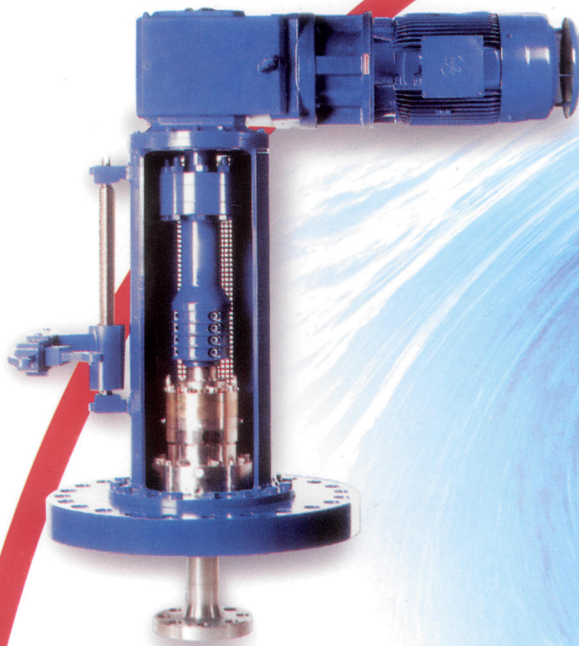




Type G

- **Process Engineering**
- **Agitators**
- **Mechanical Seals**
- **Service**

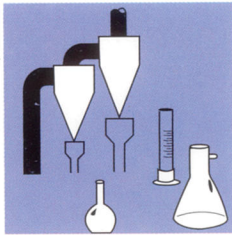


Type DR



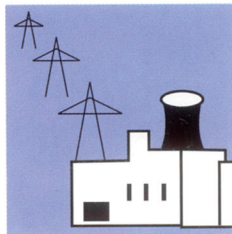
Type NR

MUT- Tschamber and PMI-Technology's extensive knowledge in mixing are being applied and used widely in many industries.



## ***Chemistry***

Pharmaceuticals, Colours, Lacquer, Varnish, Plastics, Biotechnology



## ***Power-Supply Industry***

Power Stations, Flue Gas Cleaning



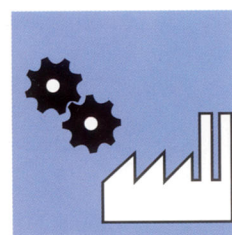
## ***Food Industry***

Dairies, Breweries, Sugar Industries



## ***Water Treatment***

Waterworks, Waste Water Treatment, Pollution Control



## ***Others***

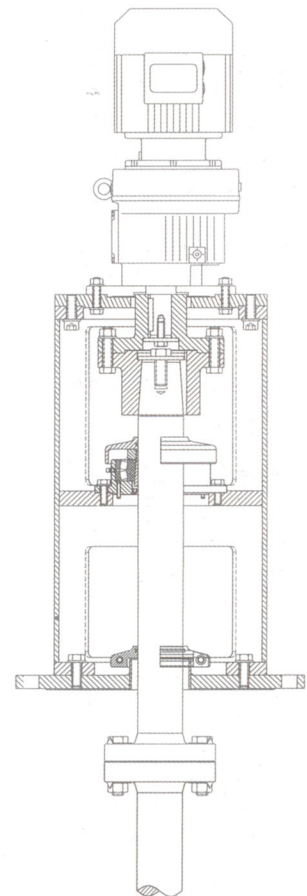
Ores, Steel Mills, Aluminium, Paper Industry

### Standard mixers NR2-NR5



The series NR2-NR5 fulfills great demands:

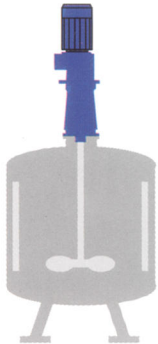
- Type of drive can be : electric, hydraulic or pneumatic
- High torque transferable by an optimal co-ordination of elastic coupling and bearing shaft
- Compact design and easy to clean
- Easy accessibility with regreasable roller bearings
- No run-out because of a direct bearing and an optimal bearing distance
- A rigid vibration and noise dampening cast construction
- Different sealings possible
- Grooveless bearing shaft
- Smallest flanges possible
- Flange coupling according to DIN 28 155



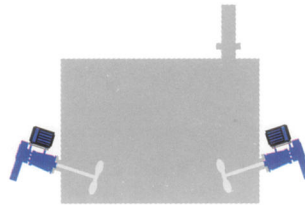
Type G 600 - 1000



## Upright tanks

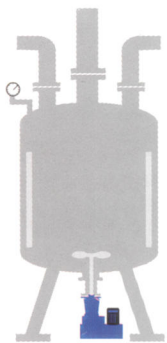


Agitator is mounted centrally, the impeller works with a minimal off-bottom distance to avoid a deposition of solids. Baffles attached to the tank wall prevent rotation and development of vortex of the liquid. The seal of the mixer works in the gasphase without particular difficulties.



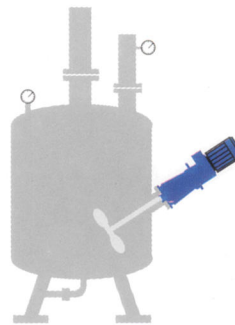
Tanks with a great diameter and a relatively small height have several side entry mixers installed at a radial angle. Therefore, there are almost no deposits.

This arrangement is a proven method concerning flue gas desulfurisation plants.



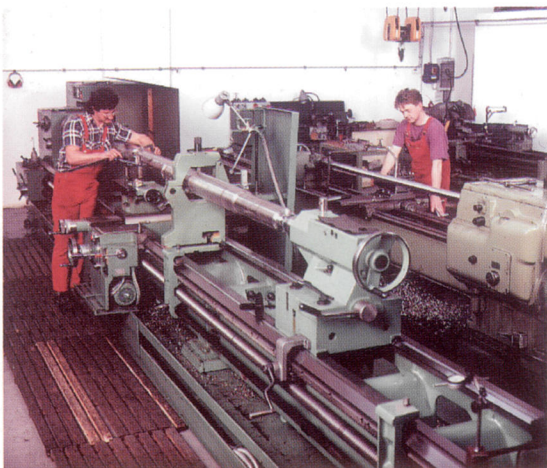
Long, tall tanks can have a bottom entry mixer. The mixer shaft may be designed very short, with correspondingly low bending moments. Loads on the vessel are very low. Baffles prevent rotation of liquid and development of vortex. Pipes, measuring and controlling connections may be attached to the top of the tank.

The mechanical seal works in the product even without flushing and/or cooling, at a very high lifetime.



Side entry mixers have the advantage whereby the bottom and top of the vessel are free. The mixer shaft is short. Thus, the bending moment is lower and the shaft diameter is smaller compared to top entry mixers. Because of the assymetrical flow, no baffles are needed. An optimal mixing of the entire contents will be reached if the correct radial and horizontal angle is chosen.

Just like the bending moment and the shaft diameter, the mechanical seal is smaller compared to top-entry. If the agitator is equipped with a shut-off device, the mechanical seal can be changed with the tank pressurised.



The mixer shaft with the impeller is a very important part of the agitator. It requires:

- correct choice and design of the impeller.
- an exact stress and critical speed calculation.
- high quality in manufacturing.
- an accurate control of the runout.

### Impellers

- Propeller
- Axial flow impeller
- Pitch blade turbine
- Trapezoidal impeller
- Turbine impeller
- Spiral impeller
- Dissolver

### Agitators

#### **Compact mixers**

- Types: G 600 - 1400
- Mixer shaft diameter : 25mm - 80mm

#### **Standard mixers**

- Types: NR 2 - NR 5
- Mixer shaft diameter: 40mm - 100mm

#### **DIN standard mixers**

- Types: TN DIN 3 - TN DIN 11
- Mixer shaft diameter: 60mm - 220mm

#### **Coaxial mixers**

- Types: TNK3 - TNK 15
- Mixer shaft diameter: 60mm - 300mm  
(at the moment P=400kW)

#### **Fermentor mixers**

- Mixer shaft diameter: 60mm - 300mm  
(at the moment P=1500kW)

#### **Quality is guaranteed because of:**

- Continuous further training of our employees
- Modern production facilities
- Permanent quality control

### Mixer seals

- Lipseal
- Stuffing box
- Single mechanical seal
- Double mechanical seal
- Mechanical seal for use in slurries
- Mechanical seal for sterile operation  
(gap free, easy to clean)

#### **Side entry mixers**

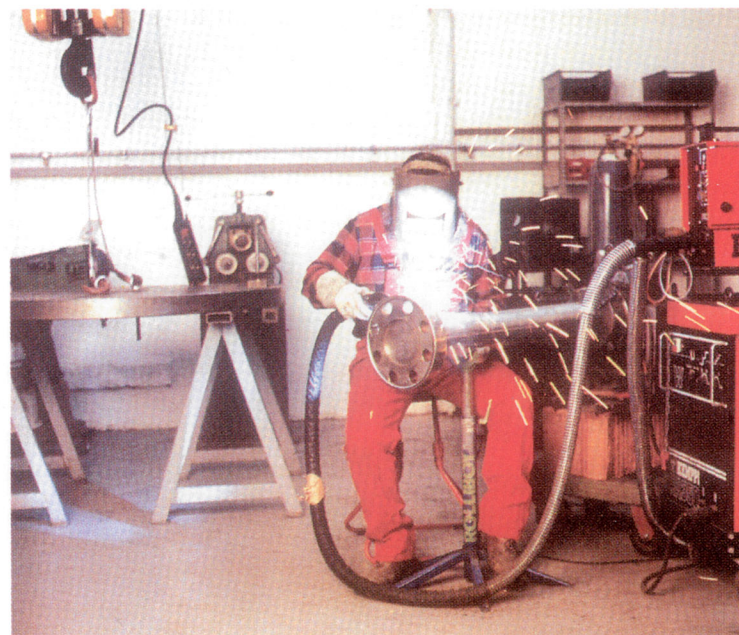
- Types: TRSL 2 - TRSL 8
- Mixer shaft diameter: 40mm - 160mm

#### **Standard mixers**

- Types: TN 3 - TN 15
- Mixer shaft diameter: 60mm - 300mm

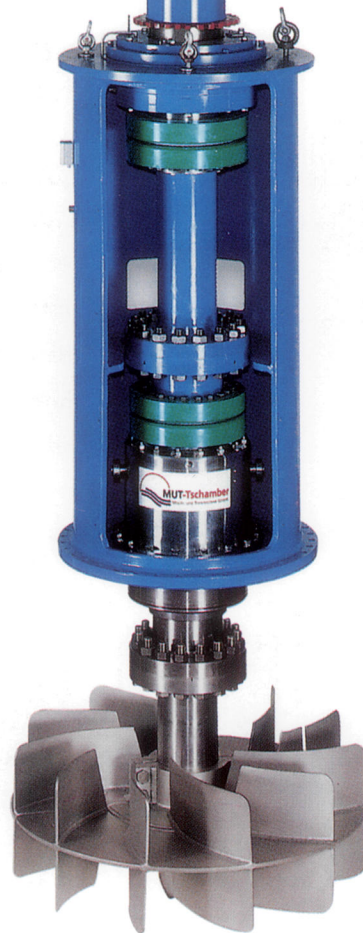
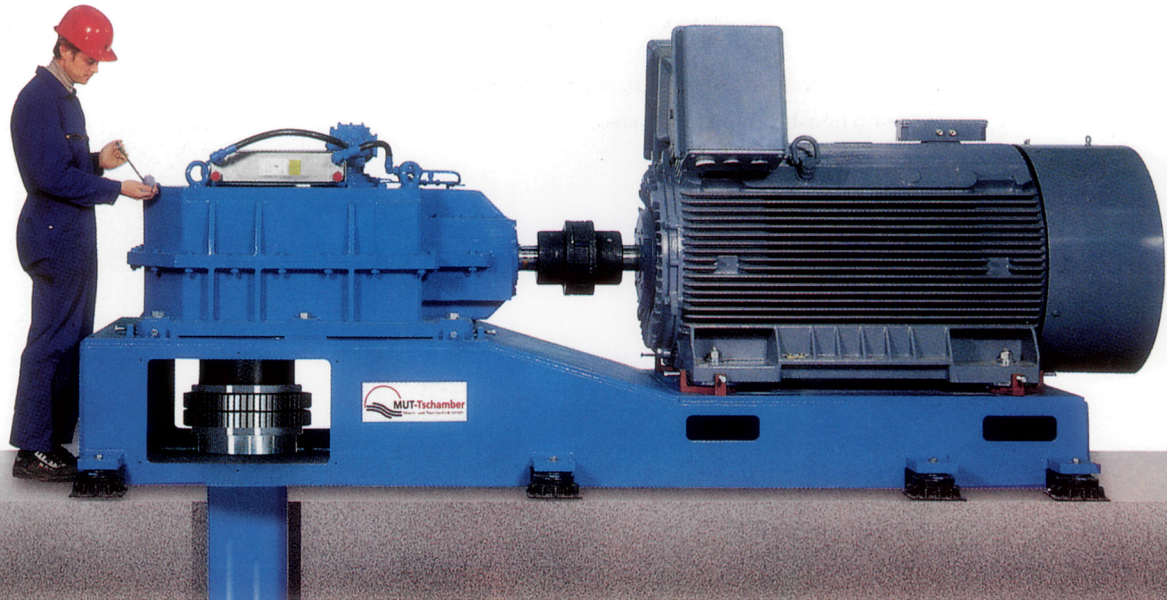
#### **Special mixers**

- According to customers' request
- Mixers with an automatically controlled movable drive (patent pending)





## DIN AGITATOR for Human-Insulin plant



Drive for main fermenter  $P=800\text{kW}$

Pedestal for mounting/dismounting  
the seal at site.

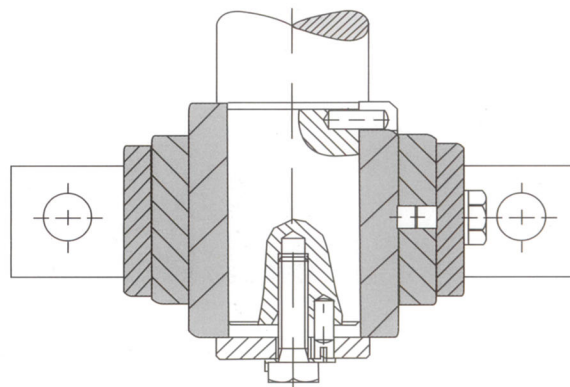
GMP-version

### Steady bearing

The bending stress of the mixer shaft and the upper dish of the vessel are being reduced with a steady bearing.

The mixer shaft diameter can be reduced and a possibly smaller bearing housing may be installed.

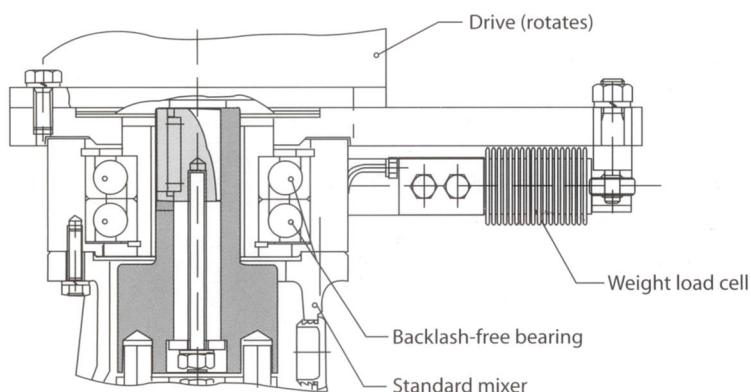
### Steady bearing Type WFL



### Power-torque-speed measurement

It is often necessary to know the exact power that the impeller draws. Therefore the torque and speed measurement were developed.

Drive indication of the torque and the operating speed and power are possible. Currently it is possible to measure the torque between 1 Nm up to 160.000 Nm.

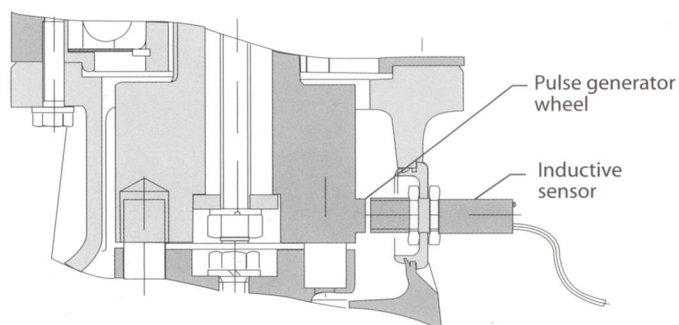


### Torque measurement device type DME-Z6

- Range of measurement : 0 - 4000Nm
- Power losses in motor and gear box are not being measured.
- Reliable measurement
- Compact design
- Low headroom
- No wear

### Speed measurement device type N2K

- No additional height
- No contact, no wear
- Reliable measurement
- Also deliverable with an explosion proof design





## Qualified Mixing Techniques



The technology is based on a wide experience, high-grade know-how and an extensive knowledge in mixing technology.

## Static Mixers

PMI Static mixers are compact in-line mixing devices with no moving parts. It may be used for any combination of liquid, gas, slurry and powder mixing. These mixers can produce a homogeneous blend of dispersion in laminar, transitional or turbulent flow within a very short laying length. Our specially design elements ensure the mixer does not have excessive pressure drop in the pipe line.

