



**Dynamic
Equipments
Private Limited**

Environmentally Conscious



AGITATORS AND MIXERS

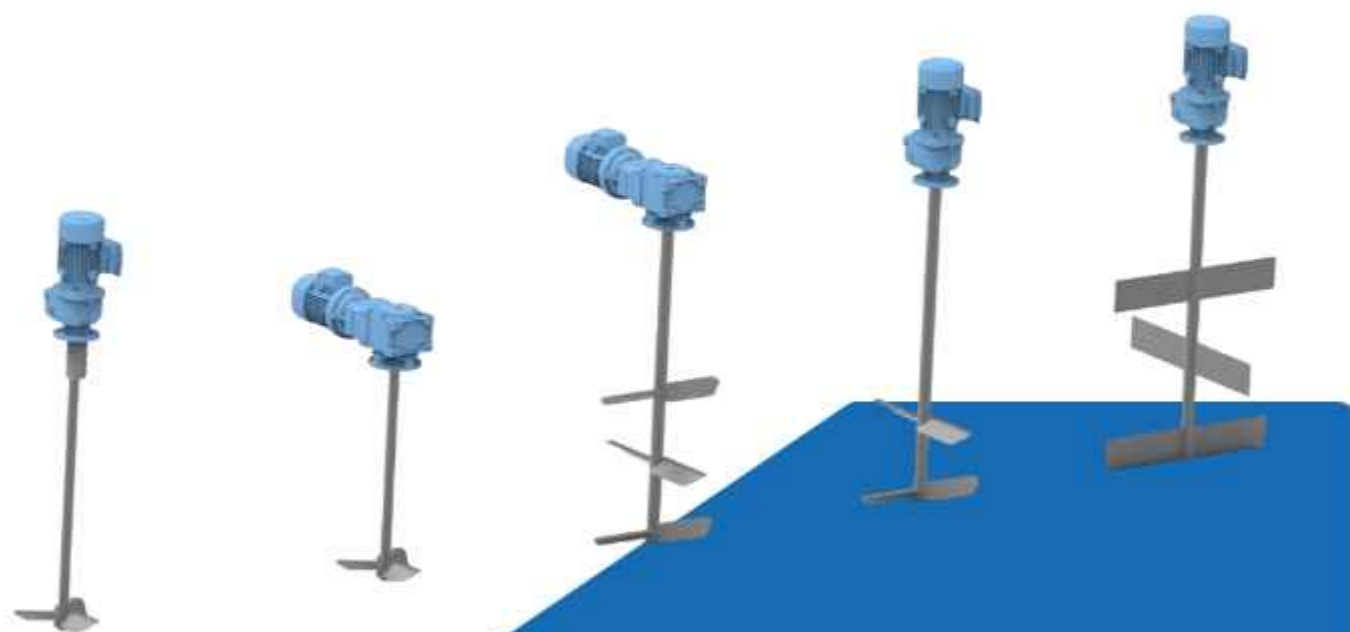
Mixing excellence and
blending relationships



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Welcome to Dynamic Equipments Private Limited

Dynamic Equipments Private Limited, founded in 1992 with a group foundation establishment since 1976, has been pioneer in the field of manufacturing of textile machinery along with background in foundry, construction machinery and other areas. Now diversified in manufacturing of SLUDGE DEWATERING, CHEMICAL DOSING SYSTEMS AND INDUSTRIAL AGITATORS



We Provide total
mixing solutions
not just **AGITATORS**

Applications for mixing and agitation we offer

Chemical mixing

All types of corrosive and non-corrosive liquids
(Dosing tank agitators and reaction vessels)

Flash mixing

For mixing of dosing chemicals in bulk liquid
(Flash mixer is water treatment plant)

Flocculators

For gentle agitation of liquid to enhance particle collision
and increasing floc formation (Flocculator for coagulated
water or wastewater in WTP or ETP)

Sludge & Slurry mixing

For mixing of water with high solids concentration
(Mixer for thickened sludge sump)

● Sludge & Slurry mixing

Sludge or slurry which is mixture of liquid and solids with a concentration of solids up to 10% solids w/w involves an optimized design and sturdy construction to handle high reverse torque generated due to very high viscosity and specific gravity of the fluid.

We have installation in many applications like

- Biogas slurry mixer
- STP, WTP & ETP sludge sump mixer
- Raw effluent mixing in collection tank with high solids concentration

● Mixers for dosing tanks and reactions vessels

Mixing of dosing tanks becomes very critical for homogenizing the dosing solution so that there is optimized dosing and there is minimum economical loss due to overdosing.



Sludge & Slurry mixing



Up to **30%**
saving in power
consumption

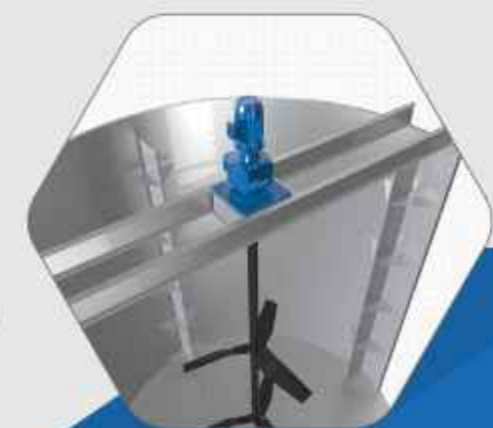
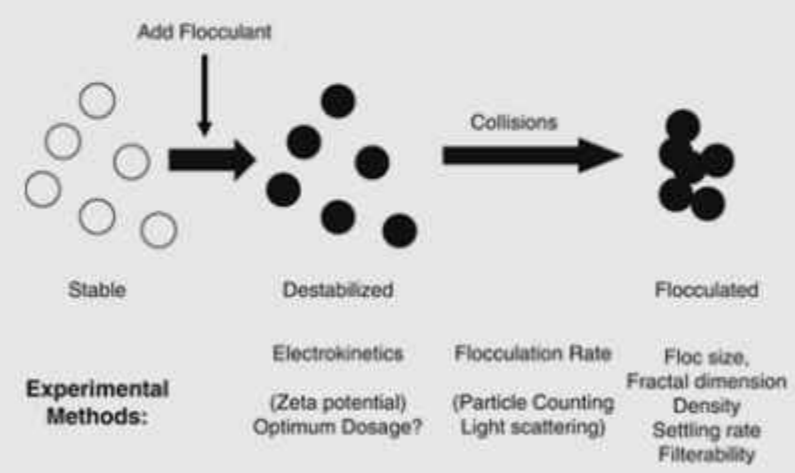


● Flocculators for water and wastewater treatment plant

Mixing of dosing tanks becomes very critical for homogenizing the dosing solution so that there is optimized dosing and there is minimum economical loss due to overdosing.

● Flash mixers—for water treatment and chemical reaction

The most critical aspect of the coagulation or any other chemical based treatment is optimum mixing of the chemical dosed and the water & wastewater treatment.



Resources

Design example for our user – A simplified version for understanding

Flash mixing agitator design			
Parameter	Value	Unit	Remarks
Velocity gradient (G)	300	1/s	User defined ; Typically 200 - 1000 1/s
Viscosity of water @ 18 C	1.14E-03	N-s/m ²	Can change as per the material viscosity and operating temperature
Volume of tank	10.00	cum	User defined
Tank diameter	2.00	m	User defined
Power required	1025.10	W	
Power required	1.37	hp	
Power required (provided)	1.50	hp	
Impeller design considerations			
Tangential tip velocity required	4	m/s	Typically range from 4-8 m/s
Impeller diameter	0.60	m	30% of effective diameter of flash mixer
n (number of revolution per minute)	127.3	RPM	Typically range from 90-150 RPM for flash mixing
Density of fluid (in our case water)	1000	kg/cum	
Power number of impeller	1.4		For selection of the blade configuration
Selection of blade	Power number		
Vertical flat blade turbine	3.5-4		As per literature for 2 blade
Pitched blade 45 deg	1.6		As per literature for 2 blade
Pitched blade 60 deg	2		As per literature for 2 blade
FINAL DESIGN & SELECTION			
Select 45 deg pitched blade with 2 blades			
Impeller diameter = 600 mm + 50 mm Shaft diameter			
Length of shaft = 2/3 Water Depth of tank + Free Board + 300 mm			
*For more detailed calculations requirement please contact our engineers			



7 most important considerations to have most effective and economic mixing solution

1. Keep the impeller diameter to effective diameter of the container in the range of 0.25-0.40 (Effective diameter in case of square or rectangular container will be Effective diameter = $1.13\sqrt{L \times W}$)
2. Always consider the worst-case viscosity in the calculation which corresponds to the lowest temperature for any liquid
3. MOC consideration to be carefully selected. For example, for high TDS application metallurgy shall be selected accordingly for example SS 316 L for TDS and chloride >5000-6000 ppm
4. For very long shaft lengths >2.5-3 meters, bottom anchor hub shall be provided with a bearing for support.
5. To avoid vortex formation in the tank, baffle placement shall be considered for more optimized mixing and dead zones
6. CFD modelling should be carried out for highly critical mixing requirements like biogas digesters and sludge sumps for selection of ideal mixing solutions
7. Gearbox selection shall be carried out only after discussing with your gearbox vendor for the application. For example, helical, bevel helical or other shall be appropriately selected

Salient Features

- Optimized design with lowest power consumption
- Adjustable mounting level options available
- CFD modelling based design approach for critical application
- High quality gearbox from Bonfiglioli, Nord and similar makes

Selected client and end users



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