Impeller Technology

1. Wheel in a New Form

The mixed flow wheel includes a wheel cone carefully matched to the inlet cone for precise running tolerances to reduce air leakage and turbulence, improve efficiency and lower sound.

2. Advanced Design

The design of the wheel is optimized through CFD flow field simulation and repeated tests for optimum air performance, dramatically improving the efficiency over the traditional mixed flow wheel.

3. High Balance Quality Grade

The wheel has been dynamically balanced twice: after the continuous welding process and after epoxy coatings applied on the surface. The balance quality grade reaches AMCA 204-G2.5 standard well above the international standard of G6.3. This helps greatly improve wheel balance, reduce vibrations and lower sound.

4. Optimum Sound Performance

The mixed flow wheel takes on intermediate performance characteristics between the axial and centrifugal wheel.

5. Advanced process

Die-formed and continuously welded, the wheel and flow passage components are of high precision, high strength and greater reliability.

General Features

1. Compact and More Cost-effective Design without Scroll

Traditional fans with scroll are subject to the limitations of inlet distance from the scroll. For the YFISH fan designed without scroll, air is directly sucked through the inlet cone into the wheel and gets pressurized which will help reduce efficiency loss caused by turbulence and achieve better air performance. At the same time, the more compact design saves space, making it the best choice for more cost-effective box-type fans.

2. Performance Characteristics of Mixed Flow Type

The mixed flow fan takes on intermediate performance characteristics between the axial and centrifugal fan and features higher efficiency and lower sound. It allows greater airflow than the centrifugal fan and produces higher pressure than the axial fan.

3. Better Sound Quality: Lower Sound Power

The sound quality of a mixed flow fan benefits from the low sound design as well as the reduced overall sound power. The sound chart compares units of same outlet diameters at an operating point. The mixed flow fan has a much lower sound level than the axial fan and double inlet centrifugal fan at all octave bands. Moreover, its sound mostly falls into the low octave band (62.5-250Hz) and a bystander would hear a more band sound.

4. Aesthetically Pleasing Housing Constructed of Aluminum Alloy

The aesthetically pleasing housing constructed of aluminum alloy features high strength, light weight and tight sealing. Also, acoustical options can be customized (Options: soundproofing egg crate foam wall tiles or double layer soundproofing structure) for further improved performance.

5. Fans in Direct and Belt Drive Types for Flexible Model Selection

- The direct drive type features high transmission efficiency, more compact design, minimal maintenance and no quick wear parts.
- The belt drive type has a broader range of applications, allows more precise model selection and offers greater flexibility in responding to field conditions.

6. Different Discharge Options and More Flexible Applications

The direct drive type offers four different discharge options and the belt drive type seven. They can meet various design needs, making onsite installation easier and more convenient.

Technical Information

1. Quality Standards

The fan has designed according to AMCA design procedure, the products are produced within very control procedure following ISO 9001, ISO14001 and ISO 45001.

2. Fan Type

The duct mounted YFISH fan shall be of the mixed flow, belt or direct driven, inline type. It shall be designed without a scroll. The fan wheel shall be of the mixed flow type, constructed of steel and shall include a wheel cone carefully matched to the inlet cone for precise running tolerances. Wheels shall be statically and dynamically balanced up to AMCA 204-G2.5 standard.

3. Surface Processing

The surface of the wheel shall be polished to remove any protuberances, welding spatters, burrs, sharp edges, scrap iron and greasy dirt before being finished with electrostatic epoxy coatings (Optional). The surface shall be a level one without sags, cracks, cockles or detachment. The surface shall remain free from corrosion

4. Main Fan parts

Fan Part	Description
Mixed Flow Impeller	The fan wheel shall be of the mixed flow type, constructed of steel and shall include a wheel cone carefully matched to the inlet cone for precise running tolerances. Wheels shall be statically and dynamically balanced up to AMCA 204-G2.5 standard, epoxy coatings applied on the surface
Fan Housing	The housing shall be made with galvanized sheet steel with electrostatic epoxy coating. Its thickness shall be enough to withstand the weight of the fan and the motor. Various outlets shall be allowed. The housing shall be constructed of fiberglass acoustic panels for high-performance sound absorption.
Motor	The motor shall be carefully matched to the fan load. It shall be (IP55,IP56, …etc) rated with Class F,H Insulation according to project specification . The motor bearing shall be of ball type and lubrication- free. Out of the air stream shall the motor and drive mechanism be located to avoid grease or dirt accumulation (only for belt drive type)
Shaft	The shaft shall be made of 40Cr steel and heat treated through homogenizing furnace to the hardness level of HB 286. The shaft material shall have a maximum limit of yield strength of 550MPa. Hard film shall be applied on the surface to avoid corrosion. The shaft shall also be dynamically balanced together with the wheel. The design speed of the shaft shall be at least 25% more than the maximum running speed of the fan.
Pulley	Fan pulleys shall be sized for a minimum of 150% of the driving power. Pulleys shall be cast iron, keyed and securely attached to the wheel and motor shaft. Conical type bushings shall be equipped for easy removal of the pulley.
Belt	The belt shall be grease and oil and static proof and resistant to high temperature
Bearing	Independent metal bearings shall be used to support the shaft to avoid vibrations directly coming onto the motor. The bearing shall be selected with service life of (80, 000 to 200,000) hours at the maximum operating speed specified in the catalog as per the design. The bearing shall be of permanently sealed type and pillow block metal ball bearing that can be lubricated.
Drive Support	Drive mechanism shall be supported by thick steel sheet finished with powder coatings to avoid corrosion. The belt tension can be adjusted through the adjusting bolt at the motor base. The design shall make sure the fan shaft and motor shaft is always parallel.
Belt Guard	The semi-enclosed belt guard shall be fitted to avoid injuries
Venturi Inlet	The inlet cone is used for precise running tolerances to reduce air leakage and turbulence, improve efficiency and lower sound.