KaeMix

KaeMix Overview

www.kaemixllc.com

support@kaemixllc.com

KaeMix FAQ

- What is it?

  Software to design and evaluate industrial fluid mixing vessels

- Where does it come from?

  Developed by Dr. Andre Bakker at KaeMix LLC, a well-known fluid dynamics expert

- Who is it for?

  Process engineers to design new mixing systems, improve existing systems, and to evaluate proposed designs

- What can it do?

  Performance prediction for single-phase and multiphase stirred reactors

- What is it based on?

  Literature data and published correlations

- Does it fit in my workflow?

  KaeMix complements your CAD and CFD software. In fact, by performing your mixer designs with KaeMix, you can save on CFD analyses because you will need fewer of them

- What kind of computer do I need?

  A standard 64-bit Windows PC with a screen resolution of at least 1920x1080 suffices – no special hardware needed

- Where can I get it?

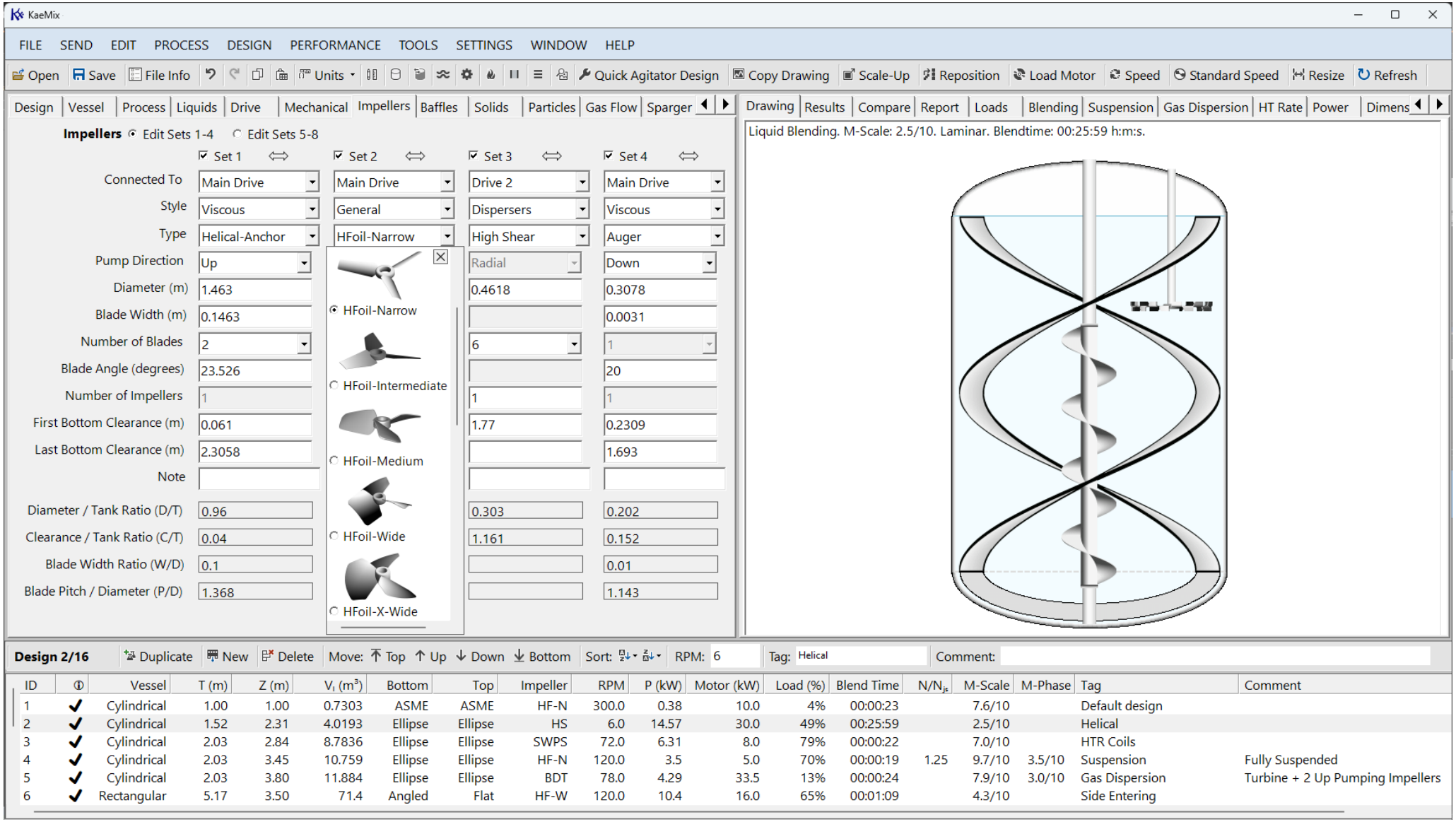
  Commercial companies: purchase full version from KaeMix LLC

  Students and academics: free KaeMix Student (reduced feature set)

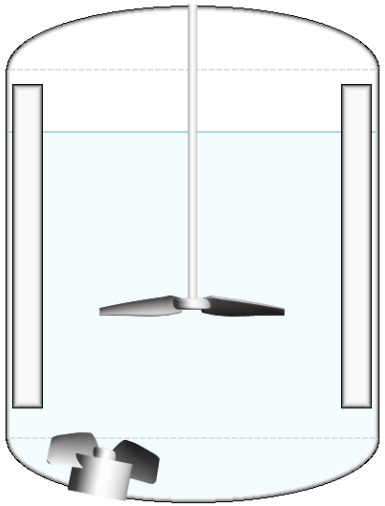
- What does the full version have that KaeMix Student does not?

  Many additional impeller styles (glass lined, dispersers, viscous, counterflow, specialty), mechanical shaft design, easy design comparison mode, heat transfer, oxygen transfer, liquid dispersion, horizontal cylindrical vessels, conical and multilevel vessels, multiple drives and shafts, side entering impellers, additional sparger and baffle styles, draft tubes, stage dividers

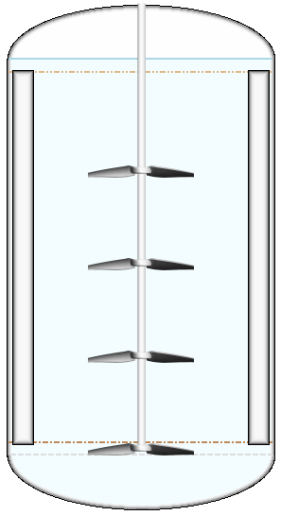
How does it look?



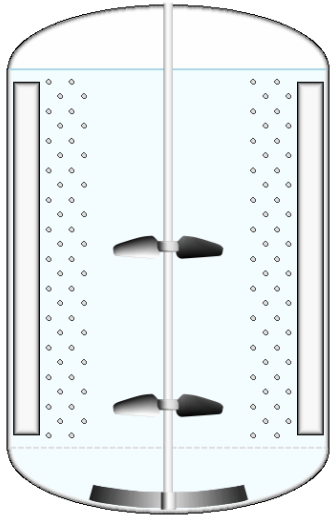
Design Examples



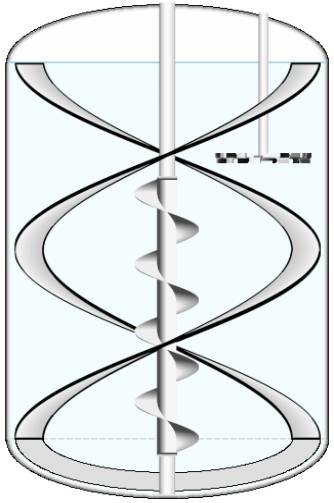
Magnetic impeller and hydrofoil



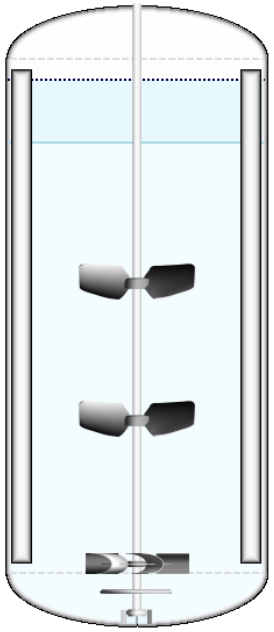
Multiple hydrofoils



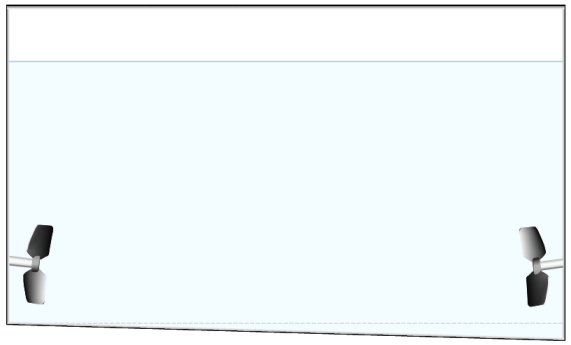
Hydrofoils, a sweeper, and helical coils



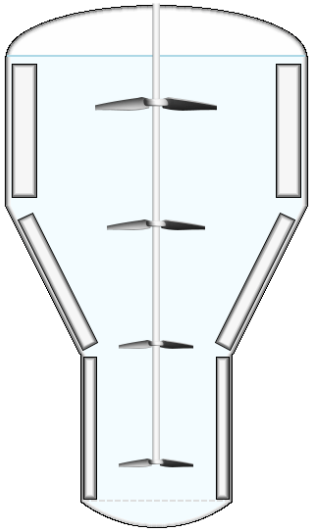
Two shafts, helical ribbon, auger, and disperser



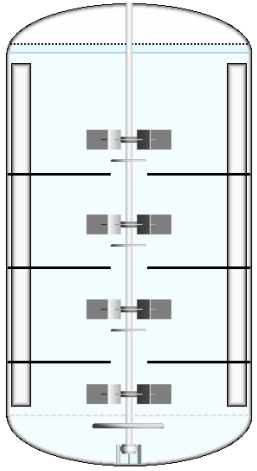
Hydrofoils, a disk turbine, and gas sparger



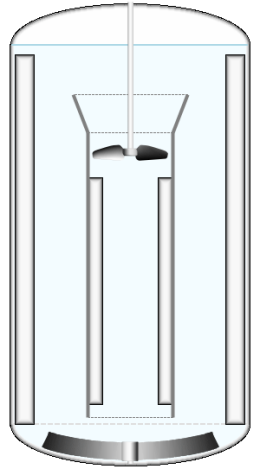
Two side entering impellers in rectangular vessel, angled bottom



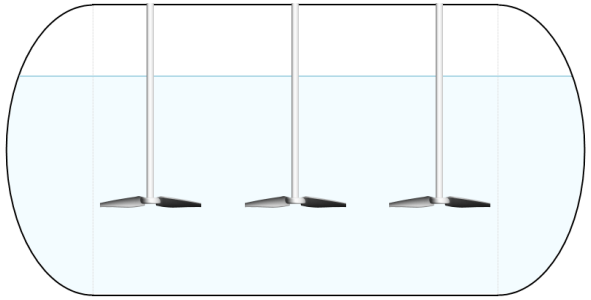
Multilevel vessel



Multiple stages, impellers, and spargers



Hydrofoil, a sweeper, and draft tube

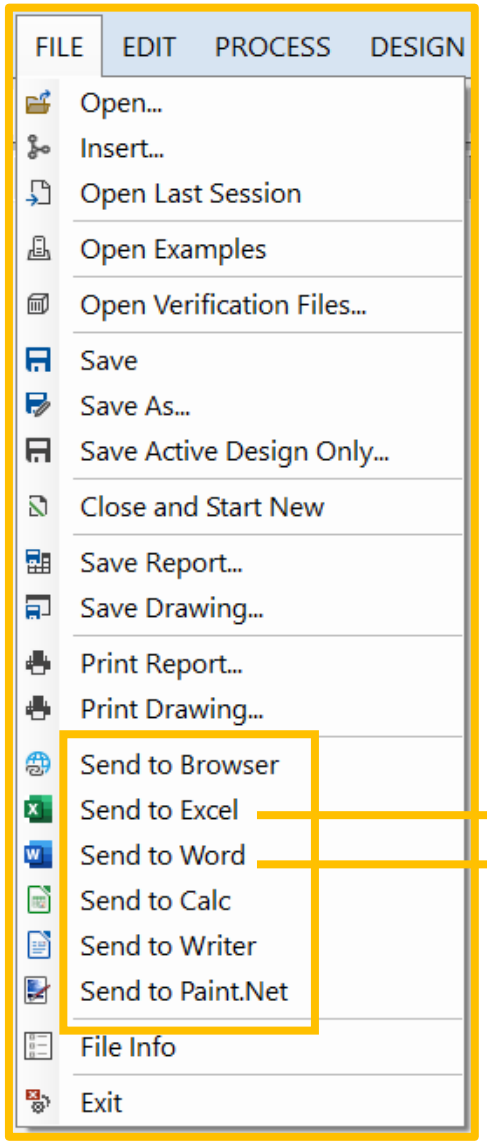


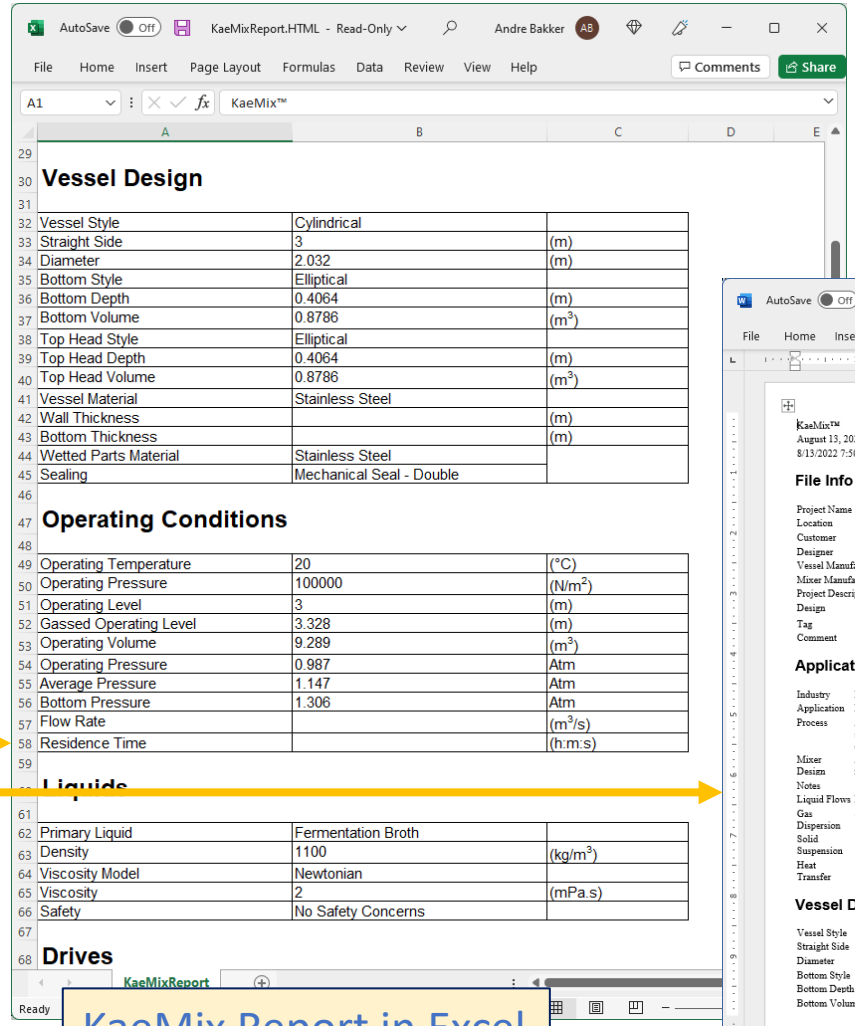
Horizontal cylindrical vessel with multiple shafts and impellers

Physics

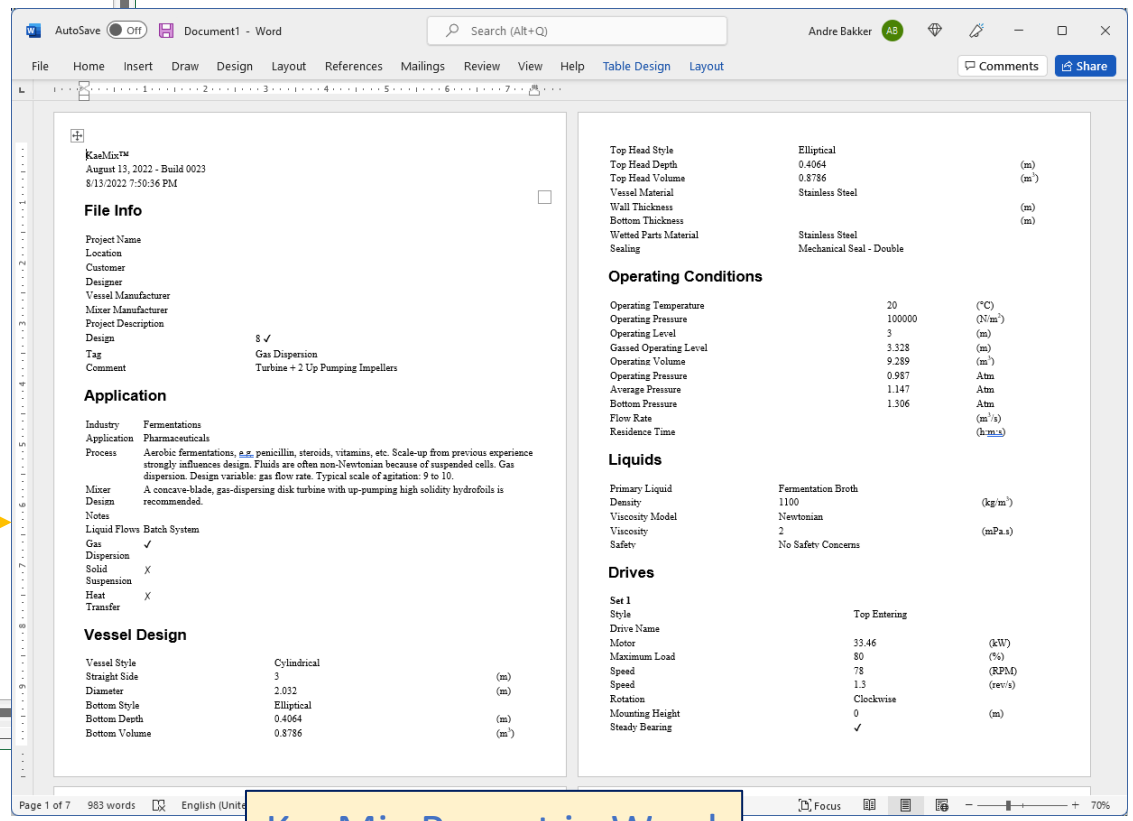
- General: flow regime, dimensionless numbers, torque, power draw, flow rate, blend times, heat transfer, cavern size, surface vortex depth, turbulence details, etc.
- Materials: built-in properties for common liquids and gases, Newtonian, power law, yield stress fluids
- Mechanical: shaft moments and stresses, critical speed, sparger pressure drop
- Gas dispersion: dispersion regime, gas holdup, mass transfer
- Solids suspension: just suspended speed, settled solids, cloud height, floating solids, solid-liquid mass transfer, dissolving time
- Liquid dispersion: droplet size, dispersion time
- Scale-up criteria: blend time, M-Scale, Fr, Re, shear rates, tip speed, power / volume, torque / volume
- M-Scale: a 1 to 10 scale of agitation for liquid blending
- M-Phase: a 1 to 10 scale of agitation for multiphase applications
- Application guide: impeller and scale of agitation recommendations

Reporting





KaeMix Report in Excel



KaeMix Report in Word

Available Equipment Styles

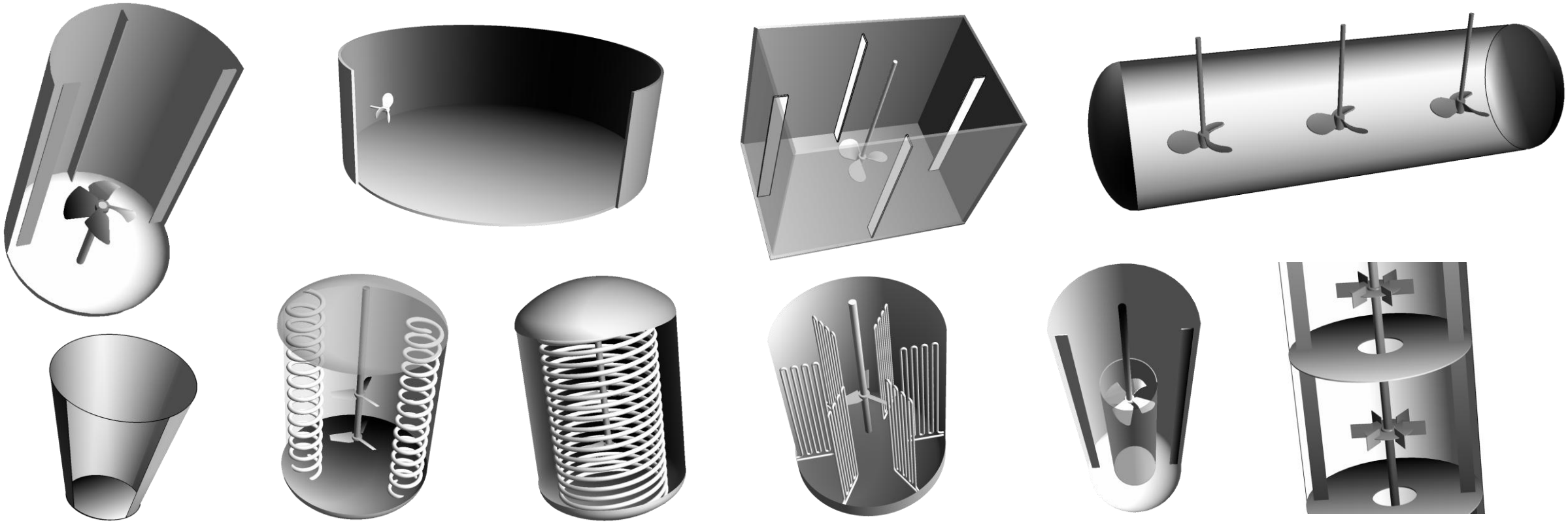
Vessels, baffles, gas spargers, impellers

Vessels

Vessel styles: cylindrical, rectangular, horizontal, conical, multi-level

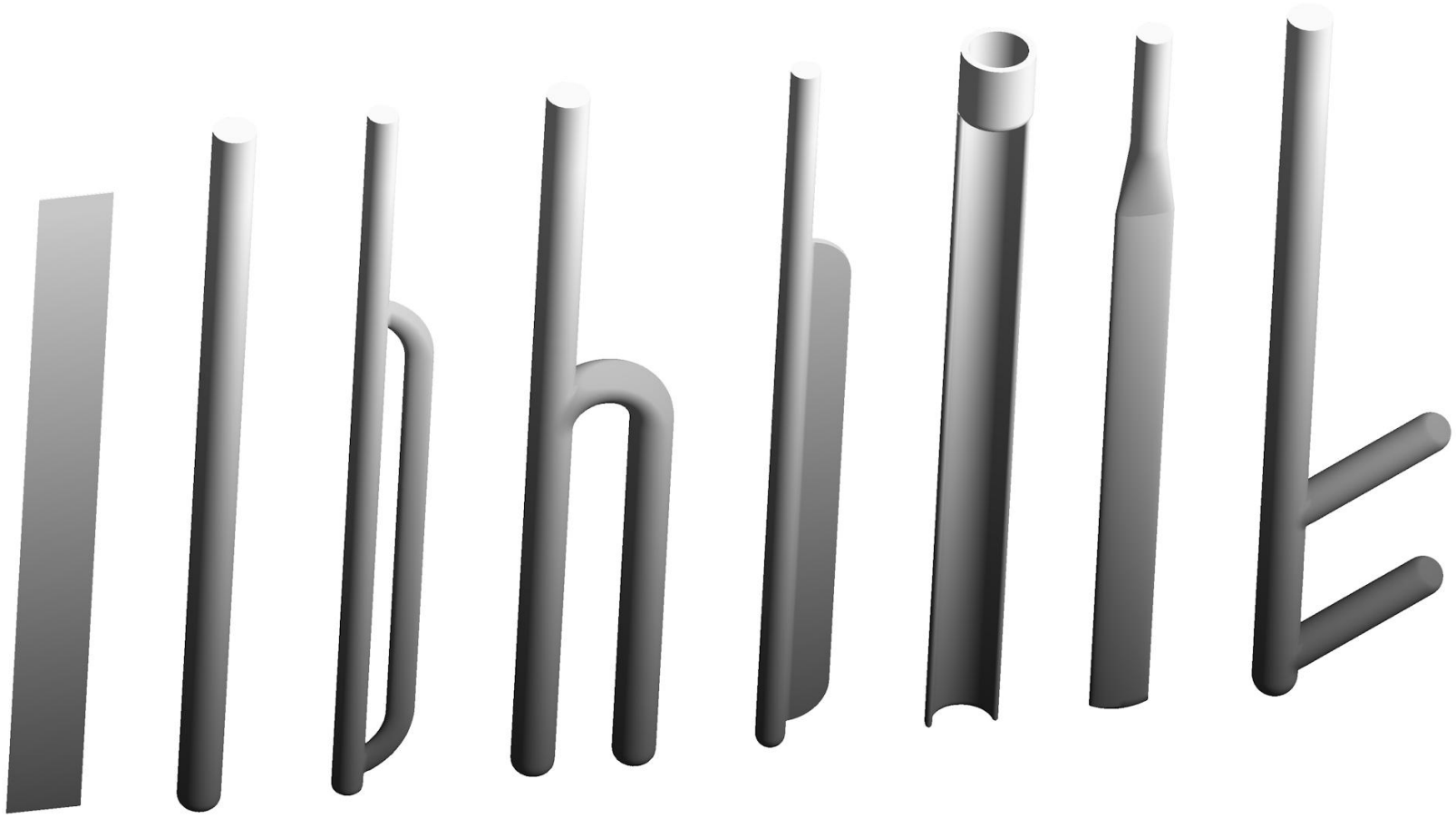
Bottom and head styles: flat, dish, elliptical, angled, conical, ASME, DIN

Internals: baffles, spargers, heat exchangers, draft tubes, stage dividers



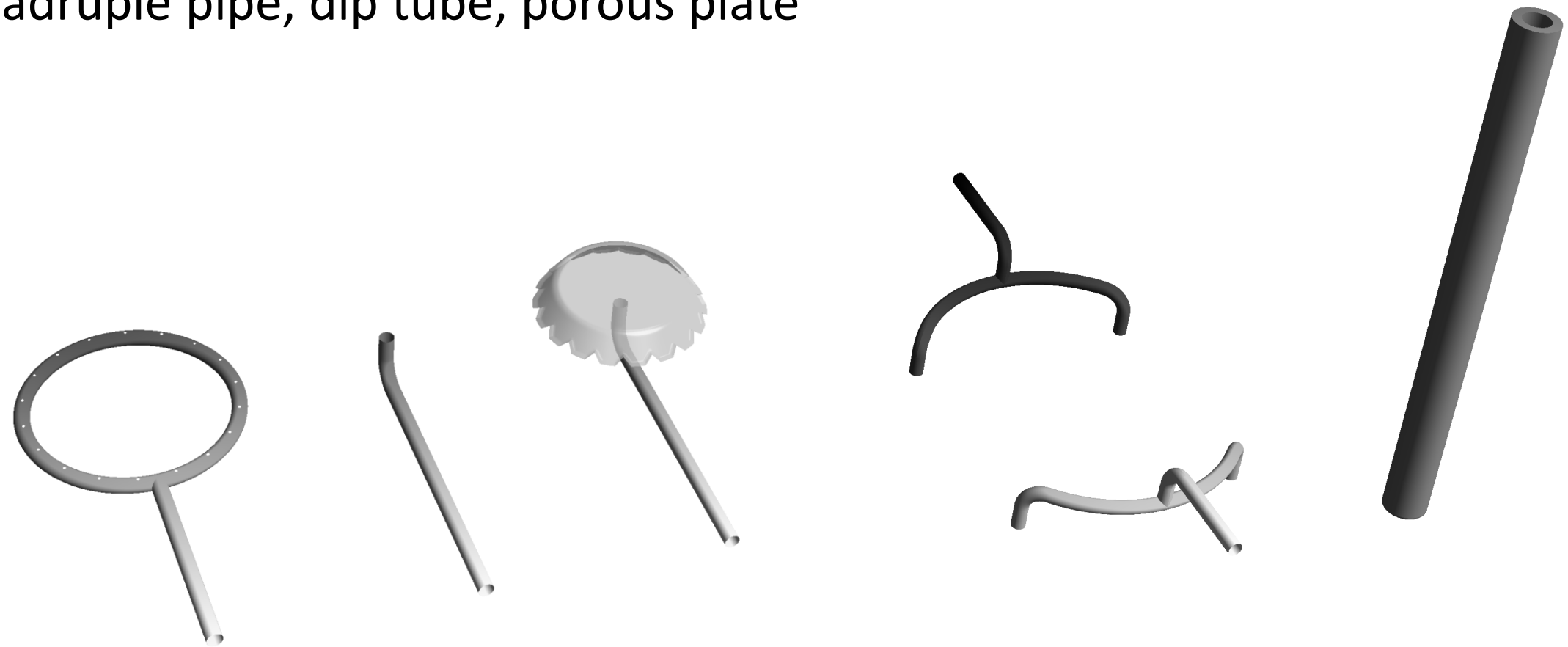
Baffles

Available styles: flat, pipe / dip tube, D-style, h-style, fin, concave / C-style, flattened pipe / beavertail, finger baffle (2, 3, 4 fingers)



Gas Spargers

Available styles: ring, pipe, pipe with bottle cap, quadruple pipe, dip tube, porous plate

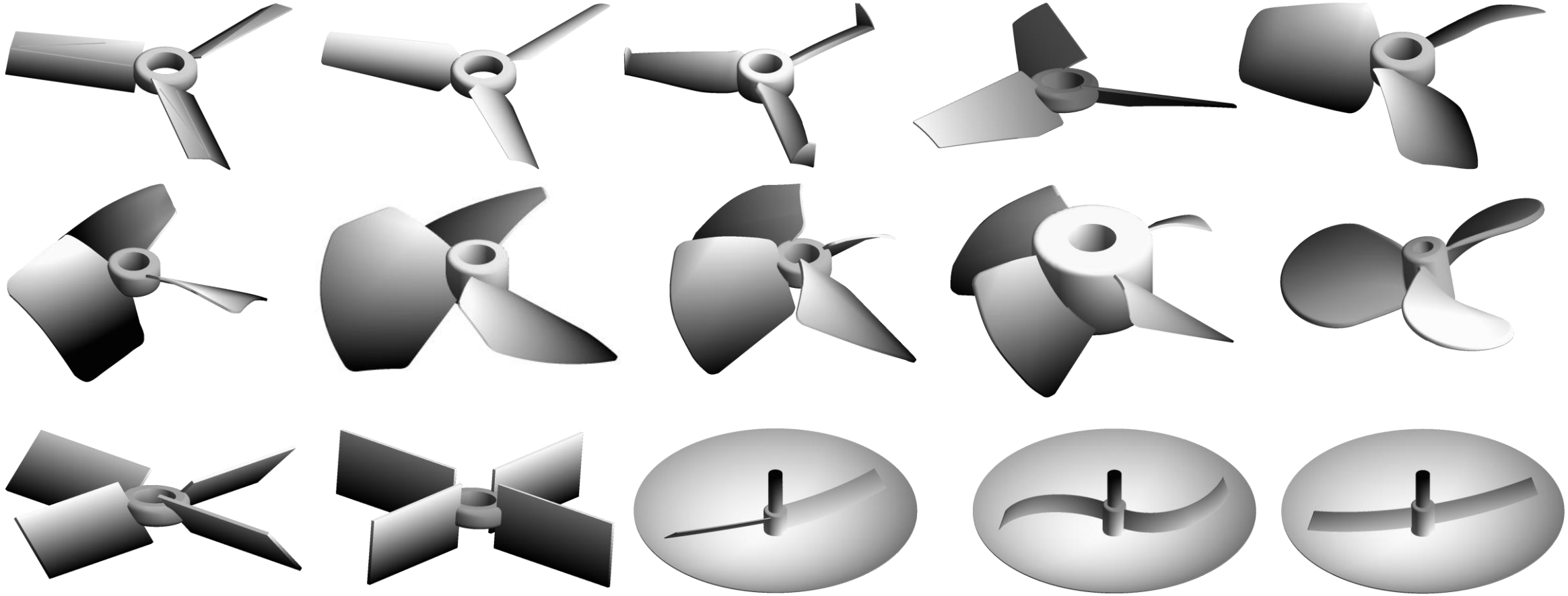


Impeller Types

- General: High-Efficiency, Hydrofoil (Narrow, Intermediate, Wing Tip, Medium, Wide, MaxFlo, X-Wide Blade), Pitched Blade, Propeller, Straight Blade, Sweeper (Curved, Pitched, Vertical Blade)
- Disk Turbine: Van't Riet, Smith, Middleton, Bakker, Conical Disk, Full Disk, Vertical Curve, Rushton, Rushton 45^{o}, Rushton 60^{o}
- Glass Lined: Angled, Concave, Curved, Disk, Hydrofoil, Opti Blades, Retreat Curve, Ring, Pitched and Vertical Blades
- Viscous: Anchor, Auger, Frame, Gate, Helical Ribbon, ParaFlow
- Dispersers: Bar Turbine, Cowles, Dissolver, High Shear, Solids Breaker, Rotor-Stator
- Counterflow: Mig, InterMig, Wide, JT
- Specialty: Magnetic, Aerator Disk, Aerator Pitched, Antiragging, Banana Blade, Brumagin, Clean Edge, Combi Blade, Cup Blade, Curved Blade, Deep Concave, Elephant Ear, Foam Breaker, Gas Inducer, Long Blade, LowVisc, MaxBlend, PBT Stabilizer, Open PBT, Open SBT, Ring Blade, Pumper Curved, Pumper Straight, Spiral Spring, U-Z Blades

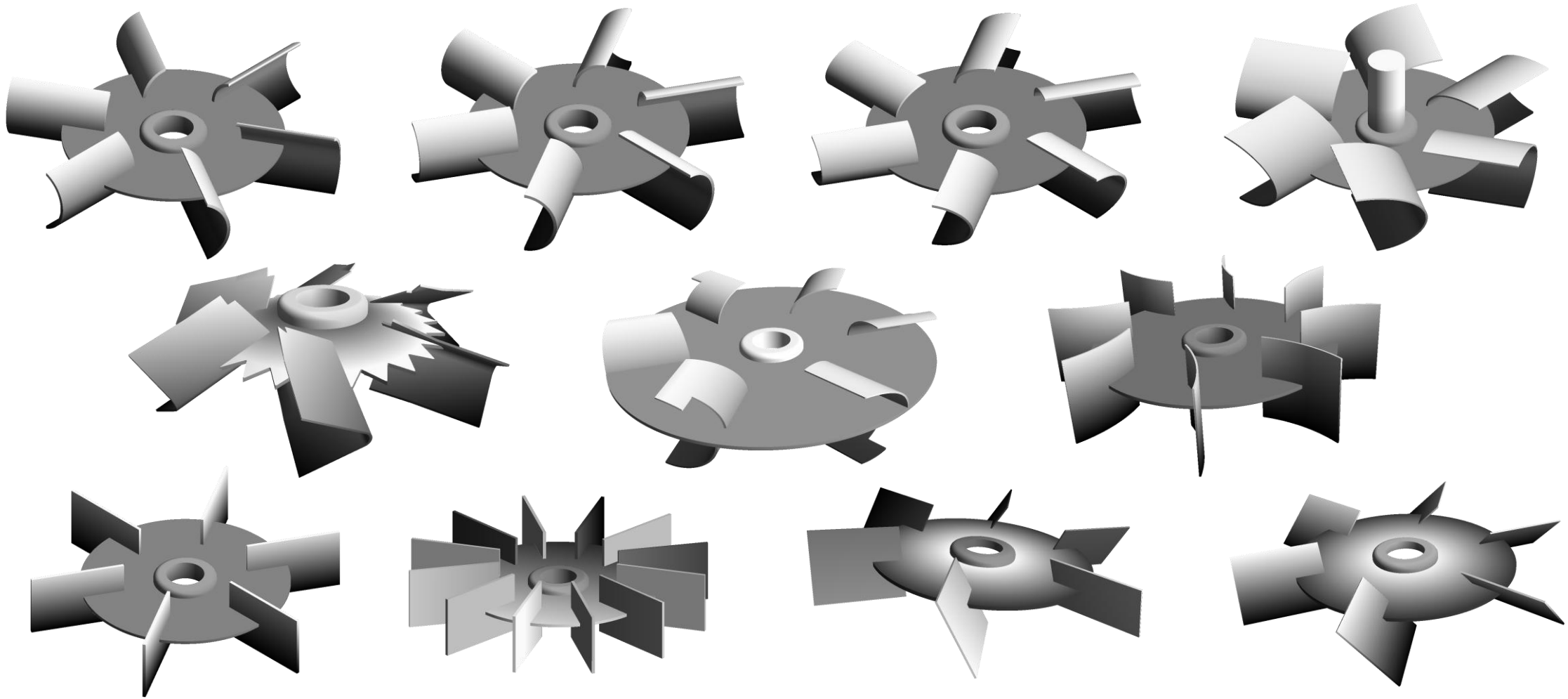
General

General: High-Efficiency, Hydrofoil (Narrow, Wing Tip, Intermediate, Medium, Wide, X-Wide, MaxFlo, and Wide Hub), Propeller, Pitched Blade, Straight Blade, Sweeper (Curved, Pitched, Vertical Blade)



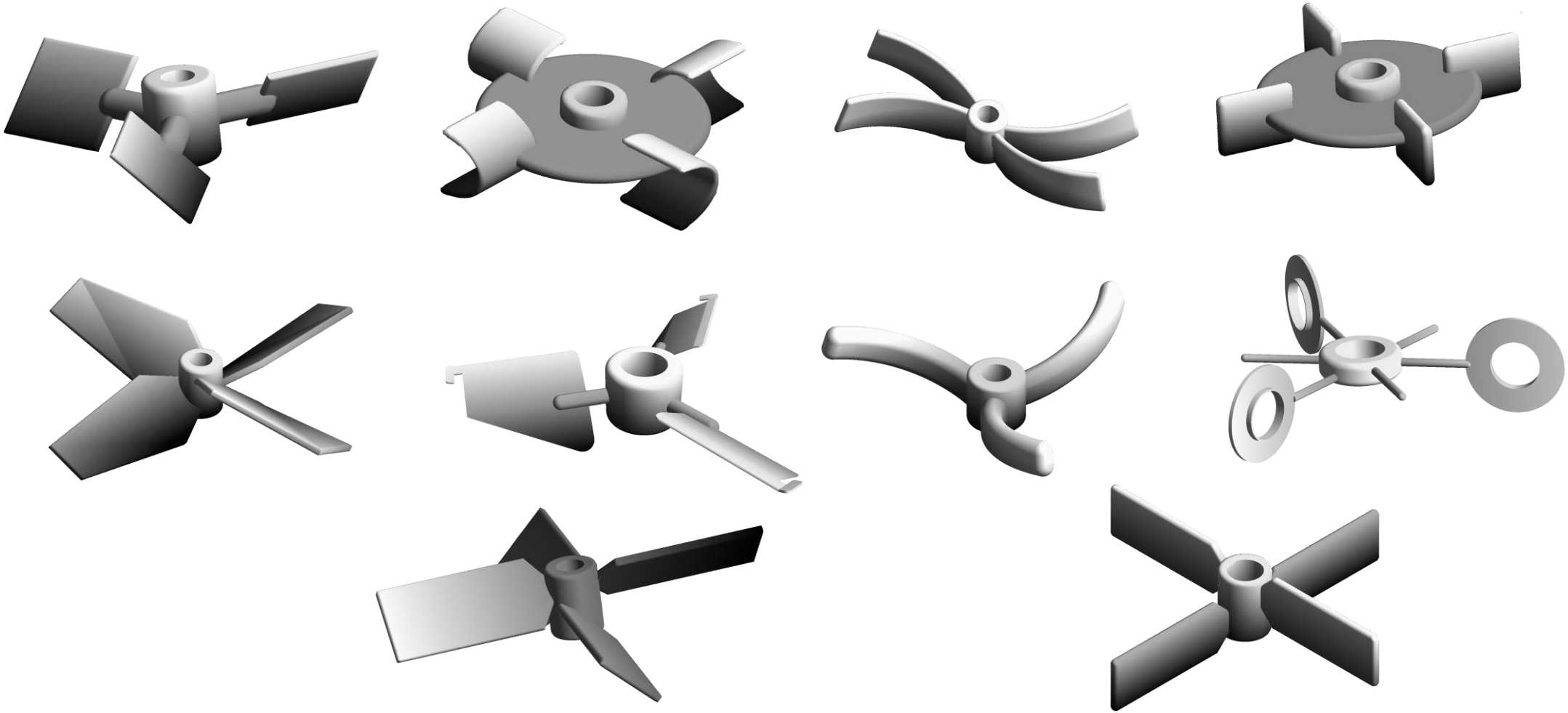
Disk Turbine

Disk Turbine: Van't Riet, Smith, Middleton, Bakker, Conical Disk, Full Disk, Vertical Blade Curve, Rushton, Rushton 45º, Rushton 60º



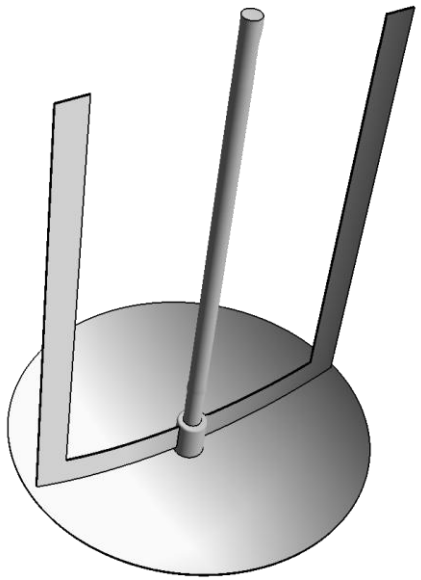
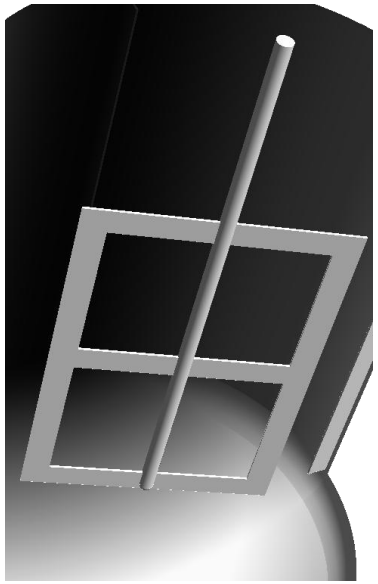
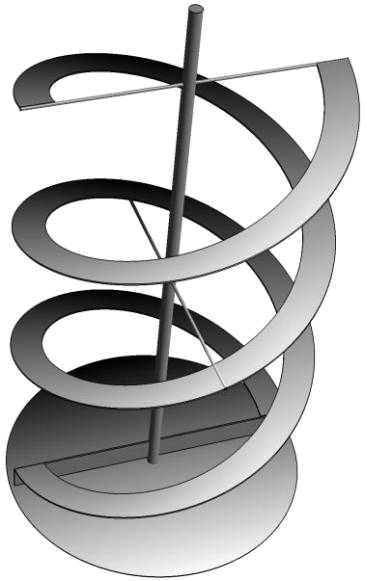
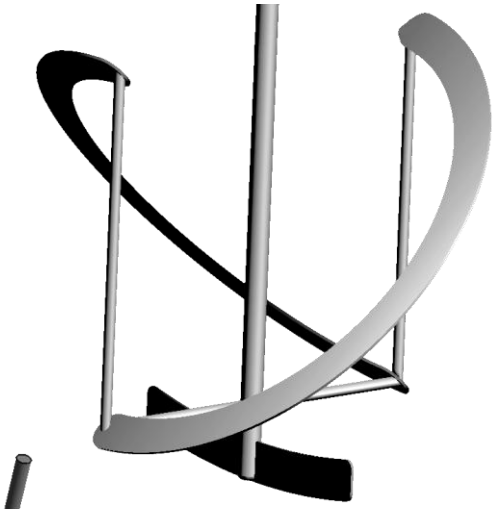
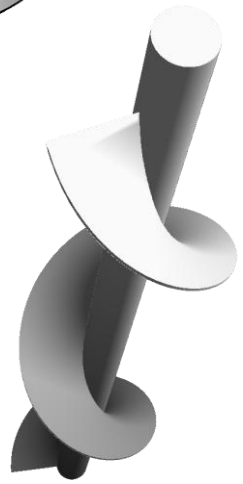
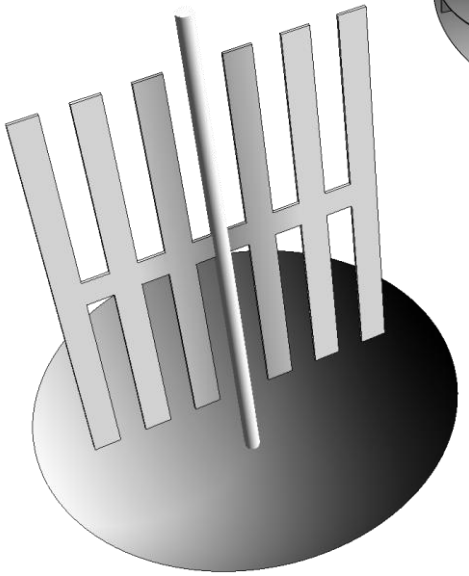
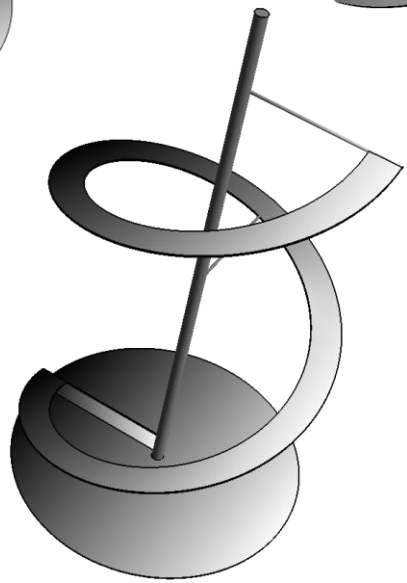
Glass Lined

- Glass Lined: Angled, Concave, Curved, Disk, Hydrofoil, Opti Blades, Retreat Curve, Ring, Pitched and Vertical Blades



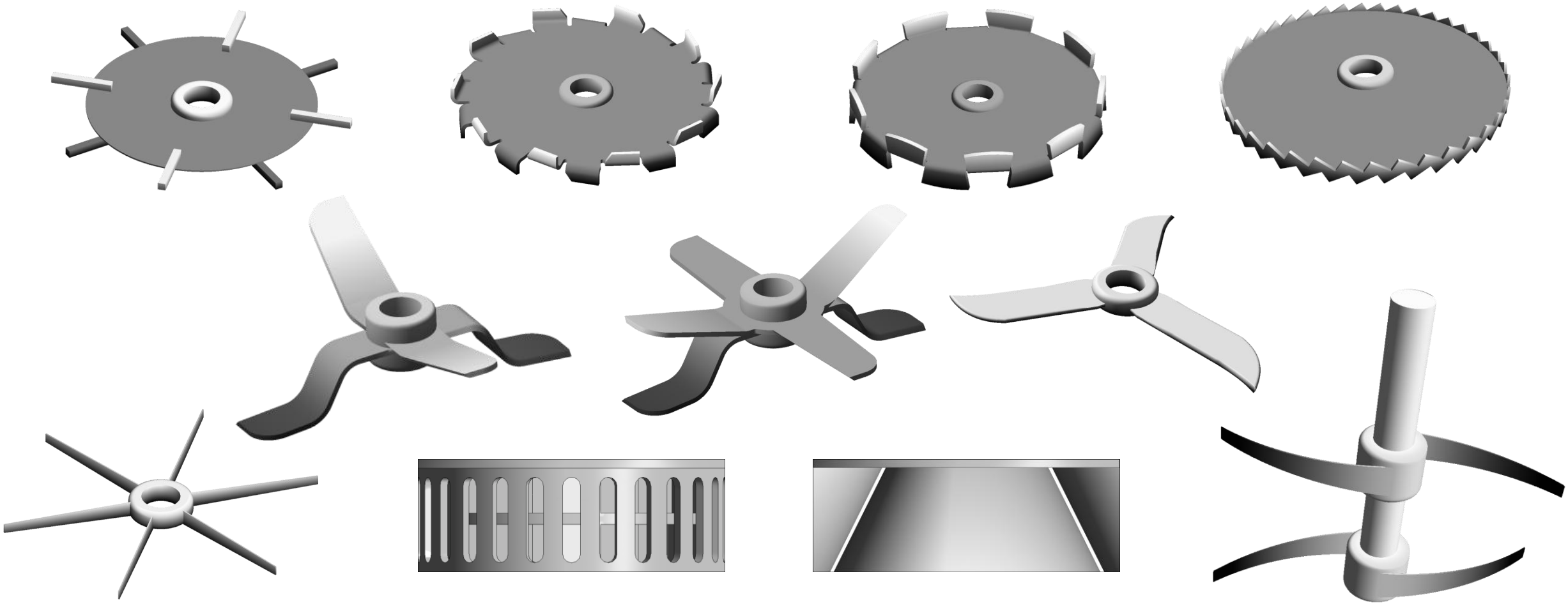
Viscous

Viscous: Anchor, Auger, Frame, Gate, Helical Ribbon, ParaFlow

Dispersers

Dispersers: Bar Turbine, Cowles, Cowles-Wide, Dissolver, High Shear, Extractor, Extractor-Slicer, Slicer, Solids Breaker, Rotor-Stator, Colloid Mill



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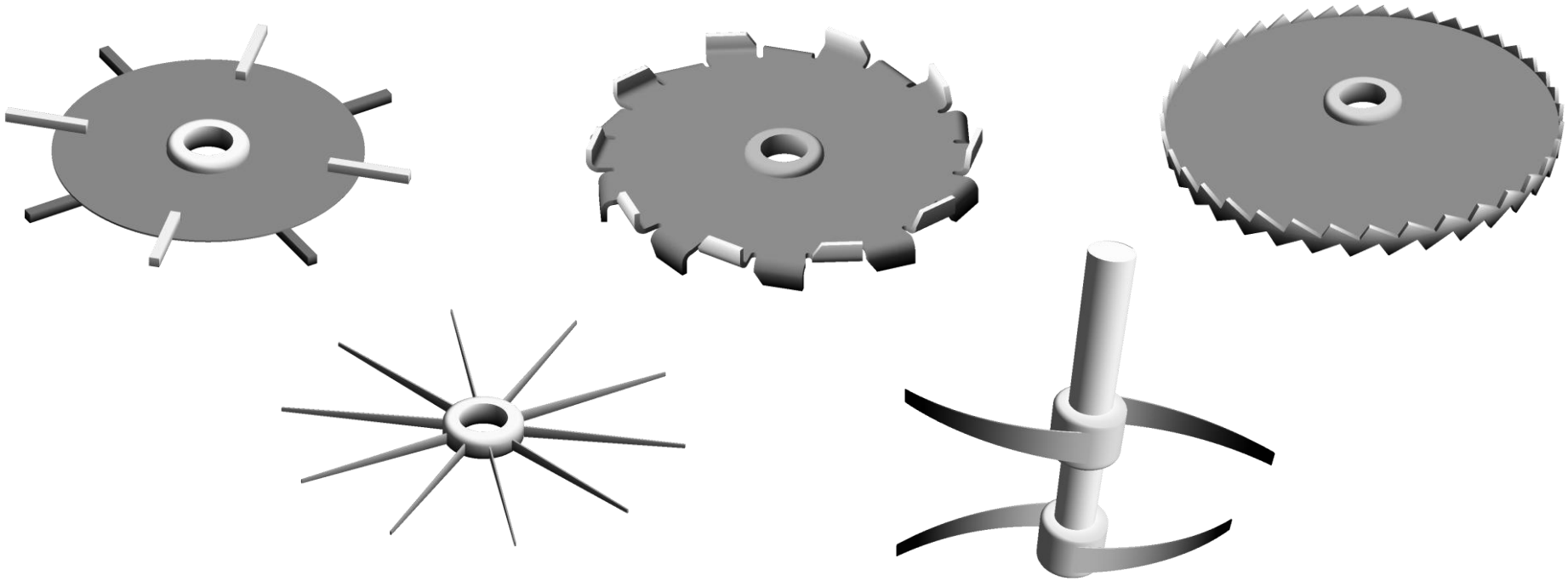
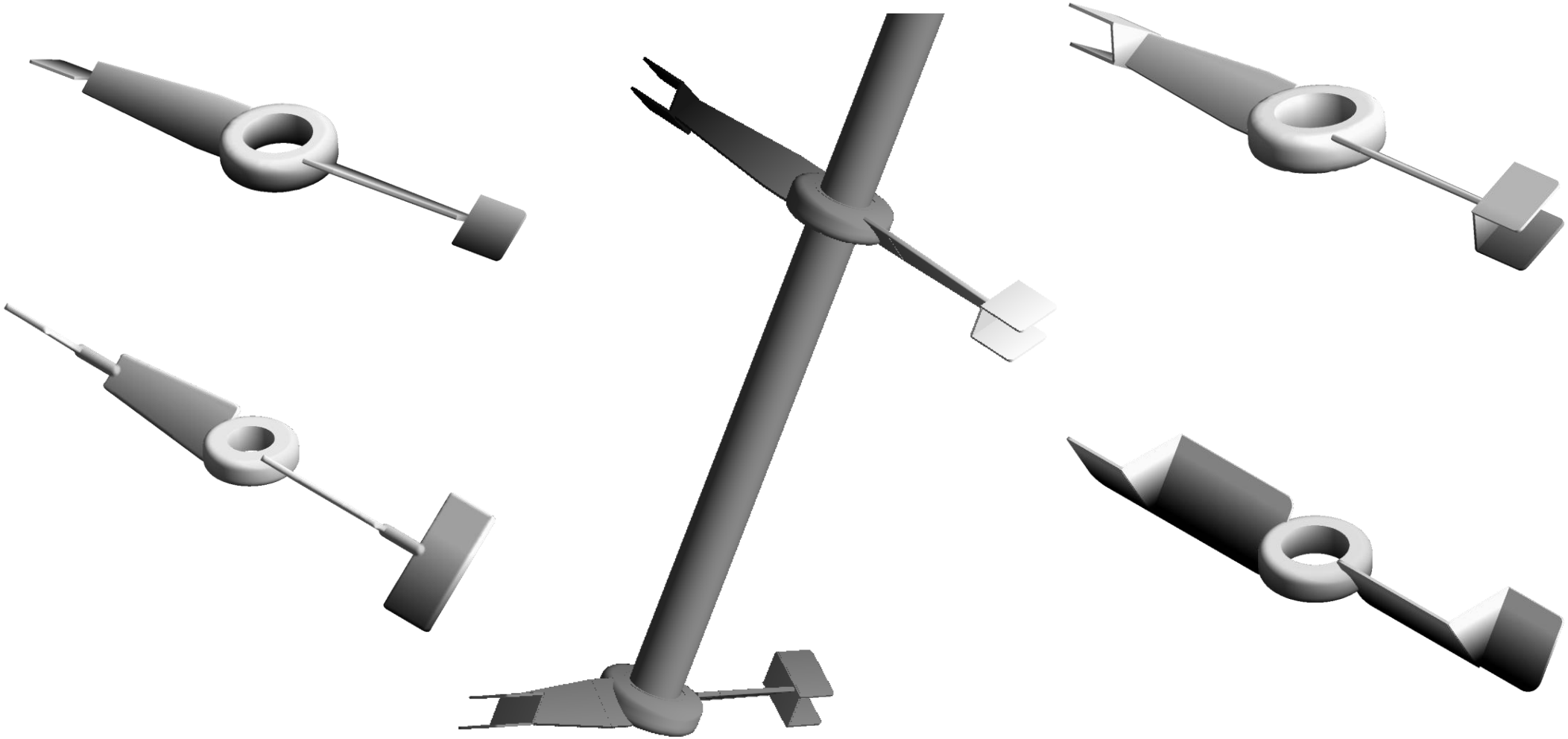


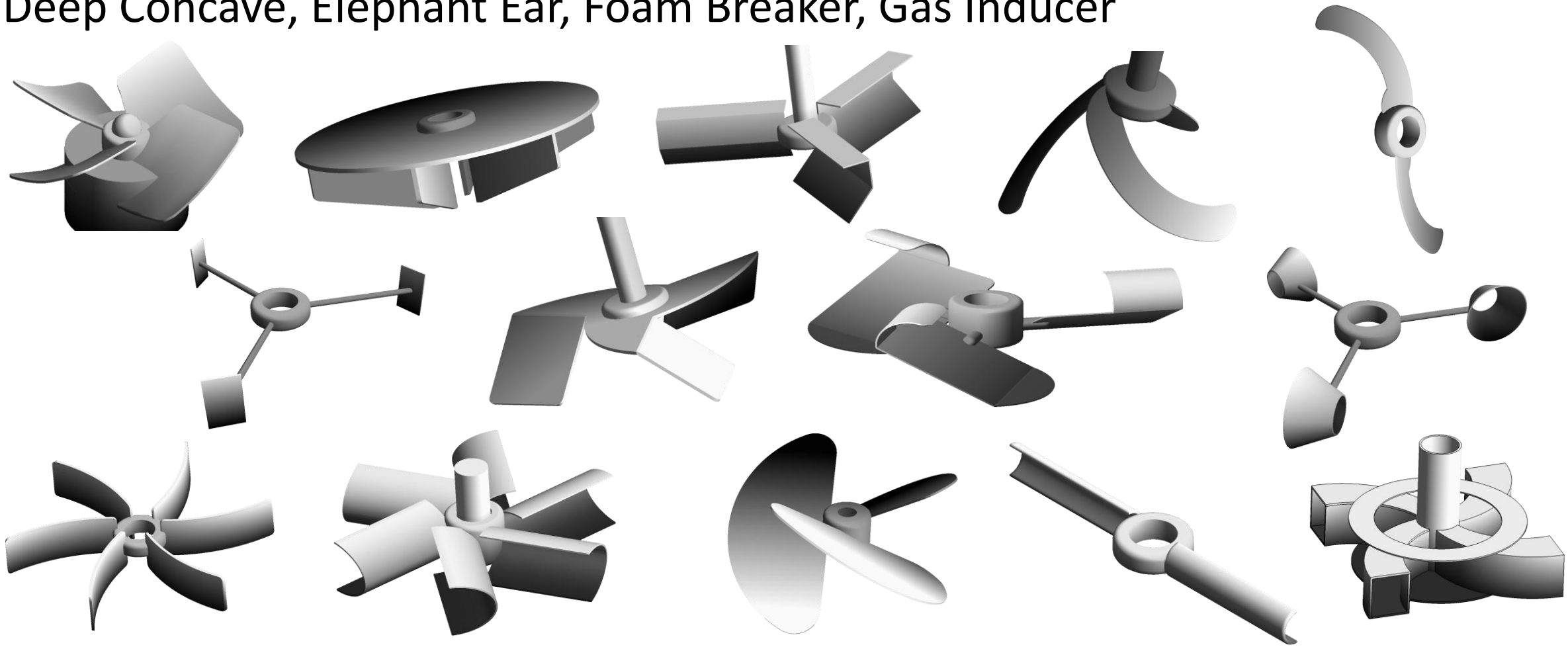
Counterflow

Counterflow: Mig, InterMig, Wide, JT



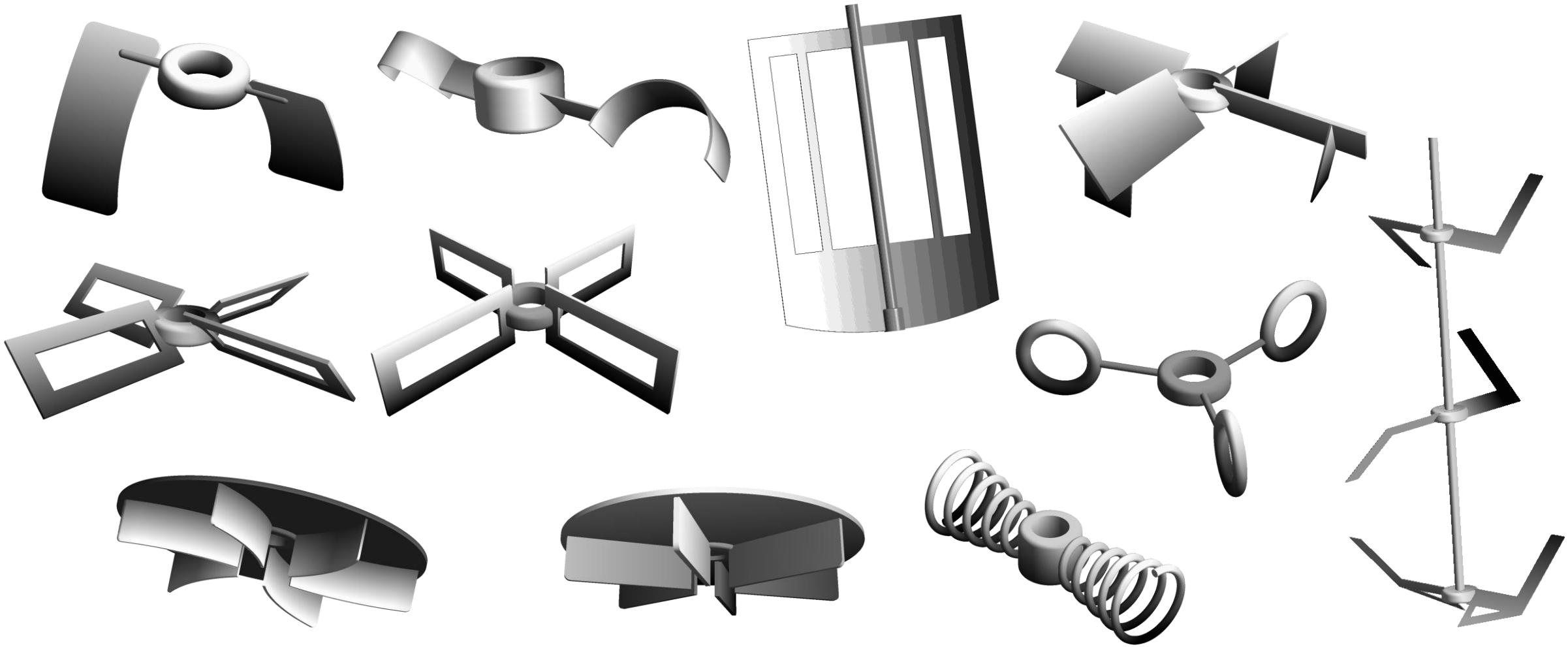
Specialty (1/2)

Specialty: Magnetic, Aerator Disk, Aerator Pitched, Antiragging, Banana Blade, Brumagin, Clean Edge, Combi Blade, Cup Blade, Curved Blade, Deep Concave, Elephant Ear, Foam Breaker, Gas Inducer



Specialty (2/2)

Specialty: Long Blade, LowVisc, MaxBlend, PBT Stabilizer, Open PBT, Open SBT, Ring Blade, Pumper Curved, Pumper Straight, Spiral Spring, U-Z Blades



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