to make the mud uniform, and it prevents damage of the roller mill.





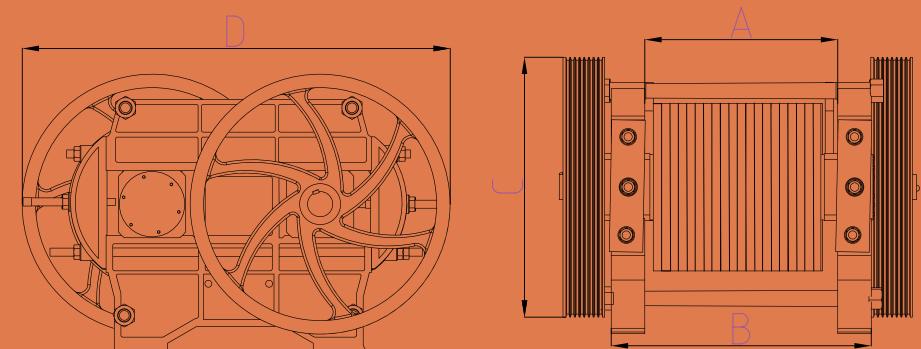
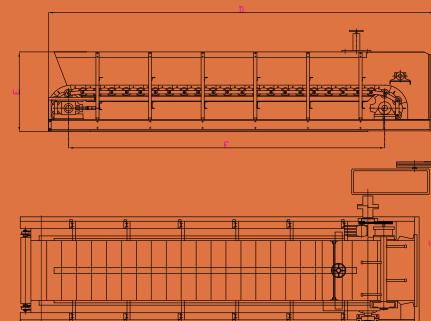
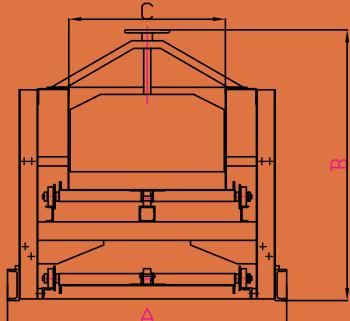
Box Feeder

This device stores some mud or soil and transfers enough soil or mud to the belt using the power of the motor. This device can withstand the weight of mud and soil.



Stone Separator Roller Mill

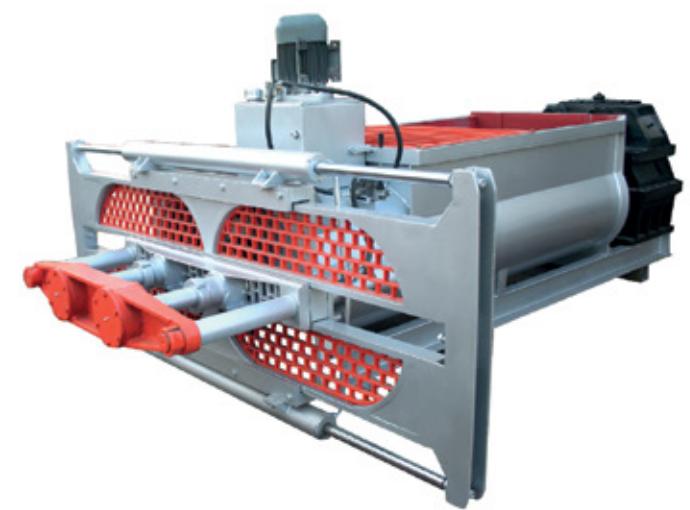
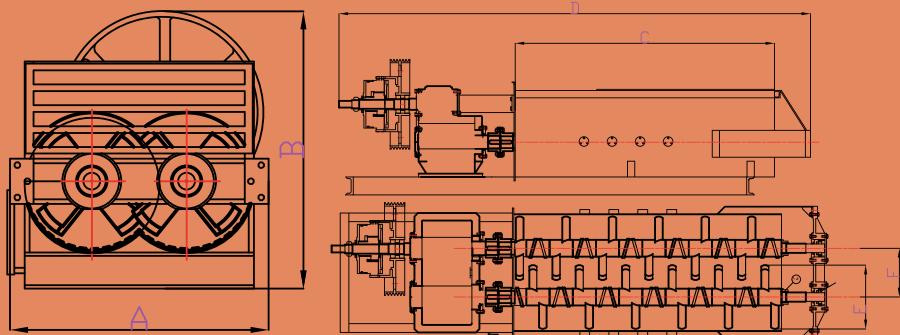
This machine simultaneously performs the work of kneading and preparing mud along with the separation of large pieces of soil such as stone.





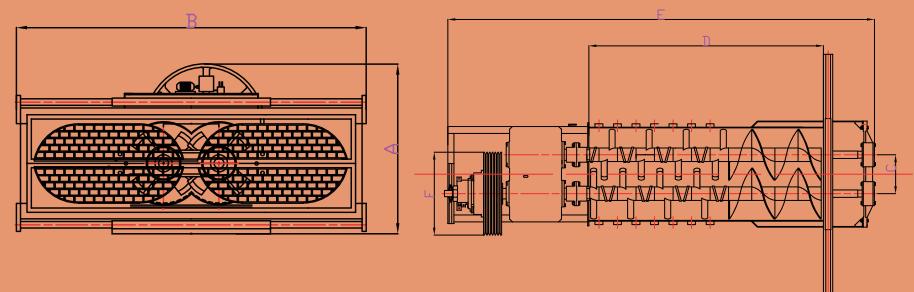
Double Shaft Mixer

It mixes the incoming soil with water and delivers it in the form of brick ingot from the outlet.



Double Shaft Screen Mixer

This device filters the coarse grains in the soil and passes the finer grains.





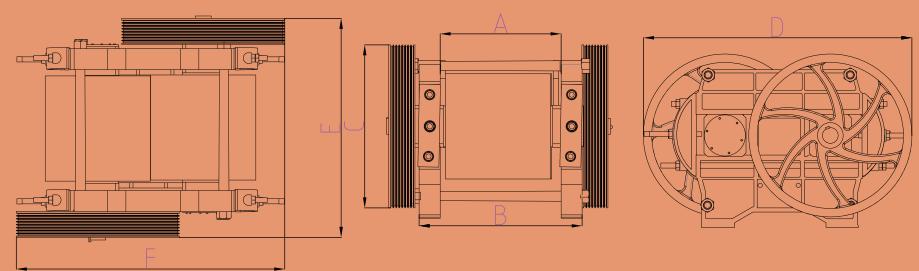
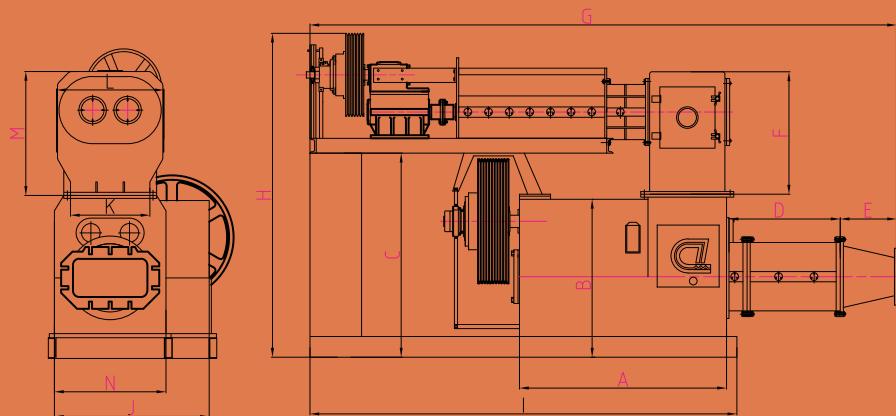
Vacuum Extruder

The role of this devise is to create a vacuum and shape to the mud, which can be used in different types.



Roller Mill

Knead the prepared mud and homogenize the mixture of water and soil



Repair and Maintenance

- Troubleshooting and repair of machines in the soil processing section.
- Troubleshooting and repair of chamber, tunnel, rapid dryers.
- Troubleshooting and repair of Hoffman kiln and kiln tunnel.
- Providing technical advice regarding all the machines and equipment of the brick production line, including the soil processing, drying and kiln sections (both Hoffman and tunnel kilns).
- Reconstruction and commissioning of brick production line machineries and equipment.





Mixer main rib



The main gear of the extruder



Mud flapper gear



Gear 430



Start-up pinion gear



Two-piece mud flapper gear

Supply of Parts

All the spare parts, required for brick factories, are supplied on time. Some examples of these parts are as below:

- Helix for extruder and mixer.
- Hardening of helix for increasing.
- Steel paddle of mixer durability.



Mixer pinion gear



Mud flapper gear



Mud flapper gear



Door of the bearing of
the mud crusher



Bearing of mud crusher



Middle spur extruder



Single spur extruder



Spiral lock



Complete snail



Dupri



Extruder complete clutch



Extruder and mixer shaft



Cylindrical part





Mixer tube



Extruder parts



Extruder and mixer clutch lever for



Clutch for extruder plate



Aluminum cutting wire



Extruder parts



Wheel for finger and transfer machines



Mixer door



Extruder male and female parts



Male and female fuel injectors



Extruder pot



Black oil filter



Gas hood door



Wind parts



Paddle of mixer



Roller mill fuse



Electric valve



Anti-wear welding wire 65-10um60



Mixer intermediate part



Correction, Improvement and Consulting

Borna Gostar Parsi company is ready to provide various services in different sectors, including consulting in the field of establish a factory to produce bricks and similar products such as tiles, ceramics, etc. From the stage of economic and technical evaluation (business plan), locating, design and consulting, construction of the production line, modification and optimization of the existing lines and their maintenance.

We are ready to advise you in the following areas:

- Consulting on your ideas.
- Consulting in the field of design and production line construction.
- Consultancy in the field of modification and optimization of the production line.
- Consulting in the field of planned maintenance and repairs of production lines.





Borna Gostar Parsi



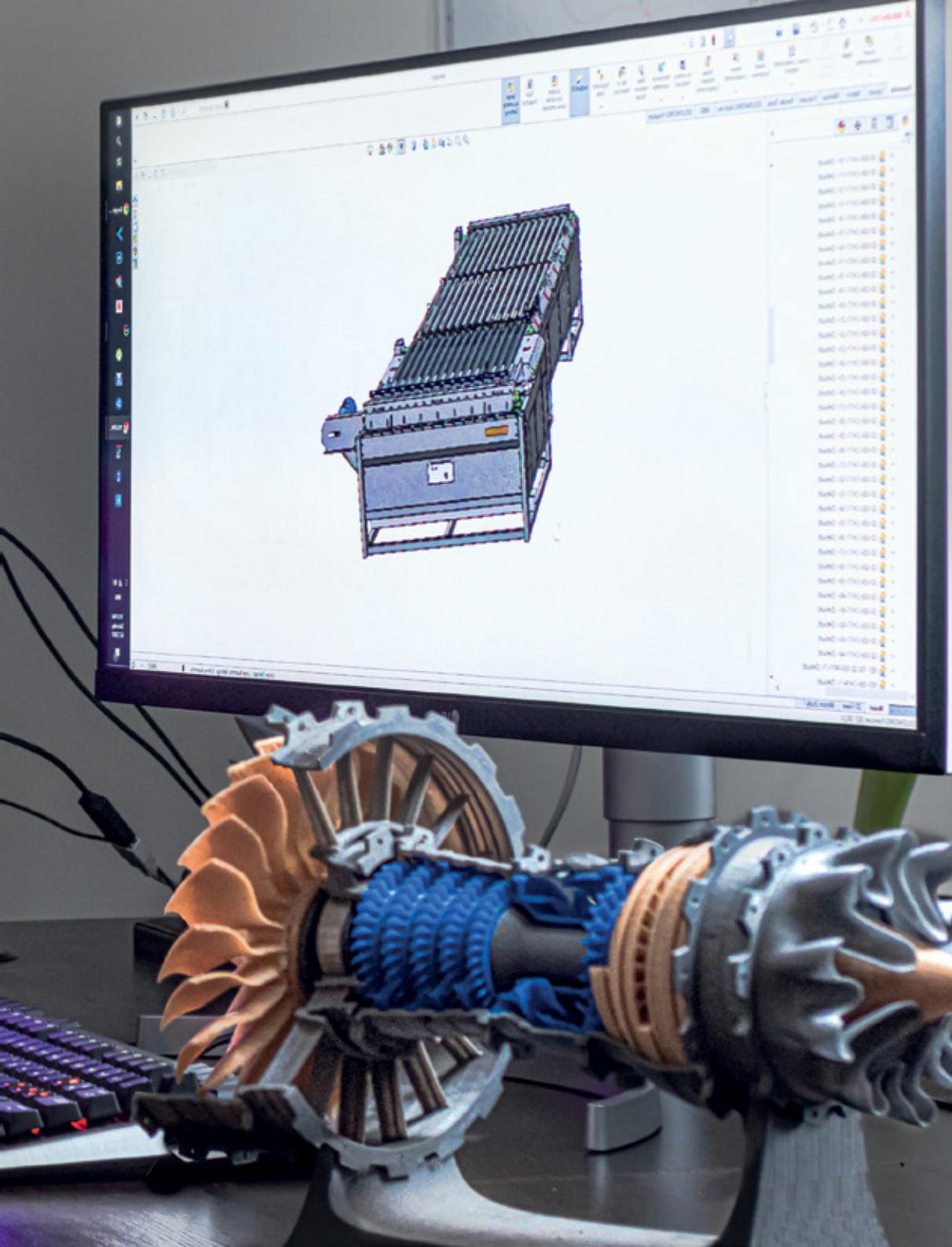
Research and Development

Borna Gostar Parsi company is constantly interacting with colleagues, customers and even competitors to create new ideas in the clay building materials industry.

The company's commitment is to be innovative in its products, considering reducing costs, increasing efficiency and protecting the environment. Hence, the company annually spends a significant amount of its income on research and development.

Establishing and equipping the best scientific research center for the clay construction products industry with the aim of enabling continuous promotion of this national industry is one of the main goals of this company.





Year 2006-2011

1. Modification and optimization of soil processing machines in brick factories.
2. Significant reduction of energy consumption in the soil processing sector.
3. Localization and construction of a fan to create a uniform flow in chamber dryers in order to reduce waste.
4. Acquire technical knowledge to improve soil processing machines.

Year 2011-2016

1. Acquire technical knowledge in the field of dryers.
2. Acquire technical knowledge in the field of kiln tunnel.
3. Acquire technical knowledge in the field of robots design.
4. Design and construction the first rapid dryer in Iran.
5. Construction and design of the first indigenous robot for moving wet clay and dry clay in brick factories.
6. Design and manufacture of axial and centrifugal fans in accordance with the world's current technology for use in rapid dryers with 80-90% efficiency.

Year 2016-2021

1. Construction of the first dryer simulator in Iran.
2. Conducting preliminary studies on ultra-fast dryers in 10-15 minutes.
3. Designing a machine for the whole soil processing process before extruder.
4. Design and implementation of a specialized brick laboratory.
5. Recycling part of the water used in brick factories.
6. Making a 3D clay printer.
7. Preliminary research on mono laser kiln tunnel.





ADL brick factory



ADL brick factory



ADL brick factory



ADL brick factory



Mirdad brick factory



Mirdad brick factory



Mirdad brick factory



Mirdad brick factory



Mirdad brick factory



Mr. Naderi's brick factory



Mr. Naderi's brick factory



Mr. Ghasemzadeh's brick factory



Mr. Ghasemzadeh's brick factory



Mr. Mohammadi's brick factory



Mr. Mohammadi's brick factory



Mr. Yousefi-Banoyi's brick factory



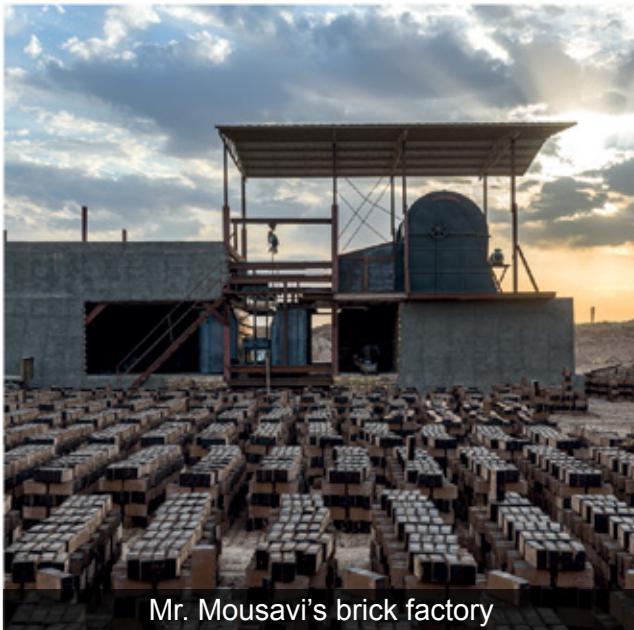
Mr. Yousefi-Banoyi's brick factory



Mr. Hassan Karimi's brick factory



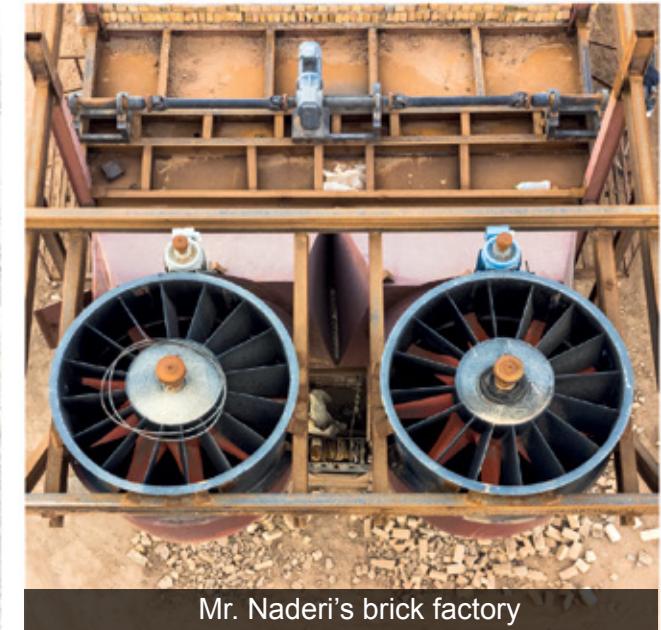
Mr. Hassan Karimi's brick factory



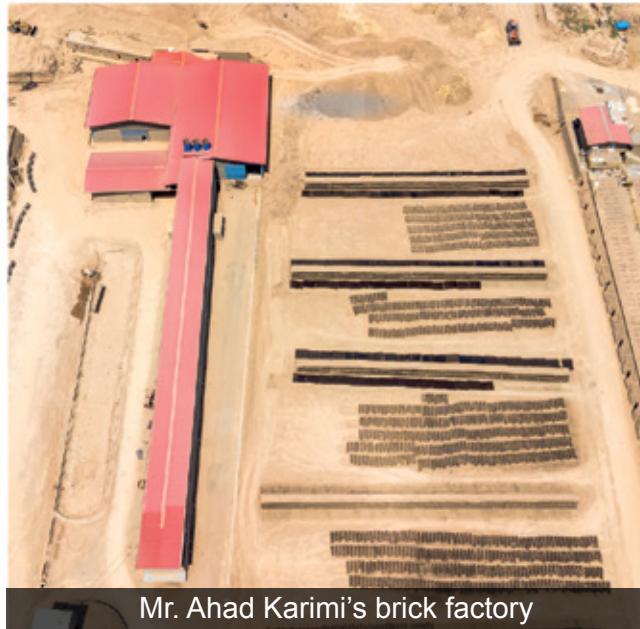
Mr. Mousavi's brick factory



Mr. Mousavi's brick factory



Mr. Naderi's brick factory



REFERENCE LIST OF RELATED PROJECTS

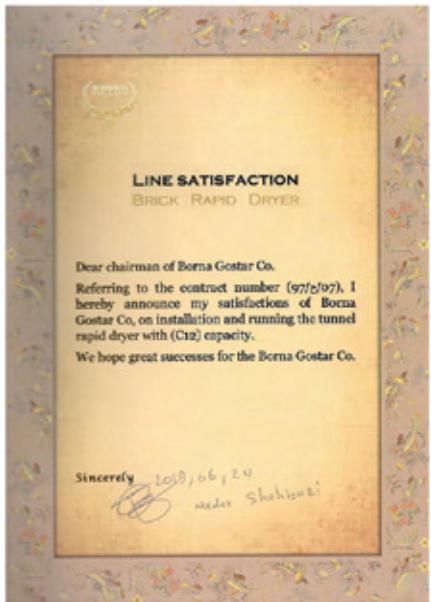
Project	Capacity (Tons/day)	Client	Location	Year	Status
Rapid Dryer (5 th Generation)	300	Noor Shariar	Iran-Tehran	2023	Current
Rapid Dryer (5 th Generation)	300	Mr. Rahimi	Iran-Mashhad	2023	Current
Rapid Dryer (5 th Generation)	600	NamasazanPooya.Co	Iran-Dehdasht	2023	Current
Rapid Dryer (5 th Generation)	300	Chamchamal Co.	IRAQ - Sulaymaniyah	2022	Done
Rapid Dryer (5 th Generation)	500	Kimia ADL Co.	IRAN-Qom	2022	Done
Rapid Dryer (5 th Generation)	300	Mr. BabaHoseini	IRAN-Gazvin	2021	Done
Rapid Dryer (5 th Generation)	300	Mr. Rafiei	IRAN-Gazvin	2021	Done
Rapid Dryer (4 th Generation)	400	Alhalani Co.	IRAQ - Nahrawan	2021	Done
Rapid Dryer (4 th Generation)	300	Mirdad Co.	IRAN-Tehran	Done	Done
Rapid Dryer (4 th Generation)	300	ADL Co.	IRAN-Qom	Done	Done
Rapid Dryer (4 th Generation)	300	Mr. Muosavi	IRAN-Gazvin	2020	Done
Rapid Dryer (4 th Generation)	300	Mr. Banuoei	IRAN-Takestan	2020	Done
Rapid Dryer (4 th Generation)	300	Mr. Ghasemzadeh	IRAN-Gazvin	2020	Done
Rapid Dryer (4 th Generation)	300	Mr. Naderi	IRAN-Shal	2019	Done
Rapid Dryer (3 rd Generation)	300	Mr. Heydari	IRAN-Takestan	2019	Done
Rapid Dryer (3 rd Generation)	800	Mr. Karimi	IRAN-Shal	2019	Done
Rapid Dryer (3 rd Generation)	800	Mr. Soltani	IRAN-Buin Zahra	2018	Done
Rapid Dryer (3 rd Generation)	300	Retro Holding	AZERBAIJAN-Baku	2018	Done
Rapid Dryer (3 rd Generation)	300	Mr. Mohammadi	IRAN-Gazvin	2018	Done
Rapid Dryer (3 rd Generation)	300	Zarin Sofal Co.	IRAN-Zanjan	2017	Done
Rapid Dryer (2 nd Generation)	400	Mr. Mehrbakhsh	IRAN-West Azerbaijan	2016	Done
Rapid Dryer (1 st Generation)	800	Pars Sofalin Co.	IRAN-Gazvin	2015	Done
Brick Production Line (Turn Key)	350	Havar Co.	IRAQ - Sulaymaniyah	2014	Done
Chamber Dryer	200	ADL Co.	IRAN-Qom	2013	Done

Some projects of construction, installation and operation of equipment and brick production line.

Techno Momtaz brick machine company	2011
Omid brick machine company	2011-2012
Zarvan brick machine company	2011
Afarin brick machine company	2010
Baba Khani brick machine company	2009
Kalhor Brothers brick machine company	2009
Aghazadeh brick machine company	2009-2010
Hosseini Nejad brick machine company	2009-2010
Biegi Machine brick machine company	2009-2010
Hedayati Nia brick machine company	2009-2010

Some modification projects, produc- tion line upgrade and maintenance

Shafaq machine brick
Aria Pottery optimal machine brick
Nama chyne machine brick
Kimia ADL machine brick
Techno momtaz machine brick
Sahib al-Zaman machine brick
Isfahan shawl machine brick
Almasi machine brick
Tehran machine brick



Borna Gostar Parsi



STAY WITH CLAY