



ARIANA SANAT  
ZAFARAN CO.

Sulphur Solidification  
Sulphur Coated Urea (SCU)  
Bulk Material Handling  
Pitch / Bitumen

ARIANA SANAT  
ZAFARAN CO.

[www.asz.ir](http://www.asz.ir)  
[www.sulf.ir](http://www.sulf.ir)

Bulk Material Handling, Storage and Reclaiming System

Sulphur Solidification  
& Forming Technology

Pitch / Bitumen Flaker

Sulphur Coated Urea (SCU) Plant

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# THE COMPANY

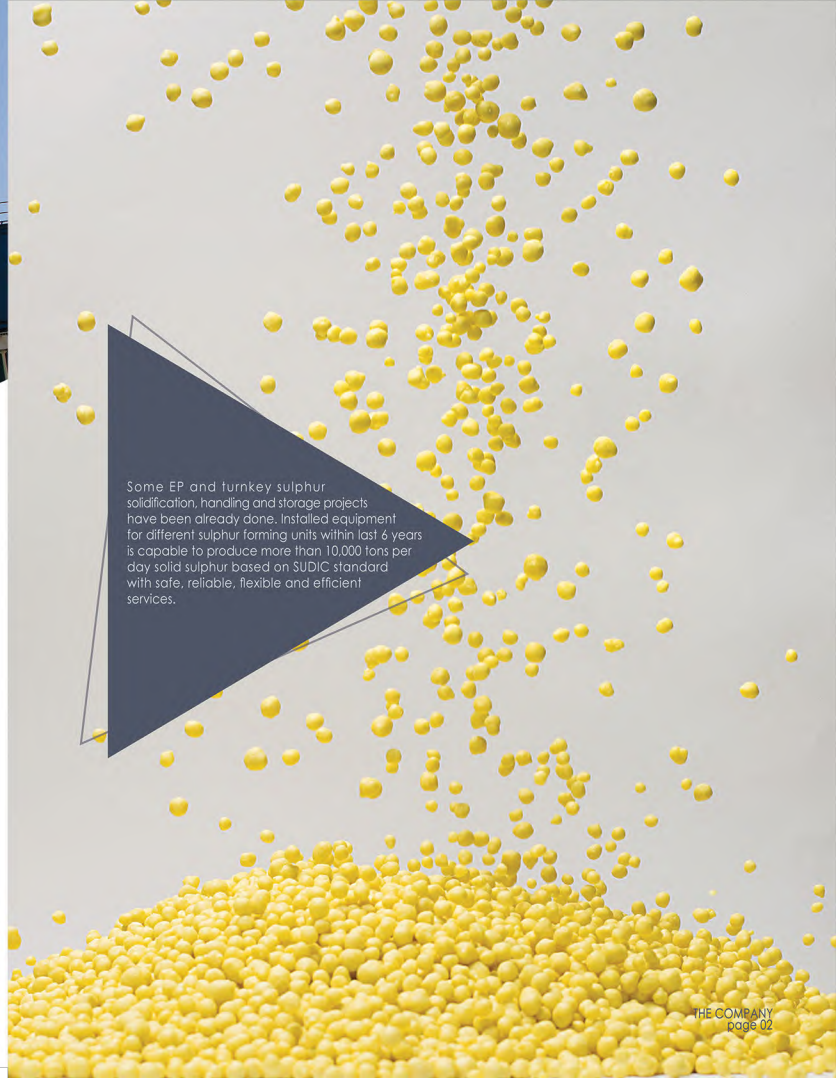


While we have several years of experience to hand over different Projects to the End-users of oil and gas refinery and also petrochemical plants, ARIANA Sanat Zafaran Co. is providing turnkey solutions to Client for Sulphur/Sulphur solidification and forming (Granulation & Pastillation) and also fertilizer plants (Sulphur Coated Urea and Sulphur Bentonite Plants) as well as bulk material handling (Conveyor, Bucket Elevator, Stackers, Tripper Car, Reclaimer, etc.) and storage (Silo, stack yard, etc.) units of oil and gas refinery. In addition, it would be our pleasure to provide these technologies to petrochemical plants as well as mine plants, too.

## ARIANA SANAT ZAFARAN CO.

is a specialist company in sulphur solidification and forming (granulation & pastillation), sulphur fertilizer units such as sulphur coated urea (SCU) plant as well as sulphur bentonite plant and also handling and storage unit of oil and gas refinery as well as mine and industrial plants. They have a broad experience to supply complete sulphur forming packages for oil and gas refineries and petrochemical complex.

**ARIANA SANAT  
ZAFARAN CO.**



Some EP and turnkey sulphur solidification, handling and storage projects have been already done. Installed equipment for different sulphur forming units within last 6 years is capable to produce more than 10,000 tons per day solid sulphur based on SUDIC standard with safe, reliable, flexible and efficient services.



# SULPHUR SOLIDIFICATION

## Sulphur Solidification

Sulphur is extracted as  $H_2S$  gas along with crude oil and gas from underground reserves, and is produced as a by product in hydrocarbon refineries.

Increased extraction of oil and gas and new efforts to decrease the occurrence of acid rain by separating sulphur from fossil fuels have resulted in an increase in sulphur production around the world.

As sulphur is produced in larger quantities, storage and handling costs can oftentimes exceed the actual value of the product itself. It's no surprise that sulphur producers are always looking for better and more efficient methods to store and transport this product.

## Transporting Solid Sulphur

In this method, sulphur is solidified before it is transported which makes the distance between production plant and destination of no concern.

Studies show that solidified sulphur goes through 10 to 15 steps such as loading, transport, unloading, storage, etc before it reaches its final destination. Solidified sulphur must be able to conserve its physical and chemical properties all steps involved in transport.

**"Executing turnkey project  
in sulphur field is our  
main prospect"**

## Transporting Molten Sulphur

Sulphur is produced in molten form at approximately  $140^{\circ}C$  in refineries. Where the transport distance is not long, molten sulphur can be transported through pipelines or inside insulated containers. The advantage of this method is that there is no need to solidify the sulphur in a refinery, and subsequently remelt it at the destination, reducing cost and energy consumption.

However, since sulphur often needs to be transported to far destinations this method is not practical in most cases.



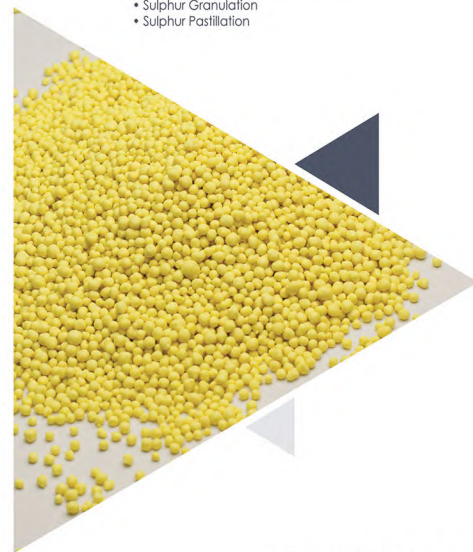
## Sulphur Solidification Methods

There have been at least five different methods to solidify liquid sulphur used in the past, most of which have now been abandoned because of either low quality of the resulting product or the high cost of solidification processing or equipment maintenance.

There are two remaining methods for sulphur solidification that are still in use today:

- Sulphur Granulation
- Sulphur Pastillation

**"We are Expert  
in Transforming  
Liquid to Solid"**



## Sulphur Granulation

This is the most common method of sulphur solidification. In this method, solid sulphur particles or seeds are coated with molten sulphur as they move through a rotating drum. With every added coat of molten sulphur the particles increase in size and weight until they finally reach a desired diameter.

## Sulphur Granulation

An important aspect of this technique is the ability to achieve high production capacity by just a single-unit granulator.

Available types of granulation drum based on capacity are 15 T/hr and 30 T/hr, respectively.

Production capacity of a single unit and reliability of this method are higher than other sulphur solidification methods. Furthermore, CAPEX and OPEX are also lower.

ARIANA SANAT ZAFARAN CO. sulphur granulation units can be used either as single-unit or multiple-units operating in parallel. These granulators are easy to repair and have low maintenance costs compared to similar equipment.

The productions of these units meet international standards and specifications, and have highly desirable physical and chemical properties, some advantageous of granulators are listed in below.

The low energy consumption of these granulators and their full compliance with all environmental standards make them a superior choice.

Such advantages have compelled sulphur manufacturers to increasingly use this approach, making it the most common method of sulphur solidification used today.

**Range of production for  
a common single-unit  
granulator is between  
360 T/d to 720 T/d**



## Granulation Process



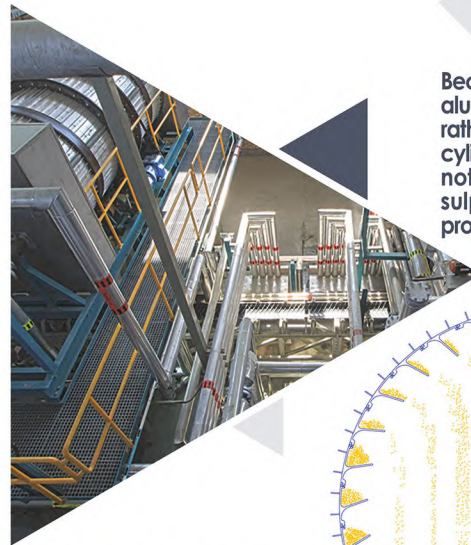
Water sprays inside the drum constantly cool the sulphur granules. The hot temperature inside the drum (in excess of 100 °C) is due to the heat emitted from the sulphur granules, which vaporizes the sprayed water and exits the drum through fans. In this way, the fans ultimately control the temperature of the air inside the drum as well as removing vaporized water. The vaporized air that exhaust the drum also carries a small amount of sulphur dust. A dry cyclone filter then separates these particles and recovers them for incorporation into new granules.

## Inside view of Granulation Drum, During Manufacturing

Liquid sulphur gets stored in a special tank after degasification and is then pumped through a 250-micron filter into a granulator.

A granulator unit consists of a horizontally rotating drum which is sloped toward the bottom. Liquid sulphur is sprayed through nozzles mounted on the header of the drum.

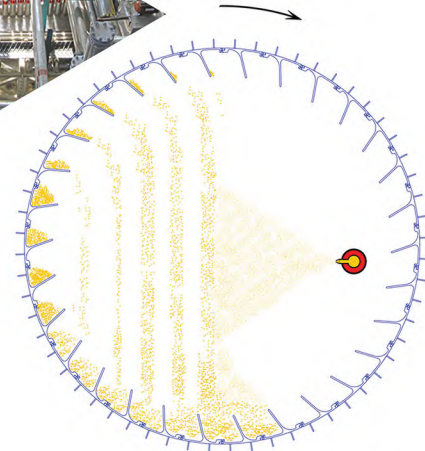
Inside the drum there are many sulphur particles or seeds (less than one millimeter in diameter) which are raised through blades inside the drum and then dropped from the top of the drum. The raising and falling cycle is repeated constantly creating a curtain of sulphur seeds inside the drum.



Because of using extruded aluminum profile (AL6061) rather than welded SS cylinder, Welding joints are not come in contact with sulphur and relevant problems are eliminated

Molten sulphur is sprayed directly on this curtain and every time that a falling seed passes in front of the spray a layer of molten sulphur it is deposited on its surface.

The layer then cools and solidifies while the cycle starts again. The cycle repeats until the seeds grow to a size of 2-6 mm at the time of exiting from the drum.



# Granular Sulphur

## Characteristics of Sulphur Granules

• Shape:	Spherical granules
• Size:	2 - 6 mm diameter
• Color:	Bright yellow
• Angle of repose:	25°
• Dust:	Less than 0.5% (wt)
• Bulk density:	Loose: >1040 kg/m <sup>3</sup> Agitated: >1200 kg/m <sup>3</sup>

• Standard:	Meet SUDIC specification
• Friability:	Less than 2% SUDIC standard II
• Purity:	High purity (as received)
• Moisture:	Less than 0.5% (wt)
• Low dust or flake generation during transport	
• Easy to re-melt	
• Stable chemical and physical forms	
• Low acidity	

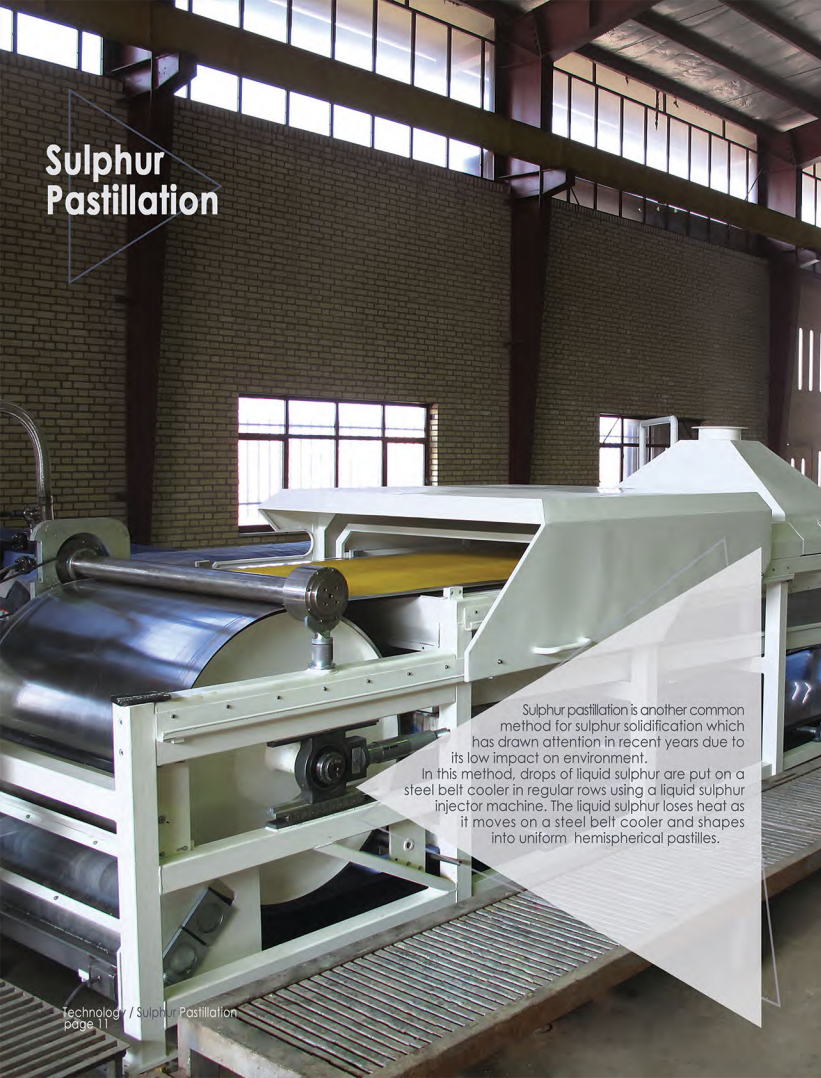
## Key Features of Sulphur Granulators

• Capacity:	15 T/hr	30 T/hr
• Dimension:	H:4500 W:3500 L:7000 (mm)	H:9500 W:6500 L:42000 (mm)
• Weight:	13500 kg	26000 kg
• Electricity :	40 KW	120 KW
• Steam:	200 kg/h (3.5 bar g)	400 kg/h (3.5 bar g)
• Water:	450 Liter per hour	900 Liter per hour

- Easy start and shutdown
- Easy to operate
- Low maintenance
- Minimal spare part requirements
- Small plant footprint
- Allows increase in plant capacity by integrating additional units



# Sulphur Pastillation



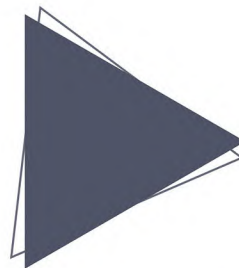
Sulphur pastillation is another common method for sulphur solidification which has drawn attention in recent years due to its low impact on environment. In this method, drops of liquid sulphur are put on a steel belt cooler in regular rows using a liquid sulphur injector machine. The liquid sulphur loses heat as it moves on a steel belt cooler and shapes into uniform hemispherical pastilles.

Since water and sulphur do not come in contact in this method, this approach poses the least risk to the environment. Its relatively easy setup and ability to produce high quality end product have made this approach popular. Another advantage of this approach is that the same equipment and technology can be used to produce other products such as Sulphur Bentonite and sulphur urea beside sulphur pastilles.

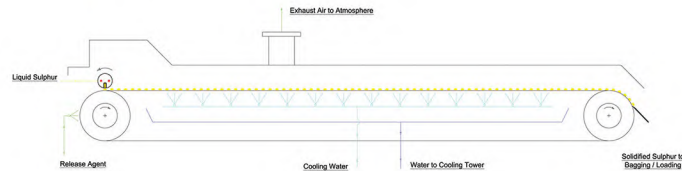
Some sulphur solidification plants which use ARIANA SANAT ZAFARAN CO. pastillators can produce either Sulphur, or Sulphur Bentonite, or sulphur urea pastilles based on market demand. This accounts for increasing interest in sulphur pastillation in production plants around the world.



ARIANA SANAT ZAFARAN co. pastillators have a capacity of 120 tons per day and their modular design allows them to be integrated together to achieve high production capacities when needed. This allows a plant to continue production even when one of the units is not operational, while making it easy to setup production plants fast and at low costs.



**“Easy installation and operation of pastillator and steel belt cooler”**





**Uniform Shape  
& No Moisture**

## Pastillation Process

After degasification liquid sulphur gets stored in a special tank and is then pumped through a 300-micron filter into a pastillator. ASZCO's pastillators are consisted of three main parts, a feeding bar and a rotor which are the non-moving parts, and a stator which revolves around them.

Liquid sulphur enters the feeding bar and gets injected on a moving steel belt cooler through the holes on perforated rotor.

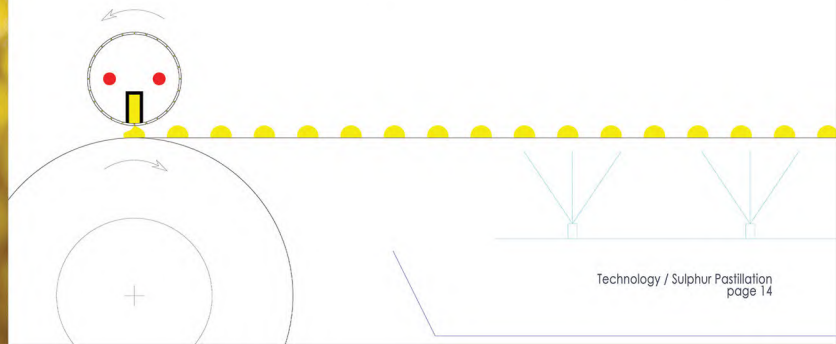
Synchronizing steel belt cooler's speed with that of rotor is one of the most important factors affecting the shape of pastilles and needs to be set precisely at production time to achieve a uniform shape. The injected sulphur which is deposited on the steel belt cooler forms a hemispherical shape as it moves on the belt. During this time sulphur cools off and solidifies by the cooling water which is sprayed from underneath at the belt. The water absorbs the heat from molten sulphur and then goes to the cooling tower to lose the heat and return to water tank. Based on climate and temperature at the production plant there might be need for a chiller in addition to cooling tower.



Regardless of how water is cooled, it never comes into contact with sulphur in this method.

Solidified sulphur would have an approximate temperature of 60°C at the end of steel belt when it gets cut off from the belt by a blade and transported by a conveyor to storage unit. To avoid sticking of molten sulphur to the surface of belt a thin layer of a release agent is applied on the belt.

This not only helps pastillated sulphur to be removed easily from belt, it also improves the shape of pastilles. The air conditioning system installed above the cooling belt stops sulphur gases from spreading into the air.





## Sulphur Bentonite Pastillation

Sulphur bentonite is widely used all around the world as a fertilizer. Chemical composition of sulphur bentonite fertilizer contains valuable substances and it is scatters in the soil while fertilizer disintegrates. It shall be emphasized that sulphur bentonite not only used to neutralize soils but also increase efficiency of farm irrigation.

Overall configuration of sulphur bentonite plant is similar to sulphur pastillation plant except some changes as follow. Steel belt cooler and pastillator which is used to produce sulphur bentonite pastillation process is same as sulphur pastillation except some changes in pastillator process so as to adopt technology to produce high quality sulphur bentonite. Furthermore, some equipment shall be considered at early stage by comparing to sulphur solidification process such as sulphur and bentonite mixing tank, agitator, etc. In addition, there is no major changes about physical properties such as size, angle of repose, etc. between pastille sulphur and sulphur bentonite.

ARIANA SANAT ZAFARAN CO. has broad experience to manufacture required facilities for sulphur bentonite plant as well as sales sulphur bentonite to different customer all around the world. for instance, Germany, Turkey, India, etc.



**"A unique technology  
of pastillator to produce  
sulphur bentonite is also  
available"**

## Disintegration of sulphur bentonite by water



**DRY SB**



**After 1 hour**



**After 2 hour**



**After 8 hour**



**After 16 hour**



**After 23 hour**



**"Nice Bed  
Great Growth"**

## Sulphur Pastillation

### Key Features of Sulphur Pastillation

- Utility Consumption:

Electricity:	20 kw
Steam:	30 kg/h (3.5bar g)
Water:	No Water consumption
- No plant footprint
- Allows increase in plant capacity by integrating additional units
- Capability to produce elemental solid sulphur and other products such as sulphur bentonite & sulphur urea

- Capacity: 4 - 5 T/h
- Dimension: H : 1700 W:2000 L: 13000 (mm)
- Weight : 5,500 kg
- Easy start and shutdown
- Easy to operate
- Low maintenance
- Minimal spare part requirements
- Cooling water does not come in contact with Sulphur
- No air or water pollution
- Re-use of water

## South Pars Gas Field Development - PH 17&18 (before Commissioning)

### Characteristics of Sulphur Pastilles

- Shape: Hemispherical granules
- Size: 4 mm dia. 2 mm Height
- Color: Bright yellow
- Angle of repose: 29°
- Dust: Less than 0.4% (wt)
- Bulk density :

Loose:	>1200 kg/m <sup>3</sup>
Agitated:	>1340 kg/m <sup>3</sup>

- Standard: Meet SUDIC specification
- Low dust or flake generation during transport
- Friability: Less than 2% SUDIC standard II
- Purity: High purity (as received)
- Moisture: Less than 0.05% (wt)
- Easy to re-melt
- Stable chemical and physical forms
- Low acidity
- Uniform size and shape





**ARIaNA SANAT**  
**ZAFARAN CO.**

## Material Handling, Storage and Reclaiming System

ARIaNA SANAT ZAFARAN CO. provides all equipment and services related to Air Conveyor, Material Handling, Storage Silo, Homogenizing Silo, packing and reclaiming system used in Petrochemical and Mine plants, including:



- \* Bulk solid sulphur Handling
  - Air conveyor
  - Belt conveyor
  - Bucket elevator
  - Inclined conveyor
- \* Steel belt cooler conveyor
- \* Homogenizing Package of HDPE
- \* Storage silo
- \* Truck loading system
- \* Stacker
- \* Two arm portal reclaimers
- \* Vibration screener
- \* Crusher
- \* Diverging gates

## Sulphur Bentonite Solidification Package



### Equipment:

- Steel belt cooler
- Pastillator machine
- Sulphur remelting tank
- Mixer vessel
- Surge vessel
- Liquid sulphur filter and pump group
- Liquid sulphur transfer pump group
- Cooling tower
- Solidified sulphur Bentonite bucket belt conveyor
- Bentonite screw conveyor
- Steam generator boilers
- Lump sulphur Bentonite bucket belt conveyor
- Storage silos (product and bentonite),
- Controlling systems and associated instruments
- MCC and switchgear
- 25 kg packing system
- 1,000 kg packaging system



## Sulphur Bentonite Solidification Package

Capacity: 120 tonnes per day  
Method: Pastillation  
Delivery date: 2006  
Status: Completed



Location: Eshtehard  
Feed: Liquid sulphur from re-melting tank  
Product: Sulphur bentonite fertilizer  
Number of trains: 1  
Train capacity: 5 tonnes per hour  
Storage: 50 tonnes silo  
Handling: Rubber belt conveyor



## TEHRAN OIL REFINERY

Sulphur Solidification,  
Handling and  
Storage Unit

Capacity :	720 tonnes per day
Method:	Granulation
Client:	Ehsan J.V. (OD&CC, IGC, D&I)
Delivery date:	2011
Status:	Completed
Location:	Tehran - Iran
Feed:	Liquid sulphur from SRU plant
Product:	Granule (spherical shape)
Number of trains:	2 (AZG15)
Train capacity:	15 tonnes per hour / 360 tonnes per day
Storage:	2 X 250 tonnes = 500 ton silo
Handling:	Rubber belt conveyor
Equipment:	<ul style="list-style-type: none"><li>• Granulator drum</li><li>• Dry steam jacketed cyclone filter</li><li>• Exhaust fan</li><li>• Sulphur buffer tank</li><li>• Liquid sulphur filter and pump group</li><li>• Liquid sulphur transfer pump group</li><li>• Rubber belt conveyor</li><li>• Storage silo</li><li>• Process water tank &amp; pump group</li><li>• Pre-fabricated piping and jacketed piping</li><li>• UCP/PLC control system &amp; instrument</li><li>• VFD and switchgear</li><li>• Electrical (Lighting, Earthing and Cabling)</li></ul>





## South Pars Gas Field Development - PH12

Sulphur Solidification, Handling and Storage Unit

Capacity: 2,250 tonnes per day  
 Method: Granulation  
 Client: Technimont / Petropars  
 Delivery date: 2013  
 Status: Completed  
 Location: Kangan - Iran  
 Feed: Liquid sulphur from SRU plant

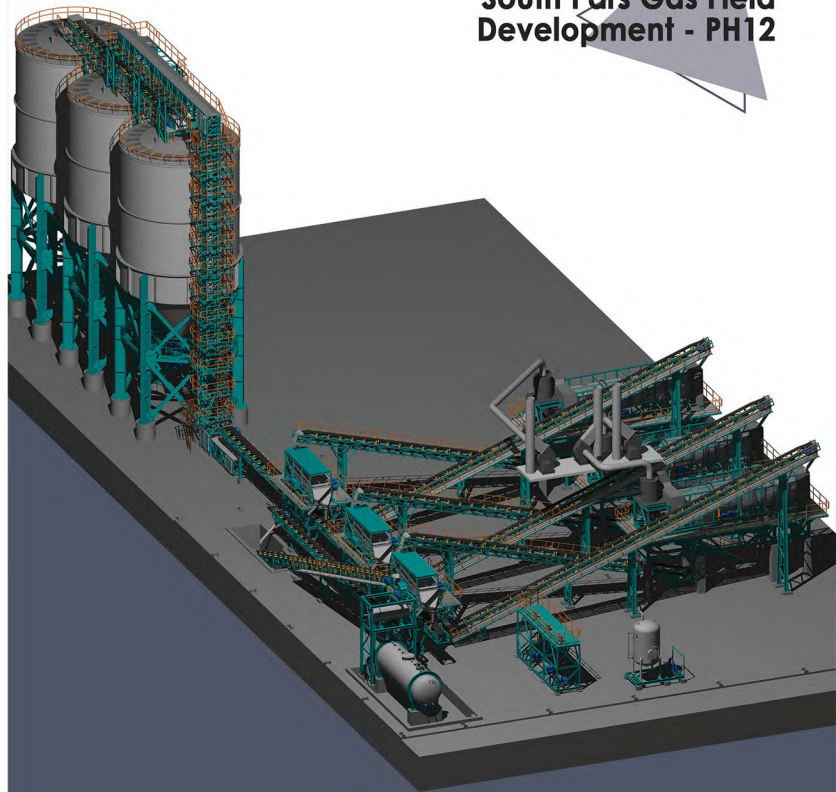
Product: Granule (spherical shape)  
 Number of trains: 3 (AZG30)  
 Train capacity: 30 tonnes per hour /  
 720 tonnes per day  
 Storage: 3 X 750 tonnes =  
 2,250 tonnes silo  
 Handling: Rubber belt conveyor  
 and bucket elevator

### Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter
- Exhaust fan
- Sulphur buffer tank
- Liquid sulphur filter and pump group
- Rubber belt conveyor & bucket elevator
- Vibration screener
- Sulphur re-melter package
- Storage silo & telescopic chute
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and LCS



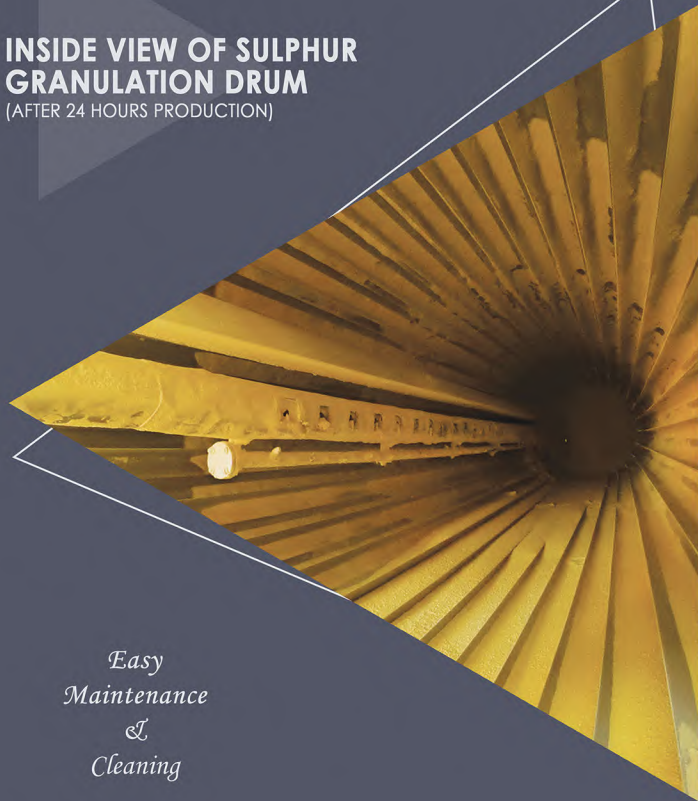
## South Pars Gas Field Development - PH12



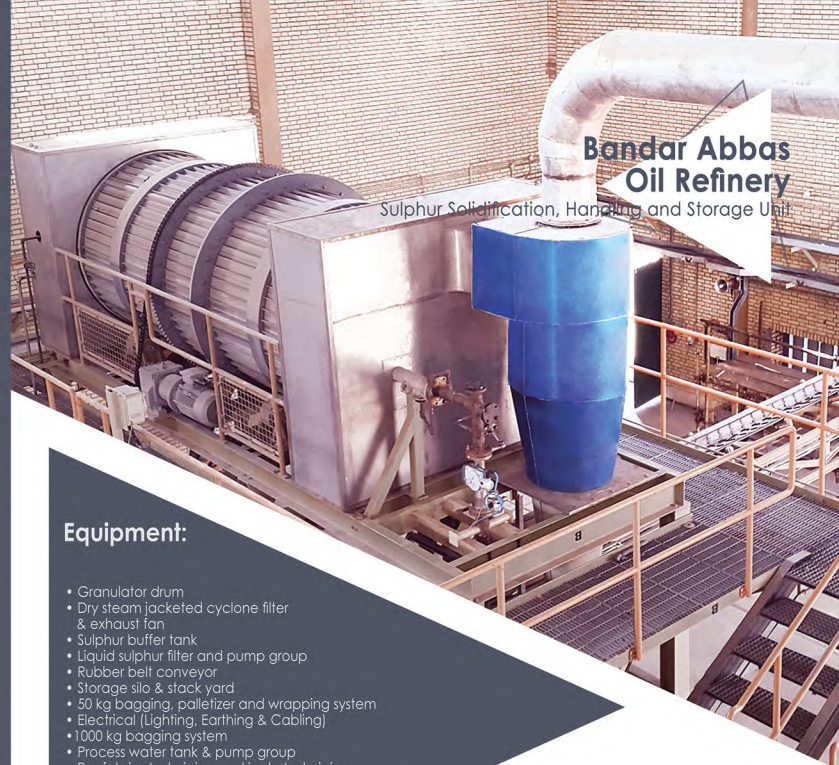


## INSIDE VIEW OF SULPHUR GRANULATION DRUM

(AFTER 24 HOURS PRODUCTION)



*Easy  
Maintenance  
&  
Cleaning*



## Bandar Abbas Oil Refinery

Sulphur Solidification, Handling and Storage Unit

### Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter & exhaust fan
- Sulphur buffer tank
- Liquid sulphur filter and pump group
- Rubber belt conveyor
- Storage silo & stack yard
- 50 kg bagging, palletizer and wrapping system
- Electrical (Lighting, Earthing & Cabling)
- 1000 kg bagging system
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and switchgear

Capacity : 720 tonnes per day  
Method: Granulation  
Client: PIDECC  
Delivery date: 2013  
Status: Completed  
Feed: Liquid sulphur from SRU plant  
Location: Bandar Abbas - Iran

Product: Granule (spherical shape)  
Number of trains: 2 (AZG15)  
Train capacity: 15 tonnes per hour  
/ 360 tonnes per day  
Storage: 3 X 350 ton = 1,050 ton silo  
and stack yard for 1,700 ton  
Handling: Rubber belt conveyor

## South Pars Gas Field Development - PH 19

Sulphur Solidification, Handling and Storage Unit

Capacity : 1,440 tonnes per day

Method: Granulation

Client: Petro Pars Iran

Delivery date: 2014

Status: Completed  
and in operation

Location: Tombak - Iran

Feed: Liquid sulphur  
from SRUplant

Product: Granule (spherical shape)

Number of trains: 2 (AZG30)

Train capacity: 30 tonnes per hour  
/ 720 tonnes per day

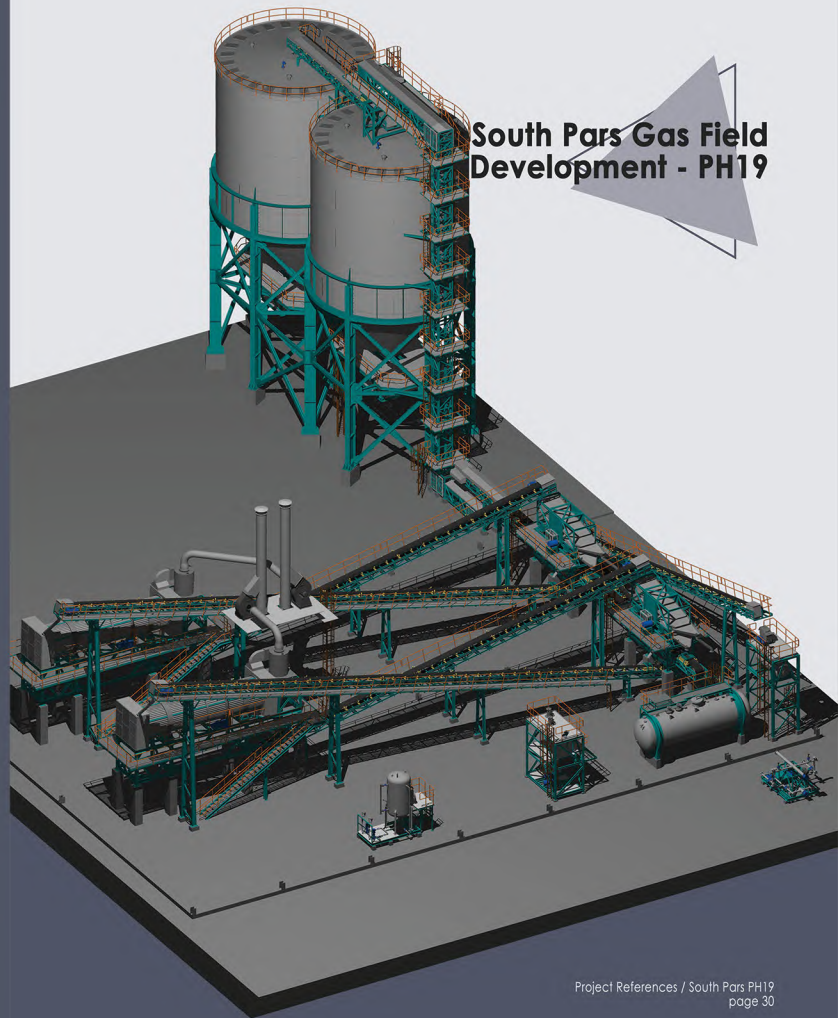
Storage: 2 X 1,100 Ton = 2,200 Ton Silo

Handling: Rubber belt conveyor and bucket elevator

### Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter & exhaust fan
- Sulphur buffer tank
- Liquid sulphur filter and pump group
- Liquid sulphur transfer pump group
- Rubber belt conveyor & bucket elevator
- Vibration screener
- Sulphur re-melter package
- Storage silo & telescopic chute
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and VFD panel

## South Pars Gas Field Development - PH19







## South Pars Gas Field Development - PH 19

Sulphur Solidification, Handling  
and Storage Units



## South Pars Gas Field Development - PH 17&18

Sulphur Solidification, Handling and Storage Unit

Capacity : 800 tonnes per day

Method: Pastillation

Client: Industrial Projects Management  
of Iran (IPMI)

Delivery date: 2015

### Equipment:

- Steel belt cooler
- Pastillator machine
- Exhaust fan
- Liquid sulphur filter and pump group
- Rubber belt conveyor & bucket elevator
- Sulphur drain tank and transfer pump
- Storage silo & telescopic chute
- Cooling water pit & pump group
- Liquid sulphur cooler package
- Release agent applicator and vessel
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and LCS

Status: Completed and in operation

Location: Assaluyeh - Iran

Feed: Liquid sulphur from SRU plant

Product: Pastillation (hemispherical shape)

Number of trains: 2 (AZP5)

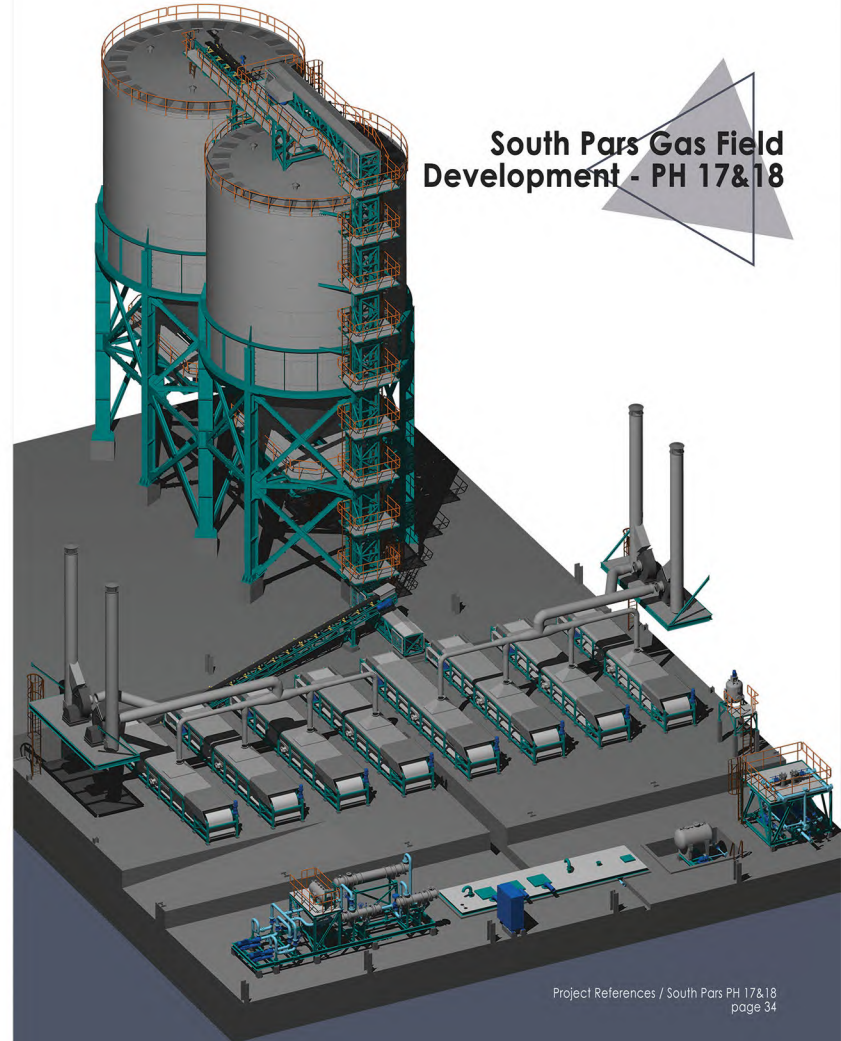
Train capacity: 5 tonnes per hour

/ 120 tonnes per day

Storage: 2 X 1,100 tonnes = 2,200 tonnes silo

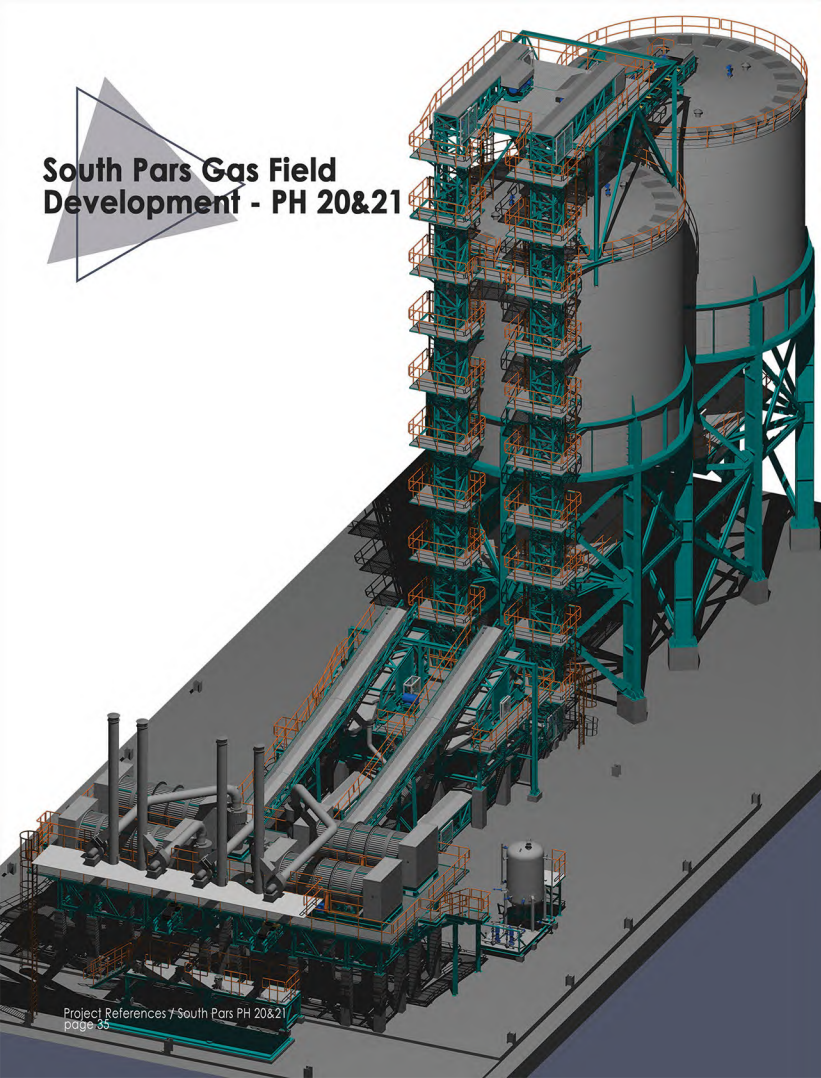
Handling: Rubber belt conveyor and bucket elevator

## South Pars Gas Field Development - PH 17&18





## South Pars Gas Field Development - PH 20&21



## South Pars Gas Field Development - PH 20&21

Sulphur Solidification, Handling and  
Storage Unit



### Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter
- Exhaust fan
- Sulphur buffer pit
- Liquid sulphur filter and pump group
- Rubber belt conveyor
- Bucket elevator
- Vibration screener
- Sulphur re-melter package
- Storage silo & telescopic chute
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument

Capacity : 1,440 tonnes per day  
Method: Granulation  
Client: Oil Industries Engineering  
and Construction (OIEC)  
Delivery date: 2017  
Status: Completed and in operation  
Feed: Liquid sulphur from SRU plant  
Location: Assaluyeh - Iran

Product: Granule (spherical shape)  
Number of trains: 4 (AZG15)  
Train capacity: 15 tonnes per hour  
/360 tonnes per day  
Storage: 2 X 1,100 ton = 2,200 ton silo  
Handling: Rubber belt conveyor  
and bucket elevator



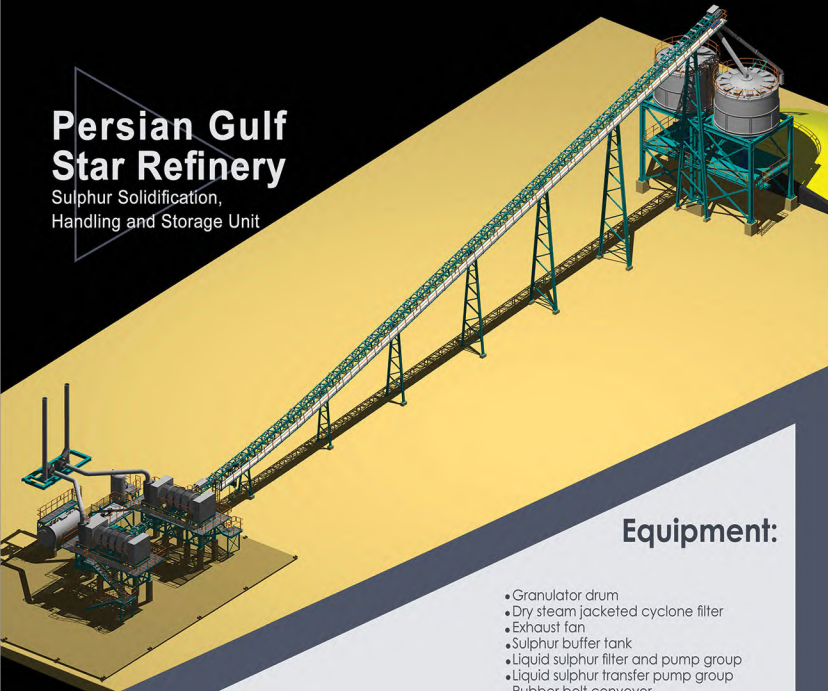
# South Pars Gas Field Development - PH 20&21

Sulphur Solidification Unit



# Persian Gulf Star Refinery

Sulphur Solidification,  
Handling and Storage Unit



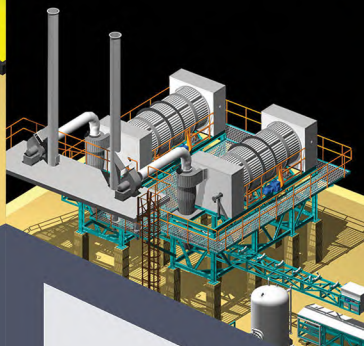
## Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter
- Exhaust fan
- Sulphur buffer tank
- Liquid sulphur filter and pump group
- Liquid sulphur transfer pump group
- Rubber belt conveyor
- Storage silo & stack yard
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and switchgear

Capacity : 720 tonnes per day  
Method: Granulation  
Client: Nardis / Persian Gulf Star Company  
Delivery date: 2020  
Status: Under construction  
Location: Bandar Abbas - Iran  
Feed: Liquid sulphur from SRU plant  
Product: Granule (spherical shape)  
Number of trains: 2 (AZG15)  
Train capacity: 15 tonnes per hour / 360 tonnes per day  
Storage: 2 X 128 ton = 256 ton silo and stack yard for 4000 ton  
Handling: Rubber belt conveyor

# Bushehr Petrochemical Company

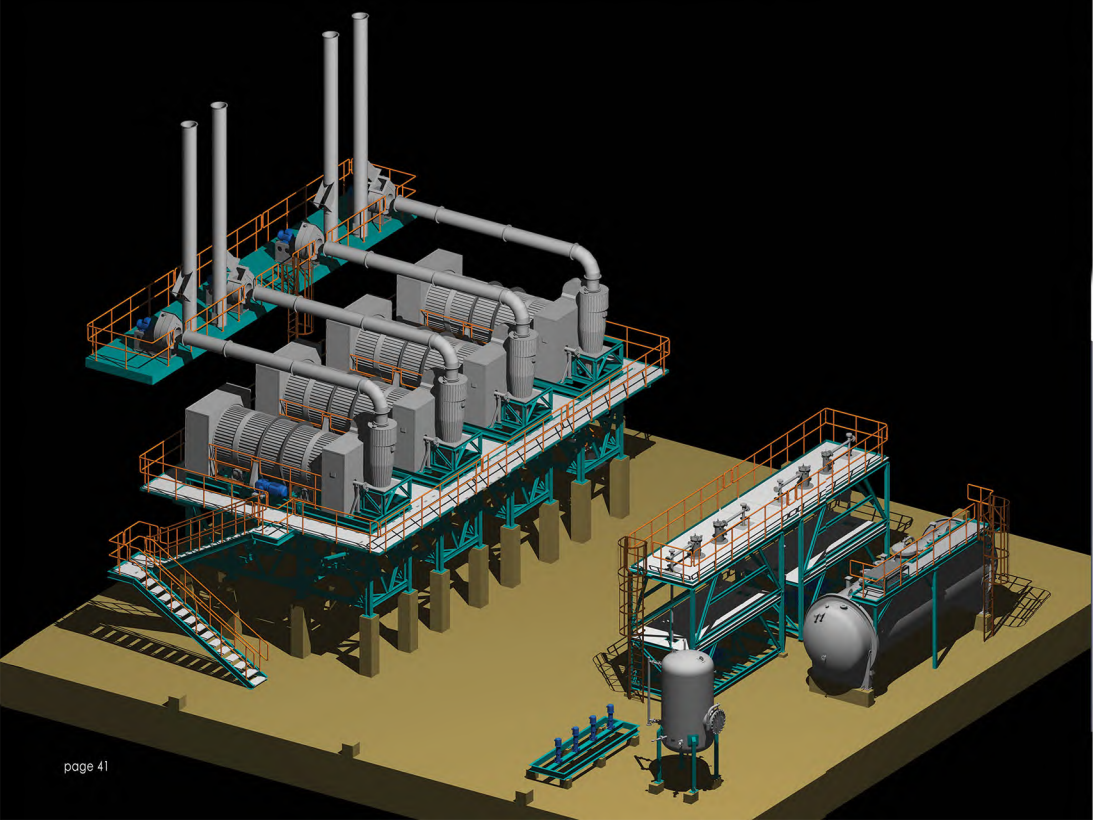
Sulphur Solidification,  
Handling and Storage Unit



## Equipment:

- Granulator drum
- Dry steam jacketed cyclone filter
- Exhaust fan
- Sulphur drain tank and pump group
- Liquid sulphur filter and pump group
- Rubber belt conveyor
- Bucket elevator
- Storage silo & telescopic chute
- Process water tank & pump group
- Pre-fabricated piping and jacketed piping
- UCP/PLC control system & instrument
- VFD and LCS
- Electrical (Lighting, Earthing & Cabling)

Capacity : 800 tonnes per day  
Method: Granulation  
Client: BUPEC-Bushehr Petrochemical Co  
Delivery date: 2019  
Status: Completed  
Location: Assaluyeh - Iran  
Feed: Liquid sulphur from SRU plant  
Product: Granule (spherical shape)  
Number of trains: 2 (AZG15)  
Train capacity: 16.65 tonnes per hour / 400 tonnes per day  
Storage: 2 X 800 TONNES = 1,600 tonnes silo  
Handling: Rubber belt conveyor and bucket elevator



## Abadan Refinery Upgrading Project Sulphur Solidification Unit

Capacity:	1,440 tonnes per day
Method:	Granulation
Client:	NIOEC/SEI & ODCC
Delivery date:	2022
Status:	Under Construction
Location:	Abadan - Iran
Feed:	Liquid sulphur from SRU plant
Product:	Granule (spherical shape)
Number of trains:	4 (AZG15)
Train capacity:	15 tonnes per hour / 360 tonnes per day
Equipment:	<ul style="list-style-type: none"><li>• Granulator drum</li><li>• Dry steam jacketed cyclone filter</li><li>• Steam jacketed exhaust fan</li><li>• Sulphur buffer tank</li><li>• Liquid sulphur filter and pump group</li><li>• Process water tank &amp; pump group</li><li>• Pre-fabricated piping and jacketed piping</li><li>• UCP/PLC and control system</li><li>• Instrument</li><li>• VFD and switchgear</li><li>• Electrical (Lighting, Earthing and Cabling)</li><li>• Firefighting and F&amp;G system</li><li>• Civil, shelter and steel structure</li><li>• Pipe rack</li></ul>



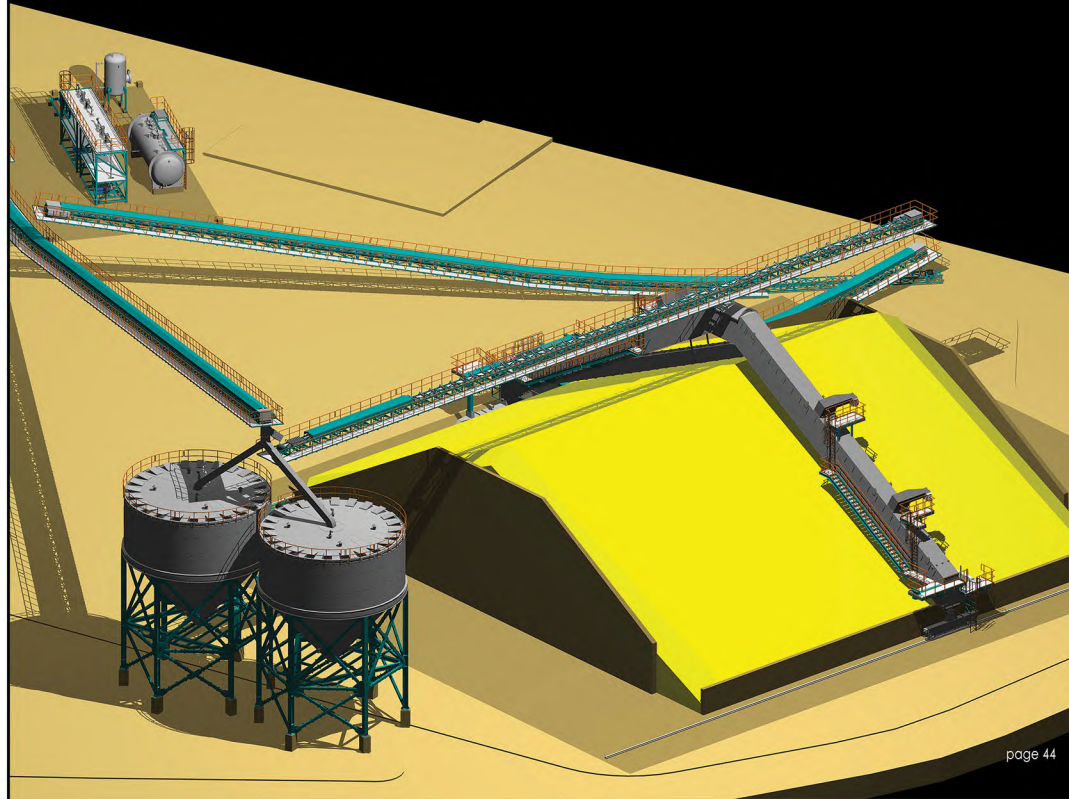
## Abadan Refinery Upgrading Project Bulk Material Handling and Storage Unit

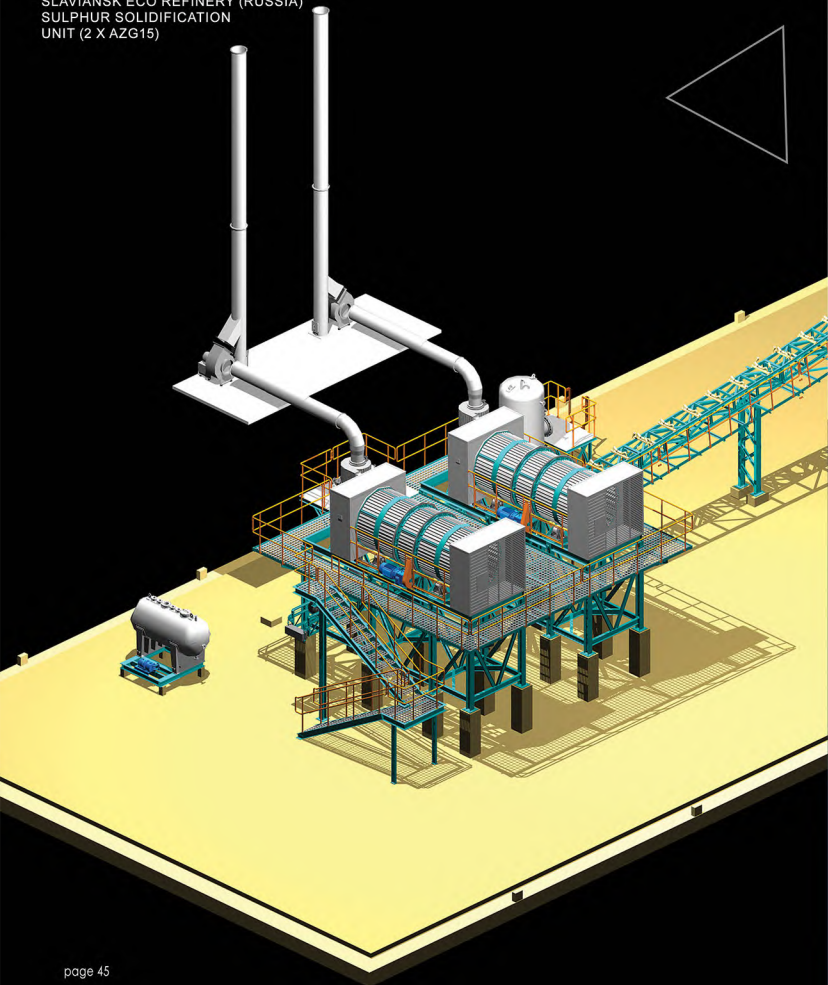
Method: Re-claimer & stack yard  
Client: NIOEC/SEI & ODCC  
Delivery date: 2023  
Status: Under construction  
Location: Abadan - Iran  
Bulk material: Granular sulphur (spherical shape)  
Storage: Stack yard, 14,000 tonnes

Silos, 2 X 460 tonnes = 920 tonnes  
Handling capacity 330 T/hr

Equipment:

- Tripper car & Stacker (1 sets)
- Rubber belt conveyor (4 sets)
- Rotary drum (4 sets)
- Silo (2 sets)
- Automatic truck loading (2 sets)
- Exhaust fan (4 sets)
- Cyclone filter (4 sets)
- Water treatment, clarifier and Screw conveyor
- Water transfer pumps (2 sets)
- UCP/PLC and control system
- Instrument
- VFD and switchgear
- Electrical (Lighting, Earthing and Cabling)
- Firefighting and F&G system
- Shelter and steel structure (~600 Ton)
- Weighing system (100 Ton)
- Dust suppression system





## Slaviansk ECO Refinery (Russia) Sulphur Solidification Unit

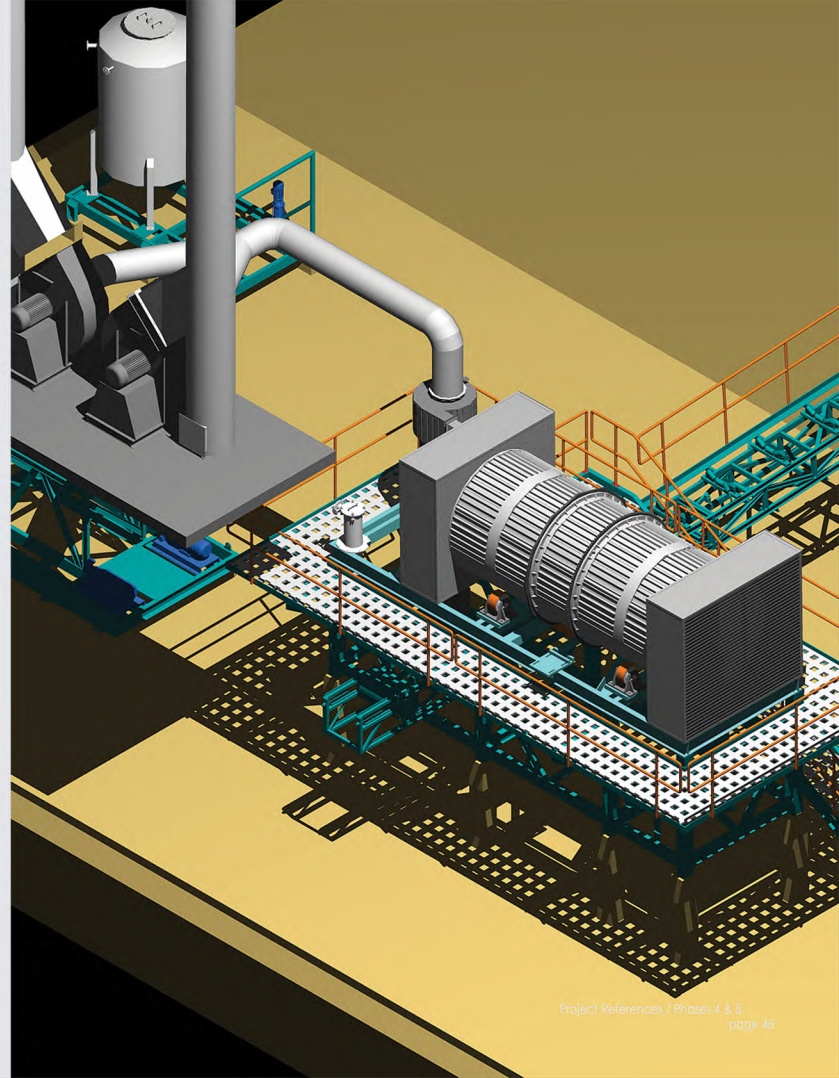
Capacity:	720 tonnes per day
Method:	Granulation
Client:	JSC techengoil/GTNG/HMS
Delivery date:	2025
Status:	Completed
Location:	Slaviansk - Russia
Feed:	Liquid sulphur from SRU plant
Product:	Granule (spherical shape)
Number of trains:	2 (AZG15)
Train capacity:	15 tonnes per hour / 360 tonnes per day
Equipment:	<ul style="list-style-type: none"><li>• Granulator drum</li><li>• Dry steam jacketed cyclone filter</li><li>• Steam jacketed exhaust fan</li><li>• Sulphur tank</li><li>• Liquid sulphur filter and pump group</li><li>• Process water tank &amp; pump group</li><li>• Pre-fabricated piping and jacketed piping</li><li>• UCP/PLC and control system</li><li>• Instrument</li></ul>



## SOUTH PARS GAS FIELD DEVELOPMENT - PH 4 & 5

Sulphur Solidification,  
Handling and  
Storage Unit

Capacity :	360 tonnes per day
Method:	Granulation
Client:	Neyr Perse/Mapna /SPGC
Delivery date:	2026
Status:	Under Construction
Location:	Tehran - Iran
Feed:	Liquid sulphur from SRU plant
Product:	Granule (spherical shape)
Number of trains:	1 (AZG15)
Train capacity:	15 tonnes per hour / 360 tonnes per day
Storage:	Available at site
Handling:	Rubber belt conveyor (2 set ) and Bucket Elevator
Equipment:	<ul style="list-style-type: none"><li>• Granulator drum</li><li>• Dry steam jacketed cyclone filter</li><li>• Exhaust fan</li><li>• Liquid sulphur filter and pump group</li><li>• Rubber belt conveyor</li><li>• Bucket elevator</li><li>• Process water tank &amp; pump group</li><li>• Pre-fabricated piping and jacketed piping</li><li>• UCP/PLC control system &amp; instrument</li><li>• VFD and switchgear</li><li>• Electrical (Lighting, Earthing and Cabling)</li></ul>





## South Pars Gas Field Development - PH 12

Sulphur Solidification, Handling  
and Storage Units