



Sismat Uluslararası
Arıtma Makinaları
İnşaat Mühendislik
Sanayi ve Tic. A.Ş.



MIXERS

MIXERS

Mixing and contacting are important operations that have an essential influence on the individual performance of process stages or on the results of the entire process. Mixers are the key equipment used for water conditioning or increasing the contact surface of water and chemicals for the multi-step processes in water and wastewater treatment plants.

Main purposes of mixing process are mixing of a liquid in another liquid, transferring of gases to liquid or another gas, dissolving of solid materials in liquid, and thickening of process sludge. Mixers provided by Sismat Uluslararası are used in the applications below:

- Rapid mixing,
- Flash mixing,
- Coagulant mixing,
- Flocculation,
- Polymer addition,
- Chemical addition,
- Chemical storage,
- Equalization and neutralization,
- Slurry mixing,
- Chlorination, etc.

Mixing is one of the most significant unit operations. Efficiency of mixing and dispersion has a major impact on the product quality and production yield. Therefore, Sismat Uluslararası gives particular importance to the selection and design of mixers. Our company's unique approach to mixer design offers the most effective mixing solutions for both the new treatment plants and retrofits to the existing plants. **Sismat Uluslararası offers the mixers as the following:**

- Static mixers (SBM)
- Axial propeller mixers (SHM)
- Radial propeller mixers (SYM)

FEATURES AND BENEFITS OF SISMAT ULUSLARARASI MIXERS

- Reliable design
- Durable and robust construction
- Effective mixing provided
- Low capital and operational costs
- Maximum efficiency with minimum energy consumption
- Long lifetime

RADIAL PROPELLER MIXERS (SYM)

Radial propeller mixers are the mechanical devices which are used to mix different kinds of liquids by using different types of blades or impellers. They are used in a wide range of applications including both simple blending and viscous blending, and well-suited for the applications controlled by tank circulation and requiring fluid shear and mass transfer. Some areas of use are given as the following:

- Solid suspension,
- Heat transfer,
- Gas absorption,
- Dissolution,
- Crystallization, etc.

Radial propeller mixers are a part of the radial flow mixers that are typically selected when a shear force must be transferred to the process or when a radial flow direction is required for the tank geometry. Sismat Uluslararası Radial Propeller Mixers are mainly made up of propeller, shaft, coupling, mounting plate and drive unit.

FEATURES AND BENEFITS OF SISMAT ULUSLARARASI RADIAL PROPELLER MIXERS

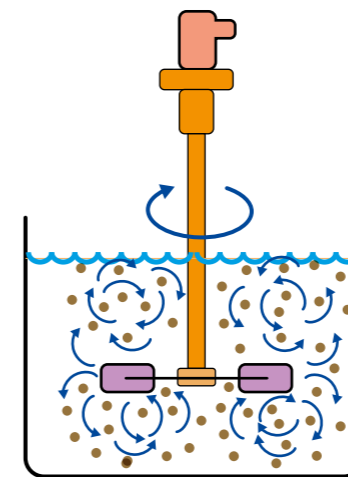
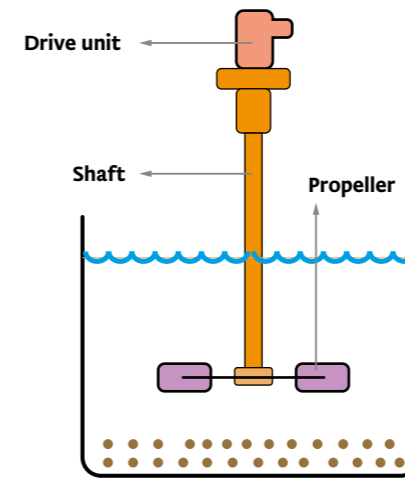
- Reliable and heavy duty design provided
- Variable speed control
- Efficient mixing performance
- Cost-effective equipment

APPLICATIONS

- **Water treatment plants**
- **Municipal wastewater treatment plants**
- **Industrial wastewater treatment plants**
 - Food and beverage industry,
 - Pharmaceutical industry,
 - Cosmetic industry,
 - Petrochemical industry,
 - Plastics industry,
 - Pulp and paper industry, etc.
- **Mineral processing plants**

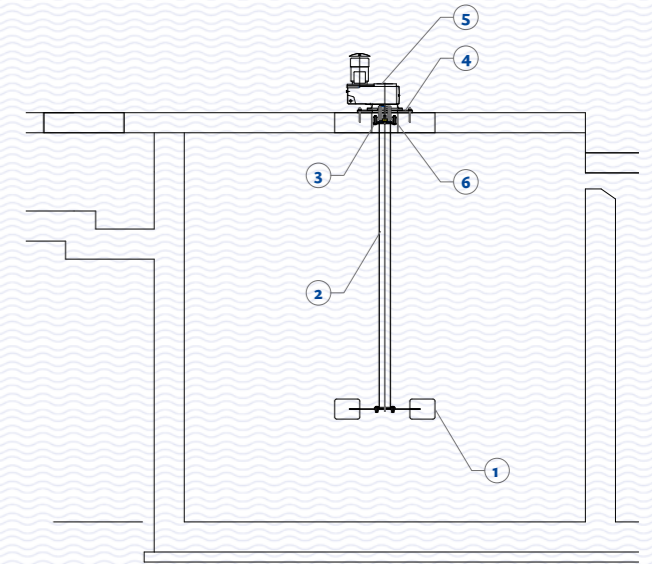
WORKING PRINCIPLE

Sismat Uluslararası Radial Propeller Mixers are the equipment allowing the fluids in low and medium viscosities to be mixed effectively by creating a radial flow what makes the fluid flow at lower velocity in radial direction. Radial propeller mixers are driven by a power unit. The mixer is rotated in a fixed direction and the materials present in the tank to be mixed are blended with the help of the radial and circular motion generated by the radial propeller mixer. These types of mixers are generally preferred for keeping the materials in suspension. They are operated at lower speed and much larger than axial propeller mixers.



The radial propeller mixer generates a radial and circular motion, and the materials are blended in a fixed direction.

Typical Radial Propeller Mixer & Components



Typical drawings are for information only.

OUR RADIAL PROPELLER MIXER COMPONENTS

	Radial Propeller Mixer Components	Materials Available
1	Propeller	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, Rubber
2	Shaft	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, Rubber
3	Coupling	Carbon steel
4	Mounting plate	Carbon steel
5	Drive unit	-according to norm of manufacturer
6	Fasteners	8.8,A2, A4

AXIAL PROPELLER MIXERS (SHM)

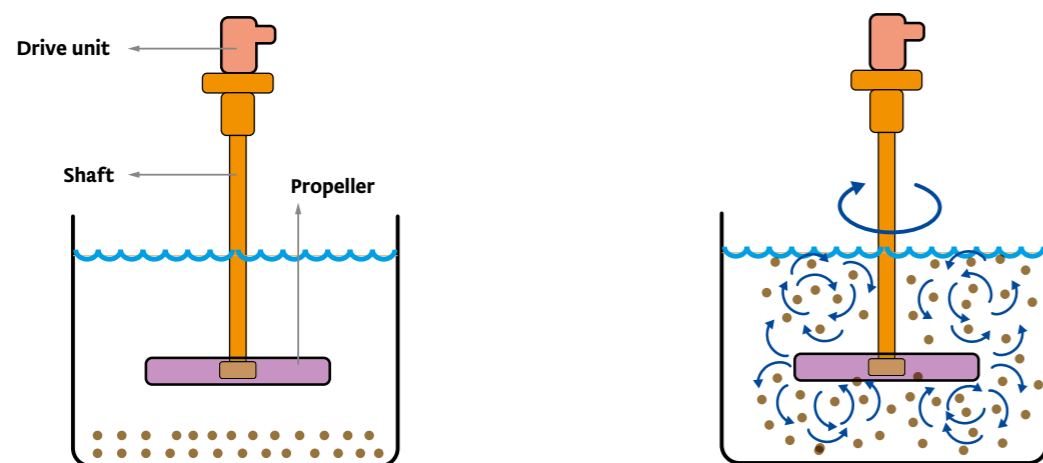
Axial propeller mixers are the mechanical devices which are used to mix the liquid materials by means of the blades or impellers and they are mostly preferred axial-flow type high-performance mixers. They provide greater stability and have a long lifetime due to the durable design. Axial propeller mixers are generally preferred for the limited volume media. These types of mixers have hollow shafts that are mounted to a motor.

Axial propeller mixers create a significant axial force. The rotation of the impeller causes a field of axial forces by means of the motions of flowing liquid on the impeller. Axial flow impellers have wide and flat blades at an angle of 45° to contact more with the viscous materials. They are primarily used for the flow-controlled processes with higher viscosities. Working of the axial propeller mixers is mainly based on shearing force. The blade edges provide relatively higher shear and require greater horsepower to drive them.

Diameter of the axial propellers is specified according to rotational speed and diameter of the reactor/ vessel. Power consumption of the axial propeller mixers also depends on the reactor/vessel size and viscosity of fluid. Sismat Uluslararası Axial Propeller Mixers are mainly made up of propeller, shaft, coupling, mounting plate and drive unit.

WORKING PRINCIPLE

Sismat Uluslararası Axial Propeller Mixers are the equipment allowing the fluids in high viscosities to be mixed effectively by creating an axial flow that makes the fluid flow parallel to shaft in downward direction. Axial propeller mixers are driven by a power unit. The mixer is rotated in a fixed direction and the materials present in the tank to be mixed are blended with the help of the axial and circular motion generated by the axial propeller mixer. These types of mixers are generally preferred for mixing the materials properly. They are operated at high speed.



The axial propeller mixer generates an axial and circular motion, and the materials are blended in a fixed direction.

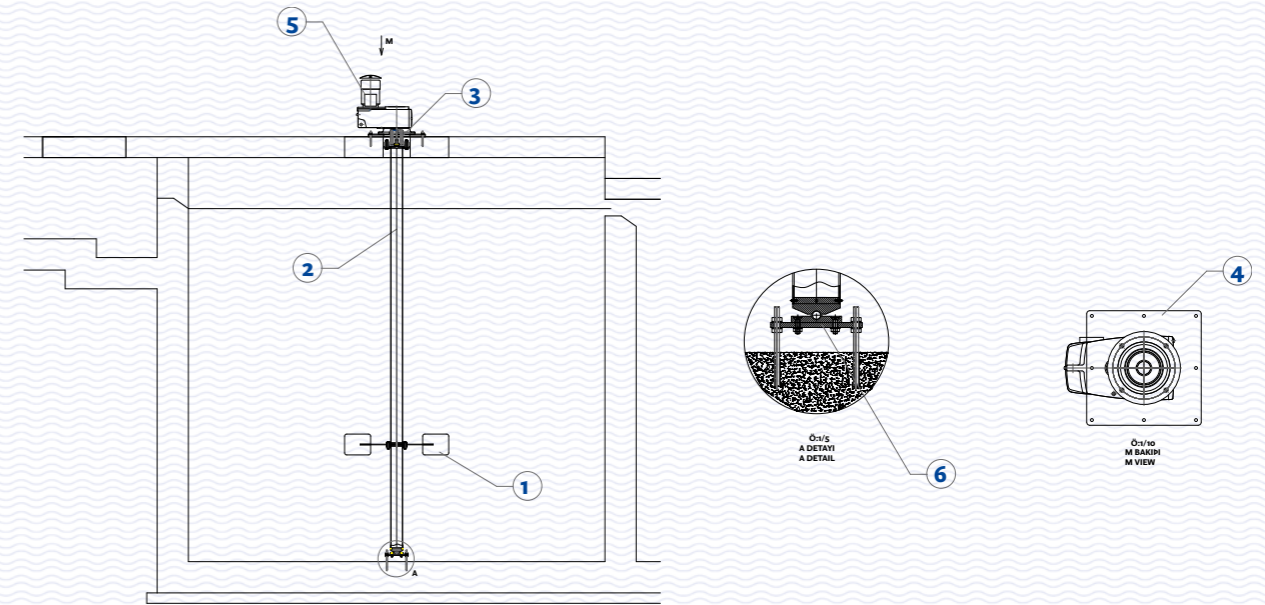
FEATURES AND BENEFITS OF SISMAT ULUSLARARASI AXIAL PROPELLER MIXERS

- Reliable and durable mixer design
- Chemically corrosion resistant structure
- Highest possible mixing achieved from top to bottom
- Propeller welded to shaft
- Easy upgrade in existing plants
- High overload capacity provided
- Lowest possible energy consumption

APPLICATIONS

- **Water treatment plants**
- **Municipal wastewater treatment plants**
 - Equalization of sewage,
 - Aerobic, anaerobic or anoxic processes, etc.
- **Industrial wastewater treatment plants**
 - Pharmaceutical industry,
 - Food industry,
 - Pulp and paper industry, etc.

Typical Axial Propeller Mixer & Components



Typical drawings are for information only.

OUR AXIAL PROPELLER MIXER COMPONENTS

	Axial Propeller Mixer Components	Materials Available
1	Propeller	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, Rubber
2	Shaft	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, Rubber
3	Coupling	Carbon steel
4	Mounting plate	Carbon steel
5	Drive unit	-according to norm of manufacturer
6	Fasteners	8.8,A2, A4

STATIC MIXERS (SBM)

Static mixers are one of the most common mixer types provided by Sismat Uluslararası. They are the motionless devices which allow for the inline continuous blending of fluids within a pipeline. Motionless mixers are capable of mixing the materials having equal or different viscosities and volumetric flow rates. Static mixers are designed to utilize the energy of the flow stream to generate effective and reliable mixing.

Sismat Uluslararası Static Mixers are used for the purposes as the following:

- Raw water mixing
- Rapid mixing
- Pre-mixing of chemicals
- Polymer dilution
- Polymer addition
- pH control
- Sludge mixing

In these types of mixers, mixing action is achieved by continuous splitting, extension and transportation of the materials to be mixed. Differences in concentration, temperature and velocity are equalized over the flow cross-section. Sismat Uluslararası Static Mixers are mainly made up of pipe and deflecting plates.

FACTS

Pipe diameter up to DN200

FEATURES AND BENEFITS OF SISMAT ULUSLARARASI STATIC MIXERS

- Durable and reliable design
- No moving parts
- Trouble-free operation provided
- High level of mixing efficiency in small volumes
- Low chemical and energy consumption
- No need for tanks, agitators or moving parts
- Simple installation and cleaning
- Low operation cost

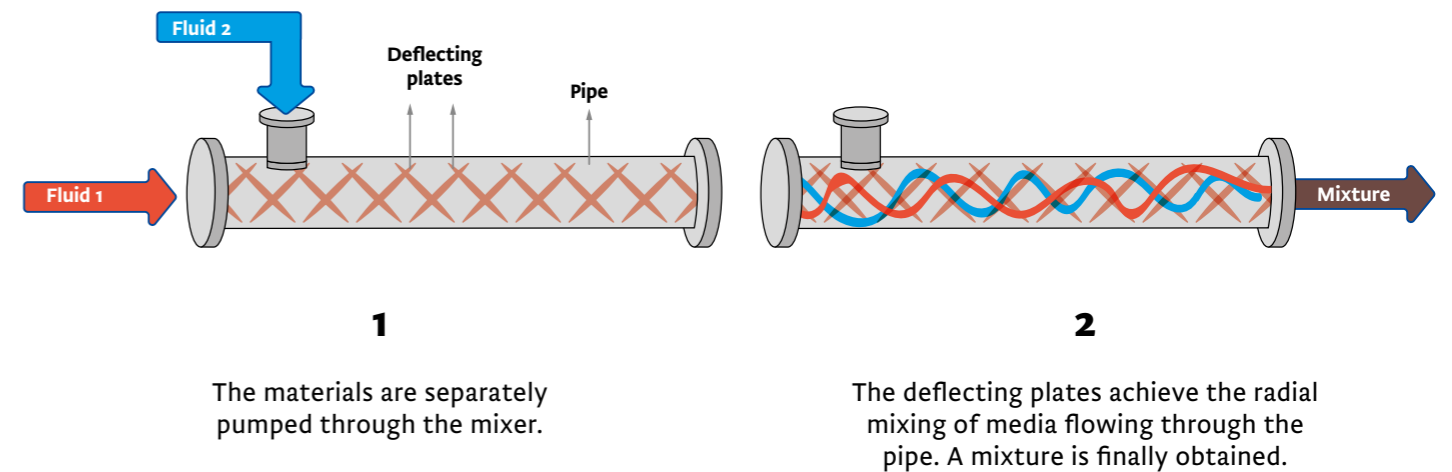
APPLICATIONS

- **Water treatment plants**
 - Coagulation,
 - Diluting flocculants and mixing with water
 - Disinfection,
 - Aeration,
 - pH control, etc.
- **Municipal wastewater treatment plants**
 - Chemical dosing,
 - Diluting flocculants and mixing with wastewater
 - Ozone injection and mixing, etc.
- **Industrial wastewater treatment plants**
 - Oil, gas and petrochemical industry,
 - Mixing additives,
 - Adjusting the viscosities of heavy fuel oils, etc.
 - Food industry,
 - Diluting concentrates and mixing flavourings,
 - Mixing CO₂ gas into fruit juices, etc.
 - Pulp and paper industry,
 - Blending,
 - pH control,
 - Acid and base dilution, etc.
 - Pharmaceutical industry, etc.

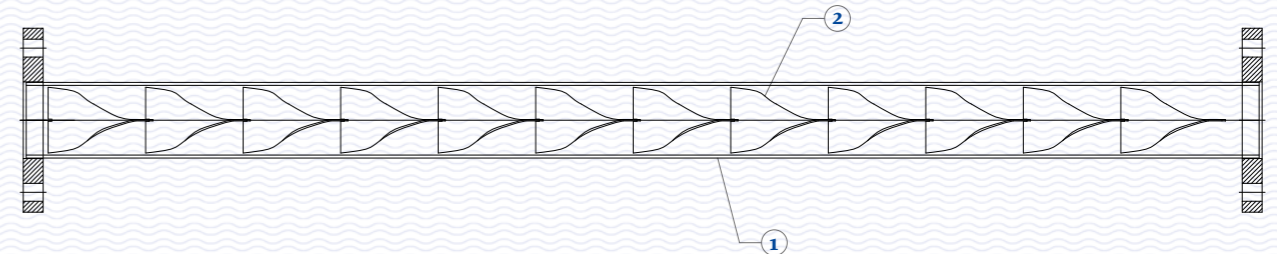
WORKING PRINCIPLE

Sismat Uluslararası Static Mixers are the equipment used for inline mixing of the fluids. They are installed in pipes or ducts and have no any moving parts.

Static mixers consist of deflecting plates. Pumps or blowers are used to deliver the materials to be mixed at the volumetric flow rates desired, and also to supply the energy required for mixing process. The materials to be mixed are separately pumped through the mixer and the plates achieve the radial mixing of media flowing through the pipe. The flow path follows a geometrical pattern that prevents any random mixing. These types of mixers are generally preferred for mixing the materials properly. They are operated at high speed.



Typical Static Mixer & Components



Typical drawings are for information only.

OUR STATIC MIXER COMPONENTS

	Static Mixer Components	Materials Available
1	Pipe	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti
2	Deflecting plates	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti





Learn More by visiting

www.sismat.com.tr

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