Laval Jet Pod Aerator

Pod Shaped Radial Stream Injector with downward-sloping Laval Nozzles

Biojet Laval Jet Pod Aerator

Pod Shaped Radial Stream Injector with downward-slopingLaval Nozzles

ABOUT THE COMPANY

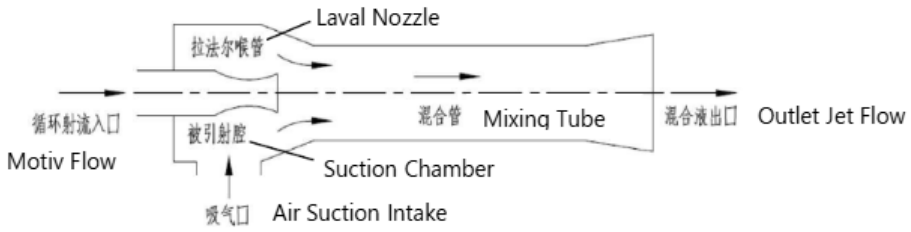
Biojet is a specialist developer and integrator of high-performance jet aeration systems and wastewater treatment technologies. Since 2009 we've combined German engineering rigor with years of hands-on implementation in China to deliver customized, measurable improvements to industrial and municipal treatment plants.

We have full independent R&D capabilities and owns a wide range of patents covering key technologies and product designs. Equipped with multiple advanced five-axis CNC machining centers, we achieve micron-level precision in both component manufacturing and system assembly. Our craftsmanship excellence is supported by a strict quality management system and long-term cooperation with premium raw material suppliers who have partnered with us for more than a decade, ensuring stable and superior material quality.

TECHNOLOGY OVERVIEW

PRINCIPLE

The Laval Jet Pod Aerator is improved on the basis of the patented Laval-tube dome jet aerator. It is made of PP engineering plastics and has many series and models. The Laval jet pod aerators are suitable for aeration in various activated sludge sewage treatment processes.



The inner nozzle or outer nozzle of Laval jet aerator adopts Laval tube design. According to the Laval principle (see Fig. 1), the flow velocity of the water flow will suddenly increase after passing through the contracted neck of the Laval tube, so this series of products overcomes the disadvantages such as high energy consumption and small service area of common types of jet aeration products in the domestic and foreign markets. Compared with these products, various aeration performance indicators have been greatly improved.

The nozzle of the Laval jet pod aerator adopts a unique design, and the direction of the nozzle is inclined downward at a certain angle (see Fig.2), so the installation depth of the jet aerator can be appropriately reduced to achieve the purpose of saving blower energy consumption, especially suitable for Large and deep aerobic reaction tank.

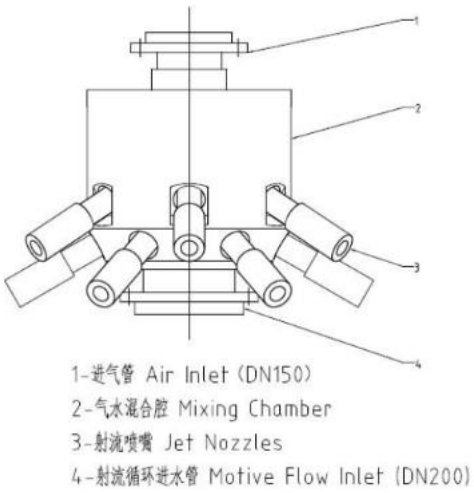


图2: 拉法尔鼎式射流曝气器结构简图
Figure 2：Outside View of Laval Jet Pod Aerator

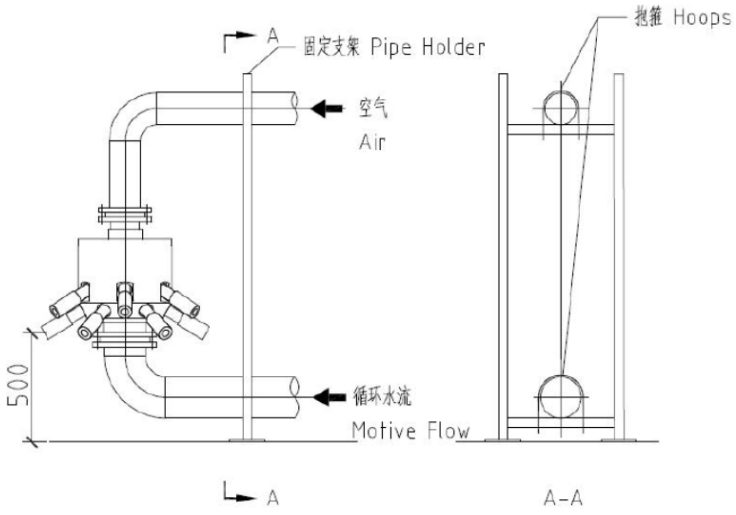
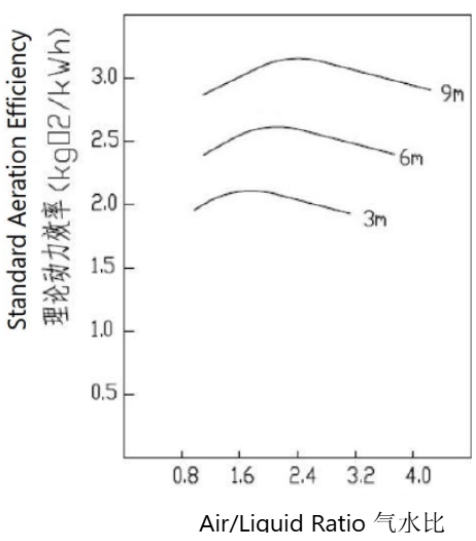


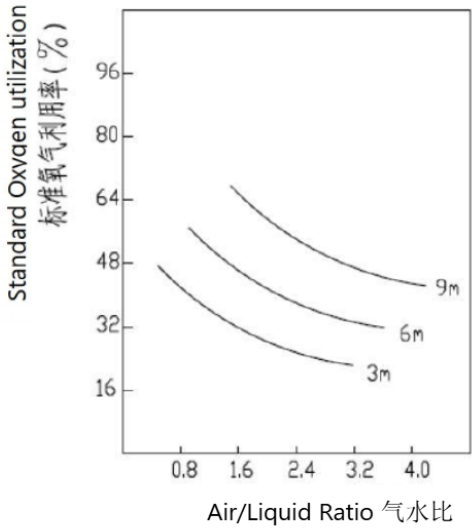
图 3: 拉法尔鼎式射流器固定方式
Figure 3: Installation of Laval Pod Aerator

ADVANTAGES OF BIOJET LAVAL JET AERATOR

- **Large Service Area, Fast Oxygen Transfer, High Oxygen Utilization**
  The innovative Laval nozzle design increases water jet velocity and bubble surface renewal rate. As a result, the service diameter can reach **10–12 m**, oxygen transfer rate can be more than ten times that of blower-only aeration systems, and oxygen utilization efficiency can reach **40–45%**.
- **High Theoretical Oxygenation Efficiency, Low Energy Consumption**
  Compared with blower-only aeration systems, energy consumption can be reduced by up to **50%**.
- **Integrated Mixing Function, Easy Process Control**
  The Laval Jet Aerator allows mixing and aeration to be controlled independently as required, meeting the needs of various wastewater treatment processes.
- **α-Factor up to 0.9 with Minimal Drop under High MLSS**
  In actual wastewater, the oxygen transfer efficiency of fine-bubble diffusers can drop by up to **50%** compared with clean water tests. The efficient mixing generated by the Laval Jet Aerator ensures an α-factor of **0.85–0.9** under any wastewater or sludge concentration condition.
- **Maintenance-Free and Long Service Life**
  No moving parts, no clogging, no sealing issues—virtually maintenance-free. The body is made of stainless steel (**SUS304, SUS316L**) or PP engineering plastic, corrosion-resistant, with a service life of no less than **20 years**.
- **Improved Flange Design – No Neck Breaking**
  Competing products often suffer from flange head breakage. Our design eliminates this risk completely.
- **Throat with High-Strength Plastic Liner to Prevent Cavitation**
  Competing products use PP material for the throat, which typically suffers severe cavitation within 3–4 years, leading to increased throat diameter, reduced jet vacuum, rising blower pressure, and declining aeration performance—sometimes causing blower overload and motor burnout. Our product uses a high-strength engineering plastic liner in the throat, greatly extending service life.
- **Tailor-Made Solutions by Experts**
  We provide fully customized aeration solutions tailored to each project—**case-by-case system design**.



理论动力效率曲线
Aeration Efficiency Curve



标准氧气利用率曲线
Standard Oxygen Utilization Curve

NOZZLE SPECIFICATION

inner nozzle diameter (mm)	F25
outer nozzle diameter (mm)	F44
motive flow rate per nozzle	12～18 m3/h
air flow rate per nozzle	45～90 Nm3/h

APPLICATIONS

1. The activated sludge treatment process using deep tank design for high-concentration wastewater such as chemical wastewater, food industry wastewater, and landfill leachate.
2. High MLSS operated submerged or side-stream MBR.
3. SBR and its derivative processes.
4. Various oxidation ditch processes.

FAX FOR INQUIRY

Fax to: +86 51489993786
Mail to：info@biojet.com.cn

Inquiry Date		Requested Quotation Date	
Company Name		Tel.:	
Contact Person		Fax：	
Post Code		E-Mail	
Address			
About Wastewater			
Origin? (Industry, Municipal…)			
Flow Rate? (M3/D)			
Constituent Concentration? (COD, BOD, NH4-N, SS…)			
Designed MLSS?			
About Structure			
Treatment Process? (A2O, SBR, MBR…)			
Nummer Of Aeration Tanks?			
Length & Width of Tank?			
Designed Water Depth?			
Tank Type? (Concrete/Steel, Aboveground/Underground)			
floor plan of the structure?			
Position Of Jet Pump (Inside/Outside of The Tank)			
Other Requirements			