

SPECIFICATION

DTM-12-20-40-60-20 M 2040



DT COLLOID MILLS

DTM 12-20 | DTM 20-20 | DTM 40-20 | DTM 60-20
FOR POLYMER MODIFIED BITUMEN PRODUCTION
Capacity 12, 20, 40 & 60 TPH.

Manufacturer:

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Denmark*

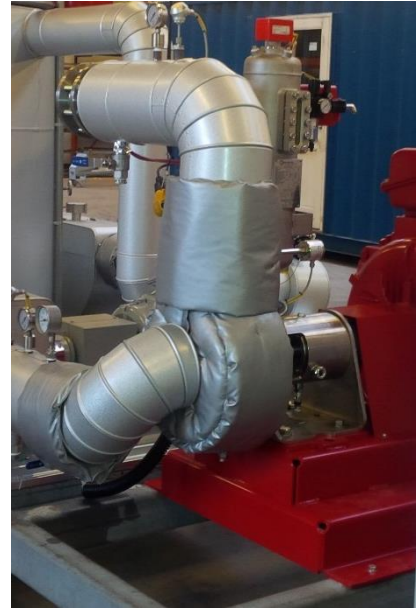


PROCESS DESCRIPTION

The DENIMOTECH Colloid mills are specially designed for polymer modified bitumen production. The DENIMOTECH mills provides a perfect homogenization of polymers with bitumen. The specific designed technology gives the surface a resistance against any type of polymer, form and dimension.

The DENIMOTECH mills consist of an inlet flange where the polymer and bitumen enter the mill house. Inside the mill house the polymer and bitumen is mixed by the rotor and stator. The fast rotation of the rotor forces the mix of polymer and bitumen through all the teeth and out through the outlet on top of the mill.

The mills are available in 60, 40, 20 and 12 tonne/hour capacities for production plants and in a 300 litre/hour version for laboratory use (see separate specification). The 12 TPH mill can be “downgraded” to 5 tonne capacity via modified pipe connections and manifold.



GENERAL FEATURES

High and constant product quality

The DENIMOTECH mills for modified bitumen production are designed and build to ensure a high and consistent quality of the product. The DENIMOTECH mills use very low amount of power.

Operational reliability

The mills are designed and build in full compliance with the latest European Standards of process machinery including mechanical and electrical design as well as documentation. Only high-quality components and materials are used to ensure best possible operational reliability in tropical and tempered climates as well as industrial environment.

Maintenance

All parts are completely numbered and identifiable in manuals and part lists. Extensive manuals go with the mills. Maintenance and service instructions as well as technical data for the various components and systems. These mills from DENIMOTECH can be maintained by the costumer and do not have to be send to DENIMOTECH to be maintained. In the manual, a spare part list for stock purpose is listed and by having these and following the requirements according to the manual, you can easily take care of maintenance yourself. Repair readiness is achieved with a relatively small stock of spare parts because of the uniform system design.

Fast and easy installation

The mills are fully assembled with all the equipment on one platform. Testing are done at the factory prior to shipment.

The mill is mounted with the AC motor via a Clonex coupling and placed together on a special designed platform. The platform can be mounted and fastned to the ground by the bolt holes in bottum of the platform. The inlet and outlet are designed with standard DIN flange and therefore easy to install in existing equipment and in a DENINOMTECH process plant.

The mills are delivered with special tools for disassembly of the rotor.

EQUIPMENT SPECIFICATION

Colloid mill & mixing system

The rotor and stator system consist of two discs with a pattern of teeth and grooves. The polymer and bitumen enter the mill house through the centre of the stator and the milling takes place as the streams are pushed radially out between the rotor and the stator. The colloid mill has all wetted parts in AISI316, stainless steel.

The rotor and stator are made from a special hardened steel, to increase the lifetime, by having better conditions to avoid wear and tear. The special surface also makes the rotor and stator able to mix/resist possibly steel particle and other difficult materials, which may occur in polymer.



The rotor and stator are designed to create the adequate turbulent forces with a minimum of energy input. The gap between the rotor and stator can be adjusted by turning the handle and thereby turning the nut. When the nut is turned the stator is either moved closer to the rotor or away from the rotor. Standard the gap between the rotor and stator are set to 3 mm. The rotor and stator gap can be adjusted from 2 mm to 4 mm.

Heating elements

The DENIMOTECH colloid mills specially for PMB production is designed with electrical heating elements to ensure a high production temperature. The heating elements keeps the mill house as well as the rotor and stator in the required temperature, to avoid cooling bitumen and polymer and thereby ensure a well-mixed PMB production.

Oil Vessel / barrier system

The mill has a double mechanical seal and a pressure vessel for the barrier fluid. The fluid in the pressure vessel is connected to the double mechanical seal by flexible steel hoses and provides the double mechanical seal with a barrier fluid. The pressure in the mechanical seal will always be kept higher than the pressure in the mill house, and thereby push the mechanical seal surfaces together and avoid shaft leakage.

On the outlet pipe from the mill it is very important to create a counterpressure, to make sure there is no vacuum created in the mill house and to make sure that the mill house always is filled with media. This will give the best milling result/production result.

The milling result depends on many factors and one of them is the time the media is inside the teeth between rotor and stator.



TECHNICAL DATA

Technical Data for mills with fixed speed (With standard AC motor)

Parameter	Unit		Plant Size	
Type	DTM 12-20 M	DTM 20-20 M	DTM 40-20 M	DTM 60-20 M
Capacity	6 – 12 t/h	10 – 20 t/h	20 – 40 t/h	40 – 60 t/h
Rotor/stator gap, adjustable	2.0–4.0mm			
Noise level	<80 dB (A)			
Viscosity	3000 - 4000			
Bar	10			
Temperature	210°C			
Polymer content	0 – 15%			
Length without manifold	1500mm	1700mm	1800mm	2000mm
Pipe connections Bitumen / Modified Bitumen	DN 50	DN 80	DN 80 / DN 100	DN100 / DN125
Width	475mm	475mm	700mm	800mm
Height w. barrier system.	1400mm	1400mm	1400mm	1400mm
Weigt	675kg	860kg	1170kg	1500kg
Electrical Data				
Voltage	3 x 400V ~ 3 x 480V +PE			
Power consumption	75kW	110kW	132kW	160kW
Frequency range	50/60Hz			
Amperage	130A	196A	235A	265A
Revolutions per minute (RPM)	3000/3600			

*) Noise shield for damping to level 70 / 74dB(A) at 50 / 70 Hz is available on request.



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