



**SINORoader**

**BE-series Emulsified bitumen plant**



## Application

Henan Sinoroader Heavy Industry Corporation is a world-famous road and bridge machinery manufacture, located in Zhengzhou City, Henan Province. Our producing base is located in Weidu District, Xuchang City with factory area over 18,000 m<sup>2</sup>.

Core business includes: road and bridge machinery equipment manufacturing; old equipment alteration; Project construction design & consulting service. Core products series includes: asphalt mixing plant; concrete and stabilized soil mixing plant; road maintenance equipments and material; Bitumen related equipments. Can meet the different needs of different regions, different markets and different customers all over the world.



BE-series Emulsified bitumen plant is the 8<sup>th</sup> generation of bitumen emulsion equipment developed by our company (bitumen emulsion equipment has gain three national patents). Emulsified bitumen that produced by this equipment have wide range of bitumen content and stable property can meet various requirements of different construction technologies and is applied into the express highway constructions and road maintenance projects.

Series product model: BE-6; BE-10 ( Burner heating or hot oil heating optional)

## Advantages & Characteristics

- ✧ This equipment is settled on a foundation which is convenient for moving to another constructions site and working in the field.
- ✧ Modular design can be equipped with water heater, heat oil coil heating device and others, which is convenient for site heating.
- ✧ Two emulsion tanks provide and drain off water in turn for continuous production. Compressed air drives fluid flow which is governed by pneumatic valve. This design saves human labor and reduces labor intensity.
- ✧ The key part of this plant emulsor (i.e. colloid mill) is equipped with world famous brand. Its special structure of pilot rotors clearance is likely to keep tiny fixed clearance. It is made of special stainless steel with properties of wear resistance and corrosion resistance. Its emulsion fineness is less than 5 $\mu$ m.
- ✧ Frequency governing motor is used to control the rotation speed of bitumen pump. Emulsion flow rate is regulated by valve (displayed by the flow meter). By the above means, bitumen content in emulsified bitumen (ratio of bitumen to water) can be accurately and stably controlled.
- ✧ Thermal oil heating system is equipped thermal oil connector to heats water tank and warms all the pumps before production, which is easy and convenient to replace baking with blowtorch.
- ✧ Thermal oil heating system realized automatic temperature controlling.
- ✧ All the parts contacting the emulsion are made of qualified stainless steel with good anti-corrosion property to suit for production process of various kinds of emulsified bitumen.



## BE-6

No.	Name	Model	Qty.	Remarks
1	Milling machine	JM-140	1	Stainless steel 316L material, motor 15kW
2	Central control system	PLC	1	Including PLC (Siemens brand), inverter and other electrical appliances for Schneider
3	Emulsion special flowmeter		1	Signal remote transmission, on-site display, anti-corrosion
4	bitumen special flowmeter		1	Signal remote transmission Insulation jacket
5	Shell and tube heat exchanger		1	External heat transfer oil heating
7	bitumen pump	Three screw insulation pump, 3.5m <sup>3</sup> /h	1	Shanggui Pump Industry, Motor 3 kW
8	Lotion pump	Stainless steel multistage pump	1	Southern Pump Industry 2.2 kW
9	Hot water pump	0.75KW, 10 m <sup>3</sup> /h	1	0.75 kW
10	Emulsifier pump	5m <sup>3</sup> /h Stainless steel gear pump	1	Motor 1.5kW
11	Heat transfer oil heating tube	15kw	2	30 kW
12	Heat transfer oil circulation pump	6 m <sup>3</sup> /h	1	Lijiu Motor 1.5
13	Finished pump	10m <sup>3</sup> /h	1	Insulation gear pump
14	Water heating tank	4.5m <sup>3</sup>	1	
15	Bitumen heating tank	4.5m <sup>3</sup>	1	
16	Emulsion tank	Φ1200×1830	2	304 stainless steel, 2.0mm thick
17	Emulsion tank heating		1	304 stainless steel pipe
18	Emulsion mixing	Double stirring	2	304 stainless steel, 1.1 kW 2 sets
19	Emulsion line	Φ32X2.5	1	PPR\304 stainless steel
20	Bitumen, clean water, finished pipelines, valves		1	Carbon steel
21	Filter		1	self made
22	Emulsifier dilution tank	Stainless steel	1	With a stirrer for a long time motor 1.5 kW
23	Cleaning system		1	Emulsion over-flow part cleaning
24	Tool consumables		1	



## BE-10

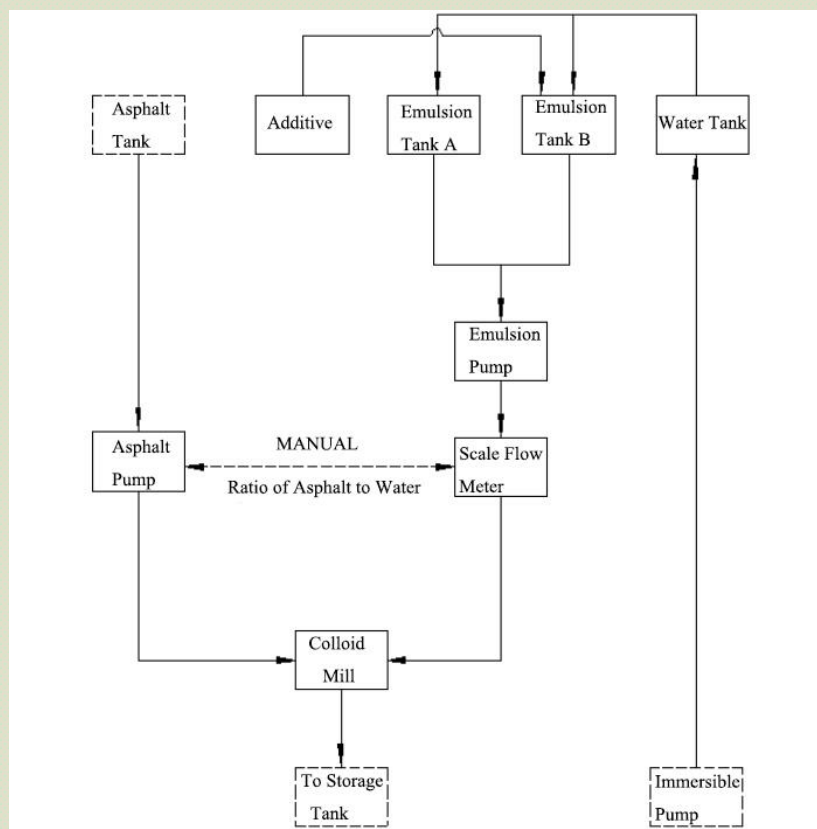
No.	Name	Model	Qty.	Remarks
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1	Milling machine	3-stage 18-layer shear mill	1	Stainless steel 316L material, motor 22 kW
2	Central control system	PLC	1	Including PLC (Siemens brand), inverter and other electrical appliances for Schneider
3	Emulsion special flowmeter		1	Signal remote transmission, on-site display, anti-corrosion
4	bitumen special flowmeter		1	Signal remote transmission Insulation jacket
5	Shell and tube heat exchanger		1	External heat transfer oil heating
7	bitumen pump	Three screw insulation pump, 4.2m <sup>3</sup> /h	1	Shanggui Pump Industry, Motor 3 kW
8	Lotion pump	Stainless steel multistage pump	1	Southern Pump Industry 2.2 kW
9	Hot water pump	0.75KW,10 m <sup>3</sup> /h	1	1.1 kW
10	Emulsifier pump	5m <sup>3</sup> /h Stainless steel gear pump	1	Motor 2.2 kW
11	Heat transfer oil heating tube	15kw	2	30 kW
12	Heat transfer oil circulation pump	6 m <sup>3</sup> /h	1	Lijiu Motor 1.5
13	Finished pump	12 m <sup>3</sup> /h	1	Insulation gear pump
14	Water heating tank	5m <sup>3</sup>	1	BTL20 burner heating
15	Bitumen heating tank	1470×2120×2200	1	BTL20 burner heating
16	Emulsion tank	Φ1200×1830	2	304 stainless steel, 2.0mm thick
17	Emulsion tank heating		1	304 stainless steel pipe
18	Emulsion mixing	Double stirring	2	304 stainless steel, 1.1 kW 2 sets
19	Emulsion line	Φ32X2.5	1	PPR\304 stainless steel
20	Bitumen, clean water, finished pipelines, valves		1	Carbon steel
21	Filter		1	self made
22	Emulsifier dilution tank	Stainless steel	1	With a stirrer for a long time motor 1.5 kW
23	Cleaning system		1	Emulsion over-flow part cleaning
24	Tool consumables		1	



## Production Process



- The cooling water for production is pumped by immersible pump into the water tank; It is heated by heat oil coil in the tank, detected and temperature controlled in real time
- The heated water is pumped into the emulsion tank A or B by water pump; at the same time of filling water, the emulsifier is filled into the emulsion tank;
- After evenly stirring, the proportioned emulsion in emulsion tank A or B is drained out by the emulsion pump, goes through the metering device at a certain flow rate then into the colloid mill;
- The asphalt pump is driven by the convertor motor to pump hot asphalt from the asphalt tank to the emulsifier, at the same time some emulsion going into emulsifier for emulsification in the emulsifier;
- Sampling and inspecting the asphalt content and fineness, adjust the ration of asphalt and emulsion so as to produce qualified emulsified asphalt;
- The finished emulsified asphalt goes out of the colloid mill then into the storage tank;

## Structure & Components

### Water system

It consists of water boiler, soap tank A, soap tank B, and heat exchanger.

### Soap Solution System

It consists of soap tanks, solution pump, glass rotameter, electrical regulating valve and manual modulation valve.

### bitumen Supply System

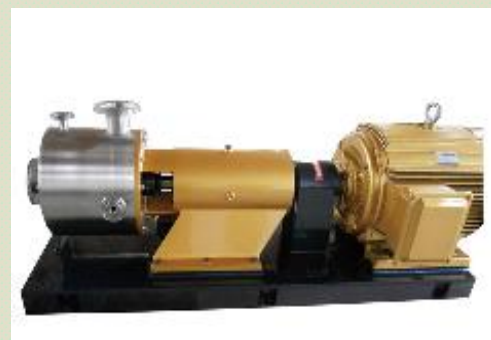
It is consisted of bitumen pump, bitumen hose (heat resistant rubber hose or stainless steel bellow) and bitumen tank.

### Emulsion System

It includes colloid mill, sampling valve and heat exchanger.

### Heat Exchanging System

This system includes heat exchanger, emulsified bitumen discharging



pipeline, water boiler, immersible pump (or sewage pump) and cooling water inlet and outlet.

### Thermal Oil System

This is a closed system. Driven by thermal oil pump, the heat oil flows through electrical heating tank, bitumen pump, laminated tube, mill, and finally the thermal oil pump. In front of the thermal oil pump inlet, an expansion tank for heat oil storage and makeup places above the plant body; blow down valve and the overflow port of expansion tank locate at the bottom of the plant body.

This system applies automatic heat oil temperature control by the electrical heating tank with a thermometer to preheat every pump before working, substituting for gasoline torch heating, which reduces the labors and makes this process easier and faster.



### Electrical Control System

It includes two systems: manual control and automatic control. Auto control system automatically controls the liquid level, soap solution flow rate and bitumen content, which performs independently and with no interactions.

**Liquid level control:** automatic water charging, automatic water discharging by turn, emulsifier and acid charging manually, manual stirring;

**Soap solution flow rate control:** keep solution flow rate in constancy automatically;

**bitumen content control:** automatically keep the bitumen content at setting values.

A routine process once every operation is to set the parameters of emulsified bitumen content and productivity; solution flow rate and bitumen content will automatically changed according to the above mentioned two parameters.





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