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CONTENTS

About Us	1
Introduction	2
Plasma Blast Machine (PBM)	5
Hydrogen-Carbon Derivatives Generator	9
Stone Processing Line	13
Tile, Slab and Stone Block Moisture Dryer	17
Resin Penetrator Machine	21
Immobile Resin Curing Furnace	25
Online Resin Curing Furnace	29
Natural Stone Sorter/Scanner and Quality Control Machine	33

ABOUT US

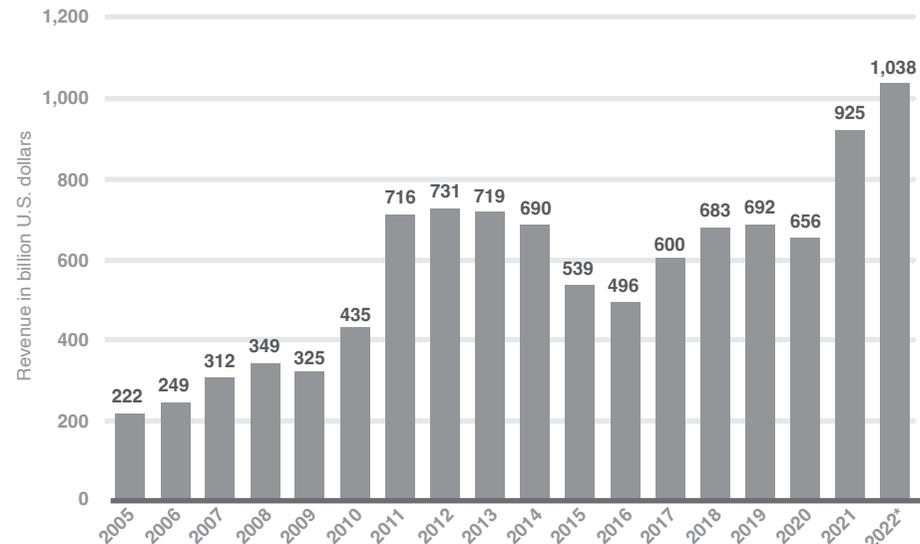
SAM HIGHTECH Ltd. is a group of young Iranian geniuses whose perseverance makes every impossible thing possible. After many years of endeavor and round-the-clock studies in manufacturing workshops with a limited budget and lots of failures, we achieved great success. Our main goal is to achieve and present the latest technologies. Straight to the point, our technologies are eco-friendly, and we try to convert our planet to a better place for all habitants of the earth.





INTRODUCTION

Environmental impacts caused by polluting industries and mining activities can occur on a local, regional, and global scale seriously. These processes also affect the atmosphere due to carbon emissions, which affect the quality of human health and biodiversity. On the other hand, the low speed of extracting mineral resources by using explosives and consequential risks to the employee's health, such as common respiratory diseases and various types of cancers, are factors perceived as the need for introducing new technologies to the mining industry. The turnover of about 1000 billion dollars of mining companies in 2022 and due to the rising income trend in the last three years promises the entry of new technologies into the mining industry, where it is possible to reduce product cost by using modern technologies such as plasma technology, and due to the increase in the speed of extraction, the income of mining companies can grow more steeply.



INTRODUCTION

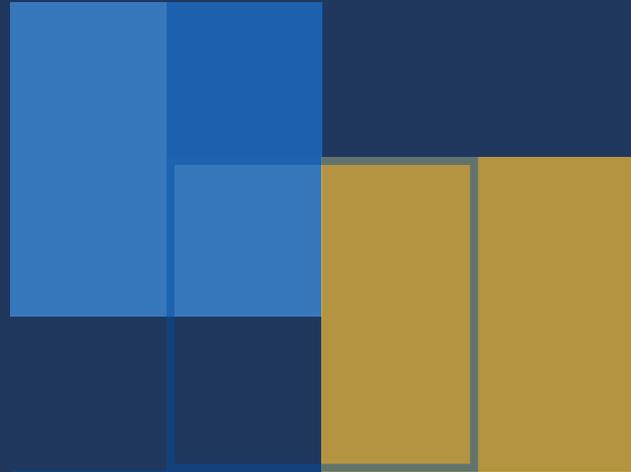
Recent studies show it is estimated that global natural stone resources such as Granite, Marble, Travertine, and Onyx are about 15 billion metric tons. Leaders of the stone market based on production value are Italy, China, India, and Iran. Iran has 4.7 billion tons of natural stone reservoirs and its extraordinary color variation makes it world widely unique. It is predicted that the global natural stone market value will be facing an enhancement of about 51% from \$33,375 million in 2020 to \$50,465 million by 2030.

High processing prices, lack of uniformity, and other poses besides international sanctions are great threats to the stone industry. Thus, the weakness of the process in the stone industry required new ideas to resolve these problems. Introducing new technologies is a good opportunity for the stone market and producers must be equipped with hi-tech solutions to survive in the market.

Since we have faced these problems in the natural stone industry in Iran, we were ignited to invent new machinery to find a new way to solve these problems.

Proudly, SAM HIGHTECH Ltd introduces its latest technology in the mining and natural stone industries. We hope to have a small role to turn threats into opportunities and overcome these problems.







Plasma Blast Machine (PBM)

PROPERTIES

- Fully controlled explosion without explosive materials based on plasma technology and electric discharge
- Applicable in underground and open-pit mines
- Increases the excavation speed up to 20 times in comparison with conventional methods
- User friendly and remote control capability
- Destruction of concrete foundations inside the city
- Controlled demolition and debris removal after the earthquakes
- Destruction of boulders into smaller pieces

ADVANTAGES

- Reducing environmental impact
- Without production of toxic gas
- High-level safety during the explosion
- No more explosives regulations
- No damage to faults
- No more damage and bothering for the neighboring villagers
- High energy efficiency
- Short-term return on investment
- Possibility of excavation in tunnels up to 30 meters per day

PROFIT

Mining Method	Excavation Method	Cost\Metric Ton (US Dollar)	Profit (US Dollar)
Underground Mining	Traditional	4	330,000
	Plasma Technology	2.6	

Note: All the costs are based on Iranian mine's average production.
 The extraction cost of each cubic meter of ore by using the plasma method is about 30% to 70% cheaper than the traditional method which using explosives.

VALUE-ADDED BASED ON INCREASING PRODUCTION VALUE

Mining Method	Excavation Method	Annual Excavation (Million Tons)
Underground Mining	Traditional (lead ore)	0.05
	Plasma Technology (lead ore)	1

Note: All of the above data are based on Iran's production and sales price.
 The mining face advance rate is about 1 to 2 meters per day for custom methods, while it is up to 20 to 30 meters per day by the Plasma Blast Method.







Hydrogen-Carbon Derivatives Generator

PROPERTIES

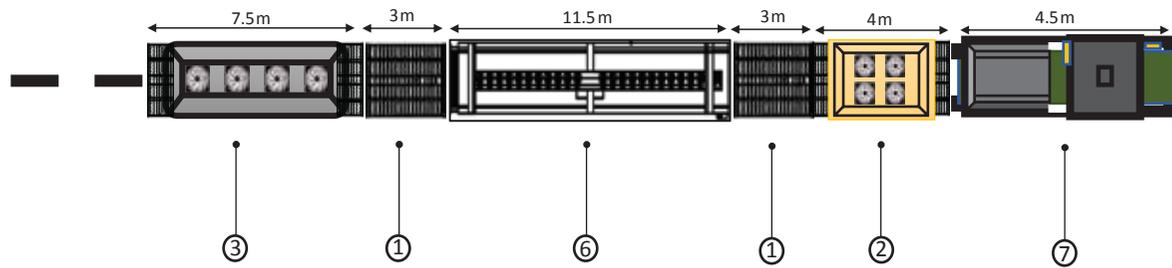
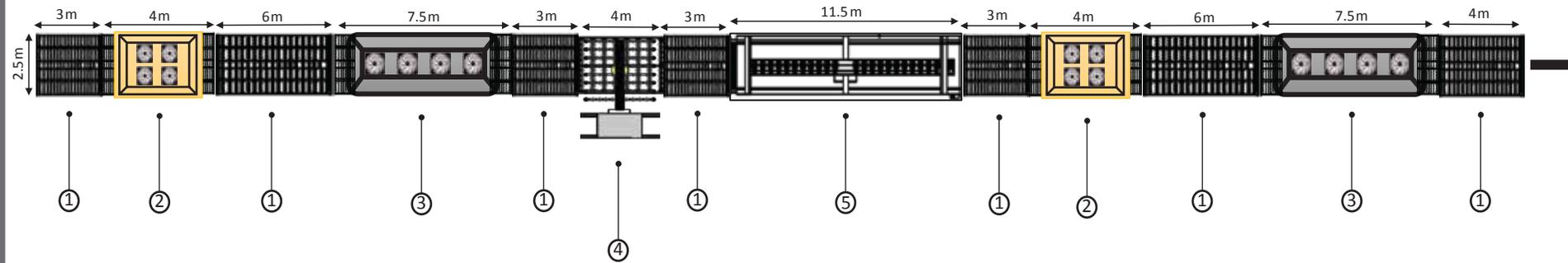
- Feedstock variability (Methane, Natural Gas, Biogas, Etc.)
- Diverse production capacity
- Production of green Hydrogen
- Production of high purity grade Hydrogen
- High value-Added Carbon derivatives production
- No greenhouse gases emission (Zero emission)

ADVANTAGES

- Low-Cost production of valuable materials
- One-pot-one-step production
- High value-added
- Simple production procedure
- Short time return on investment







Title	
1	Electric Table
2	Moisture Dryer
3	Resin Curing Furnace
4	Rotation Robot + Electric Table
5	Calibrating/ Pre-Polishing Machine
6	Line Polish Machine
7	Sorter and Scanner



Stone Processing Line

PROPERTIES

- 1-Slab placement electric table: slabs are placed on this table by transfer equipment or cranes.
- 2-Primary moisture dryer: due to the fact that the previous stage is the slab cutting section, it is necessary to remove moisture from the surface and inside of the stone.
- 3-Resin application and penetration electric table: in this step, the resin is applied to the stone and is penetrated into the texture and micro-cracks by a special Sam Hightech device.
- 4-Primary resin curing furnace: the applied resin to the back of the stone and mesh is completely cured and dried when passing through this machine.
- 5-Slab rotation robot: Slabs are rotated 180 degrees in order to apply resin to the surface of the stone.
- 6-Grinding (calibration): to optimize the consumption of resin and increase the quality of processing before applying resin to the surface of the stone.
- 7-Secondary moisture dryer: drying the stone moisture after calibrating to apply resin to the surface of the stone.
- 8-Secondary resin applying electric table: the process of applying and penetrating the resin to the surface of the stone.
- 9-Secondary resin curing furnace: for drying and curing the applied resin to the surface of the stone.
- 10-Minor repairing table: At this stage, the resin is applied to the parts of the stone that need to fettle (places emptied of resin).
- 11-Low power resin curing furnace: to cure the minor repaired parts.
- 12-Grinding and polishing stage: In this section, the final stage of grinding and polishing is done to polish the surface of the stone.
- 13-Final moisture dryer: to dry the moisture of the stone after polishing.
- 14- Scanning, sorting, and quality control of stone.

RETURN ON INVESTMENT OF THE STONE PROCESSING LINE

Line Type	Production Line Price (US Dollar)	Maximum Revenue (US Dollar)	Minimum ROI Duration (Days)	Minimum Revenue (US Dollar)	Maximum Revenue (Days)
Simple Line	335,000.00	2,323,750	50	761,900	148
Professional Line	650,000.00	3,149,200	73	1,425,400	162

- The simple line includes a moisture dryer, a resin curing furnace, and a sorter machine.
- The professional line includes 2 moisture dryers for the back and front, 2 resin curing furnaces for the back and front, and a sorter machine.







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1988-1993

Stone Moisture Dryer



**Tile, Slab And Stone
Block Moisture Dryer**

PROPERTIES

- Small dimensions of the device compared to competing models
- High processing speed Continuity of the process
- Optimal energy consumption
- The ability to identify the presence and absence of the load
- Can be installed on the factory production line
- Up to 20% energy saving
- No destructive damage to the original texture of the stone
- No need to move the stone from the production line
- Ability to immediately apply resin after the process is finished
- Can be designed and manufactured for all dimensions and types of stone and even tile
- Operation only with electricity consumption

ADVANTAGES

- This machine dries the surface and inside of the stone up to 97% by using electromechanical radiation and without raising the temperature of the stone (range of 40 degrees Celsius).
- Considering that the radiation is in the frequency range of the Hydrogen-Carbon bond in the water molecules, this method will not have any destructive effect on the stone texture.
- The high speed of stone drying (2 to 3 minutes) is one of the significant advantages of this machine, which is done continuously and can be adjusted on the speed of the line transfer rate.

ECONOMIC FEASIBILITY OF TILE, SLAB, AND STONE BLOCK MOISTURE DRYER

Parameter	Total Frugality And Profit (US Dollar/Year)
Reduction Of Energy Consumption	(300)
Minimum Increase In Production	350,000
Reduction Of Personnel	9,500
Reducing Waste	9,500
Reducing The Required Space	9,500 (At Startup)
Total Frugality (Exclude Requirement Space Reduction)	369,000 + (9,500)

- In the traditional method, 100 liters of methane gas are consumed per square meter of stones.
- In the SAM method, 200 watts of electrical power are consumed per square meter.
- The annual production rate of the traditional method is 150,000 square meters with 80 slabs per day.
- The minimum amount of increase in annual production rate is considered as 5% which is equal to 7,500 m²







Resin Penetrator Machine



Resin Penetrator Machine

PROPERTIES

- Penetration of resin deep into the stone cracks in less than a minute
- Single-phase 220V input and Low power consumption
- Easy operation
- Can be used for diverse resins and can be applied to all types of stones
- Can be used for slabs and tiles
- Ability to install on the production line and crane

ADVANTAGES

- Full penetration of the resin into the depth of the cracks
- Helping resin to cure better
- Reducing resin consumption and waste

RESIN PENETRATOR MACHINE TECHNICAL INFORMATION

Penetrator Machine Type	Model Number	Power Input	Power Consumption	Net Effective Earea	Penetration Area (Based on stone type)
Portable Resin Penetrator	PRP_SAM_1600	220 V 50 Hz	1600 w/hr	50*4 cm ²	2-4 cm/30 s
Online Resin Penetrator	SRP_SAM_8000	220 V 50 Hz	8 Kw/hr	220*4 cm ²	2-4 cm/30 s







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Immobile Resin Curing Furnace



Immobile Resin Curing Furnace

PROPERTIES

- Curing speed of 3 to 5 minutes
- Increased production speed compared to conventional methods
- Increased quality of epoxy and polyester resins
- Ability to adjust the intensity of radiation according to the stone material
- No production of VOC gas (environmentally friendly)
- Curing of colored resins
- Suitable for use on both the front and back sides of the stone
- Not affected by weather conditions
- No need for conveyor belts
- Applicable to various slab thicknesses
- Suitable for stone slabs on transport trolley

Advantages

- Increased factory production speed
- Reduced stone waste
- Improved resin physical strength
- Reduced space required for the resin process
- Reduced labor costs
- Reduced resin consumption

ECONOMIC JUSTIFICATION FOR IMMOBILE RESIN CURING FURNACE

The table assumes the daily production of 350 square meters of stone

Title	Saving rate (US dollar/year)	Ratio to the furnace price	ROI
Saving from the reduction of stone and Consumables losses	10,000	%10	10 Years
Consumption of mastic instead of epoxy	90,000	%90	1.1 Year
Reduction in current expenses and reduction in space requirements	50,000	%50	2 Years
Total saving	150,000	%150	~ 7 Months







Online Resin Curing Furnace



SAM



**Online Resin Curing
Furnace**

PROPERTIES

- Input Power: 380 V, 50 Hz.
- Maximum Power Consumption: 20 KW
- Process Speed: Adjusted to the production line
- Dimensions: Proportional to the production line
- Continuous Operation: Possible on the production line
- Adjustability: Radiation intensity and temperature
- Emission: No production of VOC gas (Environmentally friendly).
- Compatibility: Suitable for use with colored resins, slab and tile.

ADVANTAGES

- Increased factory production capacity.
- Enhanced mechanical resistance of epoxy and polyester resins.
- Reduced waste of stone and resin.
- Improved adhesion, particularly in cracks.
- Immediate post-curing stone polish ability.
- Reduced time and space required for resin processing.
- Decreased labor costs.
- Lower consumption of resin

ECONOMIC JUSTIFICATION FOR ONLINE RESIN CURING FURNACE

The table assumes the daily production of 350 square meters of stone

Title	Saving rate (US dollar/year)	Ratio to the furnace price	ROI
Saving from the reduction of stone and Consumables losses	13,500	%16.5	6 Years
Consumption of mastic instead of epoxy	40,000	%50	2 Year
Reduction in current expenses and reduction in space requirements	50,000	%62	1.6 Years
Total saving	103,500	%128	~ 8 Months







STONE SORTER

**Natural Stone
Sorter/Scanner And
QC Machine**



PROPERTIES

- Image processing by AI
- Accurate sorting
- Ability to install at the production line
- Quality control (cracks, inappropriate polish, chipped corners, exact dimension, and right angle)
- Classification based on exact color (HSL color system) and vein of stone
- The natural color of the stone

ADVANTAGES

- Standardization in classification
- Increase sorting speed up to 1200 m²/day
- Eliminate environmental effects on sorting
- Eliminate personalization in the sorting process
- High repeatability
- Low statistical error
- High accuracy

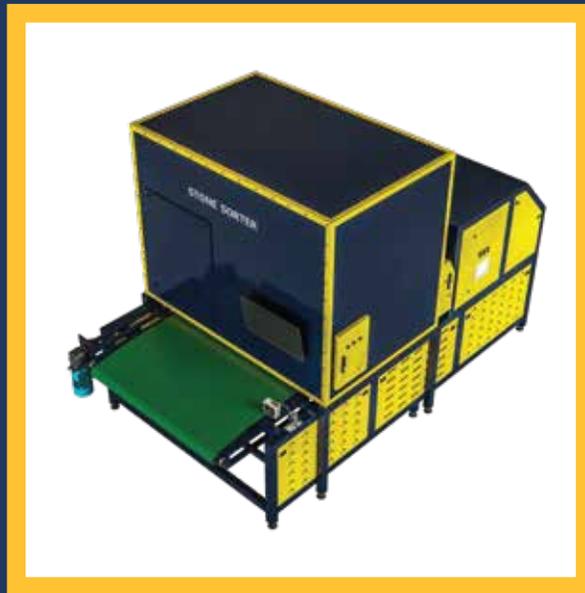
ECONOMIC FEASIBILITY OF NATURAL STONE SORTER/SCANNER AND QC MACHINE

This economic feasibility assumes stone price by approximately \$10/m² and sorting speed of 1 m²/minute in 8 hours working per day. Also, the tile sorter price is considered \$85,000.

Annual Excess Value-Added	Excess Value-Added (US Dollar/m ²)	Sorted Stone Price (US Dollar/m ²)	Excess Value-Added By Percent
150,000	1	11	10%
375,000	2.5	12.5	25%
750,000	5	15	50%
1,500,000	10	20	100%

Note: All of the above value-added depends on stone type and its market. The sorting process can increase the price of the stone from 10% to 100%.





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