

# SPECIFICATION

DTM-12-20-40-60-20 E 2042



## DT COLLOID MILLS

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

*Manufacturer:*

*DENIMOTECH A/S  
Haandvaerkervangen 12  
DK-5792 Aarslev  
Denmark*



## PROCESS DESCRIPTION

The DENIMOTECH Colloid mills are specially designed for bitumen emulsion production. The DENIMOTECH mills provides a homogeneous mixing of water phase and bitumen. The rotor and stator system are designed to produce a fine and narrow particle distribution which increase the storage stability and a higher viscosity of the emulsion. Emulsion with high content of bitumen especially have benefits from the rotor- & stator system. The higher the content of bitumen in the emulsion, this higher viscosity.

The DENIMOTECH mills consist of an inlet manifold with two flanges, where the water phase and bitumen enter the mill house. Inside the mill house the water phase and bitumen is mixed by the rotor and stator. The fast rotation of the rotor forces the mix of water phase 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.

### Particle size

End bitumen emulsion products have a size range from below one micron and up to ten microns. Average particle size is one to five microns. Different settings in speed, rotor / stator gap, raw materials, and type of end product formulation will have an effect on particles.

### 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 & emulsion system

The rotor and stator system consist of two discs with a pattern of teeth and grooves. The water phase and bitumen enter the mill house through the inlet manifold, in the centre of the mill house. 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 DUPLEX stainless steel, for corrosion resistance against low pH emulsions and thereby increase the lifetime.

The frequency controlled (optional equipment) motor allows adjustable speed to optimize the particle distribution and thereby achieve the desired emulsion characteristics and suit local requirements.

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.



### 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

Parameter	Unit		Plant Size	
Type	DTM 12-20 E	DTM 20-20 E	DTM 40-20 E	DTM 60-20 E
Capacity 74-40 % residue	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)			
Particle size (Average)	1-5 micron			
Design pressure	10 bar			
Design Temperature	210°C			
Length without manifold	1400 mm	1400 mm	1500 mm	1600 mm
Pipe connections Water phase / bitumen	DN25 / DN50	DN40 / DN65	DN50 / DN80	DN65 / DN100
Pipe connections Emulsion outlet	DN50	DN80	DN100	DN125
Width	590 mm	610 mm	770 mm	770 mm
Height w. barrier system.	1250 mm	1250 mm	1250 mm	1270 mm
Weigt	550 kg	590 kg	740 kg	900 kg
<b>Electrical Data</b>				
Voltage	3 x 400V ~ 3 x 480V +PE			
Power consumption	30 kW	37 kW	55 kW	75 kW
Frequency range	50/60Hz			
Amperage	55A	68A	98A	124A
Revolutions per minute (RPM)	3000/3600			

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



DenimoTECH A/S  
Haandvaerkervangen 12  
DK-5792 Aarslev  
Denmark

tel.: +45 6390 5000  
email: sales@denimotech.com  
www.denimotech.com

