

## 4. THE ASPHALT PLANT PROJECT DESCRIPTION

The project consists of implementing an asphalt plant with the premises of Eastern Stone Crusher Ltd in order to improve and diversify the activities of the existing plant situated at Fond du Sac (see Figure 1).

Figure 3 gives an overview of the continuous mixing asphalt plant which will be added to the existing setup at Eastern Stone Crusher Ltd, Fond du Sac. The construction drawings are found in [Annex 4](#).

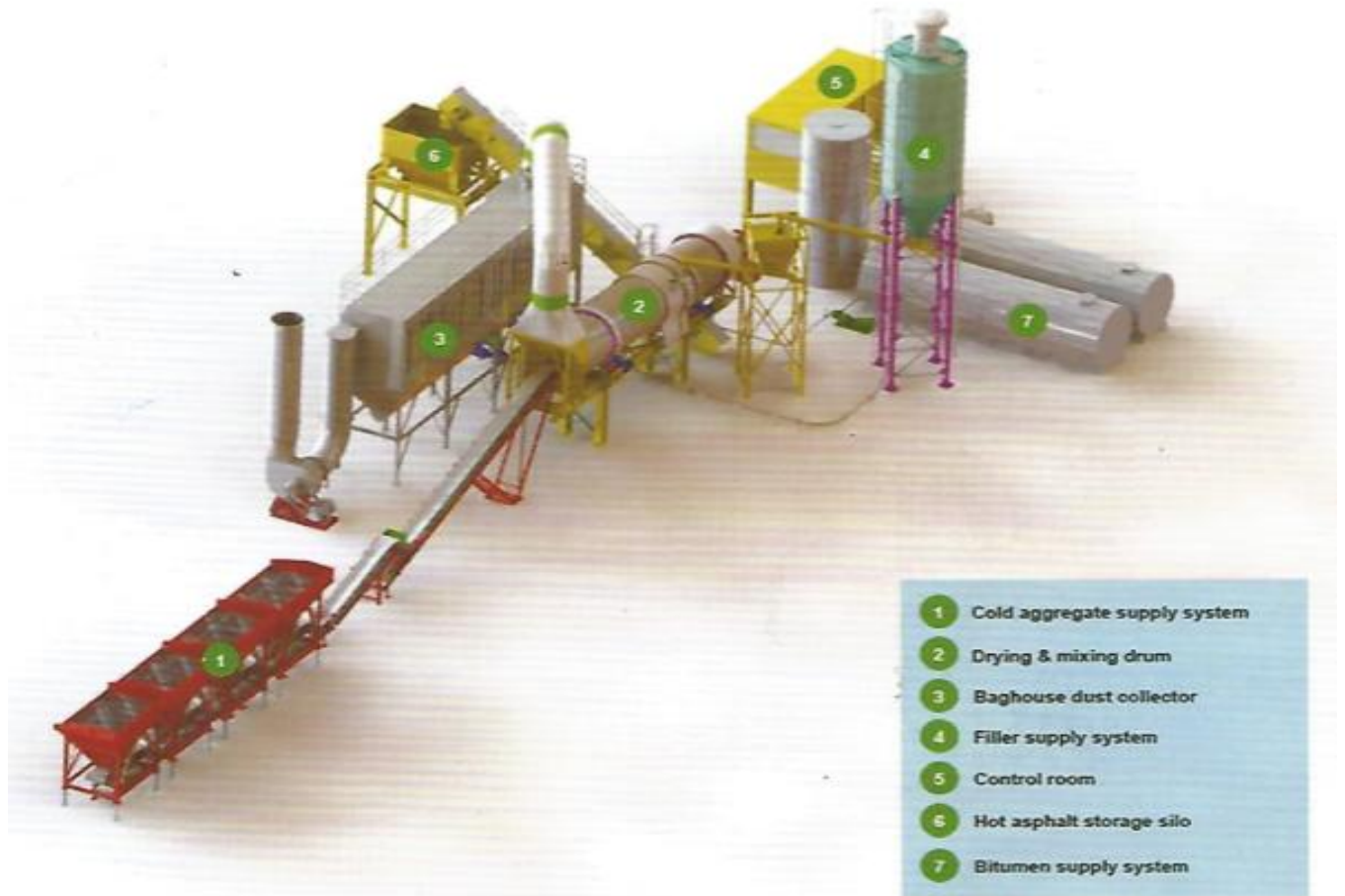


Figure 3: Proposed asphalt plant with the main parts of the structure

Continuous Asphalt Mixing Plant (CAP80), with a rated capacity of 80t/h, is a back-flow type asphalt plant wherein the heating, drying and mixing are done in the same drum. With non-stop rotating drum dryer, it can continue to produce good asphalt and discharge to hot asphalt storage silo or truck directly.

The main features are:

- Modular design, convenient to install.
- Reasonable structure and layout to smoothen the whole production line.
- Special drum dryer design increase heat exchange and efficiency.
- Customizable cold feed system and bitumen supply system.
- Brand components like bearing and motor reduces energy consumption and increases working performance.
- Human-computer interface and PLC control system guarantees excellent data transfer between the asphalt plant and computer, and has the additional convenience in operation with multiple languages.
- Low consumption, high efficiency and environmental-friendly design.

The main components are:

#### **The cold feeder system**

1. Separate compartment design and compact structure save transport space and provide convenience in installation. It can store 2-4 sizes of aggregates with coarse screening to remove oversized aggregates.
2. Each cold feed bin is equipped with VFD controlled feeding belt conveyor which can realize individual adjusting and whole proportional adjusting to automatically control the flow of aggregate , and the operator can monitor and adjust in the remote control room. The collecting belt conveyor with sidewalls can effectively prevent aggregate overflowing to both sides while delivering and the rubberized surface greatly improves its surface cleanness.
3. The vibrator is optional for cold feed bin. If the construction site is moist or raw materials are wetter than standard conditions ( $\geq 5\%$ ), the aggregates easily lump onto the wall and affect the whole production line. With the vibrator, arching phenomenon can be tremendously reduced.
4. No. and volume of the bin can be customized upon special request.
5. Equipped material lacking alarm can timely remind the operator.



Figure 4: The cold feeder system

### **The Drying System**

Drying system is a key part of the whole plant as its drying efficiency has direct affect on mixing capacity and heating temperature can influence the binding and mixing effect and finished asphalt temperature. At the same time it can determine the fuel consumption. Therefore its design is of utmost importance. LYRM is focusing on research and innovation in the fields for more than 20 years and developing a series of products.

1. Various sizes of drums are from 1.00 m to 1.85 m for customer's choosing based on actual need. The driving way can be chain type, friction type and gear type.
2. The support frame is welded H steel and fastened to supporting legs by bolts with a certain angle. The specially designed butterfly elastic connection plate completely solves thermal cracking problem and extend its working life.
3. Specially designed flights allow the aggregates to form perfect material curtains while falling down which is good for heating and drying.
4. The rock wool layers are effectively to prevent the heat loss and thermocouple is installed to monitor and control the temperature of hot mixed asphalt to meet the required condition.
5. Both the drum and burner are installed on the same chassis.
6. Continuous mixing with low consumption



Figure 5: The drying system

### Drying System- Burner

1. Suitable for different fuels, such as heavy and light oil, natural gas and coal.
2. High efficiency and low consumption.

### Drying System –Oil Burner

1. Oil circuit system is separated with burner body, safe, convenient and flexible.
2. The working pressure of oil pump is 12 bar, long service life.
3. Secondary gas ignition system, high reliable ignitor.
4. Adopt Honeywell servo mechanism and temperature controller, reliable and high precise control.
5. Unique purging piping, effectively prevent the oil plug.
6. Combustor adopts double-deck structure, robust and durable.
7. Simple structure, good performance, safe and reliable.
8. Simple to operate and maintain.
9. High combustion efficiency, energy saving, environment-friendly.

### Drying System-Coal Burner

1. New burning furnace completely solves the slagging phenomenon.
2. Reasonable air-coal ratio due to electric air door system guarantees optimal combustion efficiency.
3. E200 mesh coal pulverizer and multiple duct air supply mode assure full contact and complete combustion.
4. Wide ranges of temperature and flame length to satisfy different requirements.
5. Firebricks extend its working life
6. Highest temperature is 1600-1800 °C to eliminate Nox.
7. Low fixed carbon content in ash (about 0.1%) and CO emissions.
8. Dust remove effect is  $\leq$  Ringelmann I, environment friendly.

## The Dust Collection System

Dust collection system manufactured by LYRM features in simple structure, convenient installation, and low failure rate with high efficiency. It is another key part of asphalt plant as it can reduce the dust emitted to the atmosphere and thereby protect the planet. There are multiple choices for customers to choose, such as cyclone separator, water scrubber and baghouse dust collector, and cyclone collector is a most popular system seen in asphalt drum mixing plant.

### **Drying System-Cyclone Separator**

1. Cyclone separator is a mechanical dust collector with simple structure, easy to manufacture, install and maintain. Under the same operational condition, centrifugal force onto the particles is 5~2500 times gravitational force. It is widely used to remove 5 $\mu$ m particles and multi-cyclone separator can be used to remove 3 $\mu$ m particles (80~85 %).
2. In order to keep its performance, inspect the fasten condition of each connection part and sealing condition between separator and exhaust pipe, separator and hopper, hopper and discharging device, and ash conveying device . Regularly observe the wearable parts and dust performance if the busy gas temperature or moisture varies.

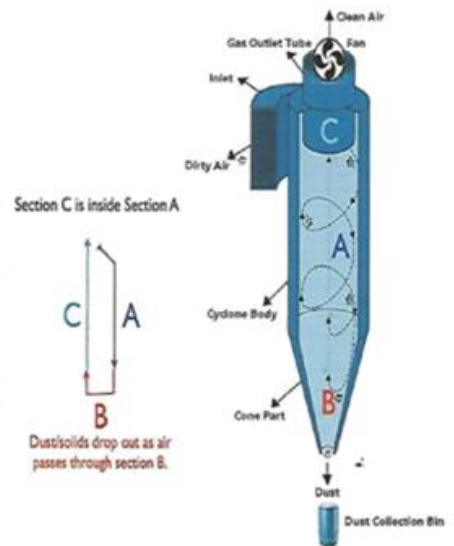
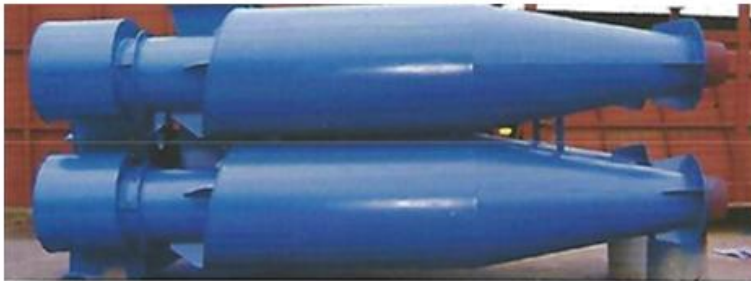


Figure 6: The drying system – Cyclone separator



### **Drying System-Baghouse dust collector**

The bag is made of DuPont NOMEX and can resist high temperature. The cleaning unit is pulse type with high efficiency and less dust residual. The screw conveyor can effectively deliver the dust to the assigned place.



Figure 7: The drying system – Baghouse dust collector

### **The Hot Mix Elevator**

1. Closed shell type can prevent heat loss and reduce dust emission.
2. New type double plate chain bucket elevator, durable and easy to operate and maintain.
3. Discharge the hot mix asphalt directly into the storage silo.



Figure 8: The hot mix elevator

### **The Control Room**

Control cabinet provided by LYRM has a good visual field for better observation and lined with soundproof layer for a better working condition. Wood floor and air conditioner add extra comfort to the operator. Advanced control system with safe and reliable overload protection device and emergency safety button enhance the safety level. Brand parts like SIEMENS weighing module guarantee the stable performance. Large storage and processing capacity is good for dealing with large data and gradation. Auto and manual operation can be freely switched.