Mixing System

CMC-ATEX

I Application

The CMC mixing unit is a system designed for a fast dispersion of hydrocolloid products such as carboxymethylcellulose (CMC), flours, carbopol, pectin, and guar or xanthan gum. These additives are widely used in industry on account of their multiple properties: as thickeners, jellifying agents, stabilisers, complexing agents, etc.

The ATEX version of this equipment is designed for use with products with the potential to create an explosive atmosphere. The main application is to manufacture hydroalcoholic gels, which usually contain a significant amount of alcohol.

The main ingredients of hydroalcoholic gels are:

Alcohol (ethanol or isopropanol)	*50-80%*
Water	*0-40%*
Glycerin	*0-20%*
Gelling agents (carbopol, hydroxypropyl cellulose, etc.)	*0.5-5%*

I Operating principle

Hydrocolloid compounds are usually available in dry powder form, which must be diluted in water to obtain the desired colloidal solution.
When these powders come into contact with water, lumps quickly form and it is difficult to obtain a homogeneous mixture using a conventional agitator. To overcome this problem, this mixing unit incorporates a rotor-stator mixer at the bottom of the tank that shears the product, thereby increasing the water-additive contact area.
A cowles-type agitator fitted in the tank allows efficient circulation of the powder to the mixer lower head and also helps improve the dispersion time.
A product can become very viscous when the process requires using high concentrations of gelling agents, so using an additional anchor type agitator to ensure a completely mixed product may be necessary.
With its standard configuration, this equipment is set up to work with products up to 5000 cP. The configuration can be adapted accordingly for use with more viscous products.

I Design and features

AISI 316L stainless steel closed vertical unit.
Vertical agitator with cowles propeller.
Tank bottom high-shear mixer.
Maximum and minimum level probe.
Manhole for powder adding and inspection.
CIP spray balls.
Manual butterfly valves for discharge.
A control panel for installation in a non-classified zone.

I Technical specifications

Materials:	
Parts in contact with the product	*AISI 316L*
Other materials	*AISI 304L*
Gaskets in contact with the product	*EPDM*
Surface finish:	
Internal	*2B, with removed and polished welds Ra ≤ 0.8 µm*
External	*2B, with brushed, washed and passivated welds*

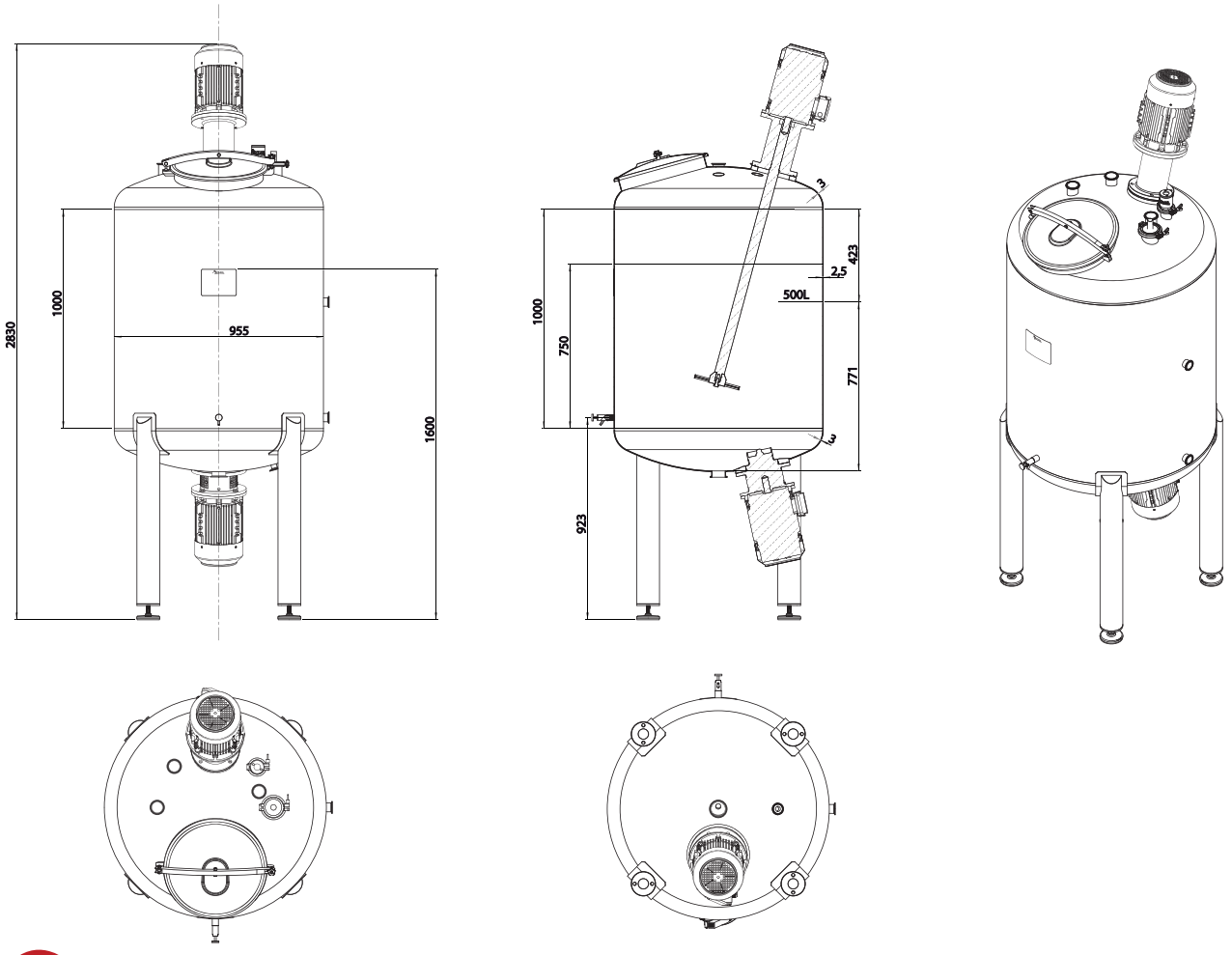
I Technical specifications

Operating limits:	
Capacity	*500L and 1000L*
Working pressure	*Atmospheric*
Working temperature	*Ambient (system without jacket)*
ATEX certified equipment with marking:	II 2G Ex h IIB T4 Gb II 2D Ex h IIIB T135°C Db

I Options

Product discharge pump.
Skid-mounted discharge pump.
Pump protection level.
Jacketed and insulated tank.
Anchor-type agitator or other agitation element according to client's requirements.
Y-filter at the pump outlet.
A sampling valve in the tank body.
Load cells.
Other options on request based on customer-specific requirements.

I Dimensions of CMC-ATEX mixing system 500L



I Dimensions of CMC-ATEX mixing system 1000L