

# High-Speed Centrifugal Blower Integrated Solution

High-Speed Motor + Centrifugal Impeller + Variable-Frequency Control,  
Designed for Continuous Operation and Built-In Equipment Applications

While meeting target operating conditions, achieve lower installed power, a smaller footprint, and higher equipment integration efficiency.

Integrated High-Speed Motor

Centrifugal Impeller

Radial Diffuser

## Measured Replacement Reference

4 kW High-Speed Centrifugal Blower ⇔  
7.5 kW Regenerative Blower

Operating Condition 1: 300 m<sup>3</sup>/h, 15 kPa

Shaft Power: 1.8 kW vs. 3.5 kW, Approx. **48.6%**  
Energy Savings

Operating Condition 2: 180 m<sup>3</sup>/h, 30 kPa

Shaft Power: 3.0 kW vs. 5.0 kW, Approx. **40%**  
Energy Savings



Continuous  
Operation



Retrofit  
Applications



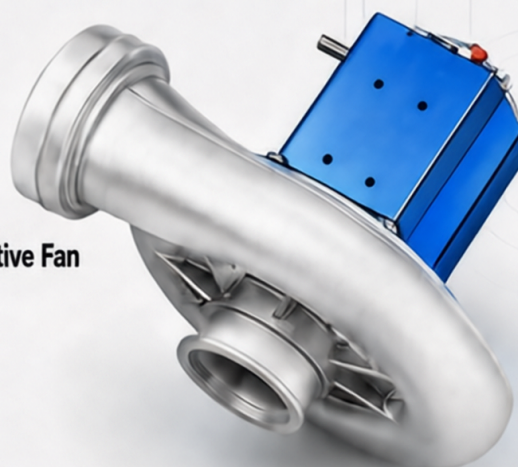
New Equipment  
Integration

Based on comparisons under two measured operating conditions;  
final selection is subject to actual site conditions.



# Measured Operating Condition Comparison

4 kW High-Speed Centrifugal Fan vs. 7.5 kW Regenerative Fan



| 4 kW High-Speed Centrifugal Fan

Under the same target operating conditions, the high-speed centrifugal solution not only reduces shaft power, but also lowers installed power and footprint, improving overall equipment integration efficiency.

| Comparison Item          | Conventional Solution               | High-Speed Centrifugal Solution                                                  | Comparison Result                                              |
|--------------------------|-------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------|
| Equipment Solution       | 7.5 kW Regenerative Fan             | 4 kW High-Speed Centrifugal Fan                                                  | Alternative Reference for the Same Target Operating Conditions |
| Operating Condition 1    | 300 m³/h · 15 kPa                   | 300 m³/h · 15 kPa                                                                | Same Operating Conditions                                      |
| Condition 1 Shaft Power  | 3.5 kW                              | <b>1.8 kW</b>                                                                    | Energy Saving of Approx. 48.6%                                 |
| Operating Condition 2    | 180 m³/h · 30 kPa                   | 180 m³/h · 30 kPa                                                                | Same Operating Conditions                                      |
| Condition 2 Shaft Power  | 5.0 kW                              | <b>3.0 kW</b>                                                                    | Energy Saving of Approx. 40%                                   |
| Installed Power          | 7.5 kW                              | <b>4kW</b>                                                                       | Lower Power Configuration                                      |
| Footprint & Installation | Larger Footprint                    | More Compact Structure                                                           | Easier Equipment Integration                                   |
| Structural Integration   | Conventional External Configuration | Integrated High-Speed Motor + Impeller                                           | Higher Integration Efficiency                                  |
| Applicable Scenarios     | Conventional Configuration          | Continuous Operation / Existing Equipment Retrofit / New Equipment Configuration | Wider Range of Applications                                    |



Operating Condition 1  
Energy Saving of Approx.

**48.6%**



Operating Condition 2  
Energy Saving of Approx.

**40%**



Installed Power

**4kW vs. 7.5kW**



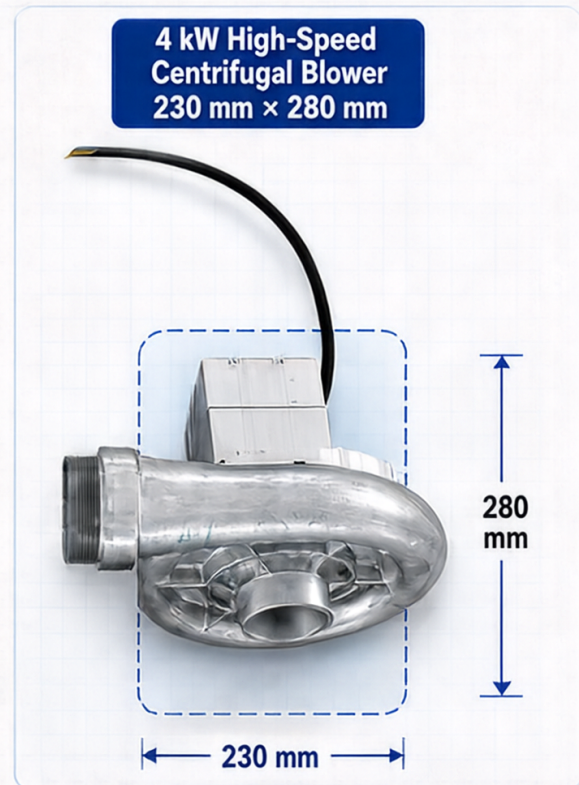
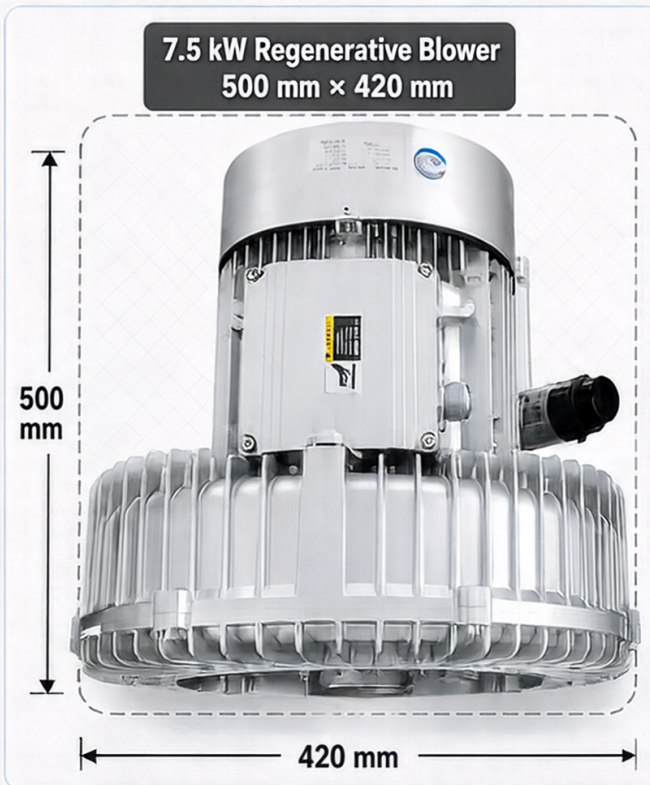
**Key Conclusion: Under the same target operating conditions, lower power configuration, smaller footprint, and higher integration efficiency.**

**Note:** The above data are based on comparisons under two measured operating conditions. Final model selection shall be subject to actual site conditions.



# Compact Structure, Better Suited for Built-In Equipment

Intuitive comparison: Under the same configuration conditions, the high-speed centrifugal solution has a smaller footprint.



| Solution                           | Equipment Dimensions (L × W × H) |
|------------------------------------|----------------------------------|
| 7.5 kW Regenerative Blower         | 500 × 420 × 460 mm               |
| 4 kW High-Speed Centrifugal Blower | 230 × 280 × 350 mm               |

| Unit Dimension Comparison (L × W × H)                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Height: 460 mm vs 350 mm</li> <li>• Unit length reduced by approx. 54%</li> <li>• Unit width reduced by approx. 33.3%</li> <li>• Unit height reduced by approx. 23.9%</li> </ul> |



Unit Footprint Reduced by Approx.

**69.3%**



With the Same-Spec Silencer Filter Installed,

Overall Length Is 270 mm Shorter **270 mm**



Lower Installed Power



Smaller Footprint



Easier Equipment Integration

Note: When the same-spec silencer filter is installed axially on both solutions, the added length is essentially the same.

The above comparison is for unit dimensions only; actual installed dimensions and model selection are subject to site conditions and system configuration.



# Fish Farm Application Case

## Replacing a Roots Blower with an IBI High-Speed Centrifugal Blower

As no on-site instruments were available to measure flow, pressure, or power, the operating current at the user's satisfactory operating condition is used as the comparison reference.



**B** Before Retrofit: Original Roots Blower On Site



**A** After Retrofit: IBI High-Speed Centrifugal Blower On Site

### Operating Current Comparison at the User's Satisfactory Condition



 Same site; readings are referenced at the user's satisfactory operating condition.



Application:  
Fish Farm  
Aeration



Original  
Equipment:  
Roots Blower



Replacement Solution:  
IBI High-Speed  
Centrifugal Blower



On-Site Reference  
Indicator:  
Operating Current



**Case Conclusion:** While meeting on-site operating requirements, the IBI high-speed centrifugal blower has **lower operating current** and is better suited for continuous operation and energy-saving retrofits.



Note: The above data are recorded from an on-site case and include only current readings at the user's satisfactory operating condition. Standard tests of flow, pressure, and power were not conducted; the results are for project evaluation reference only.

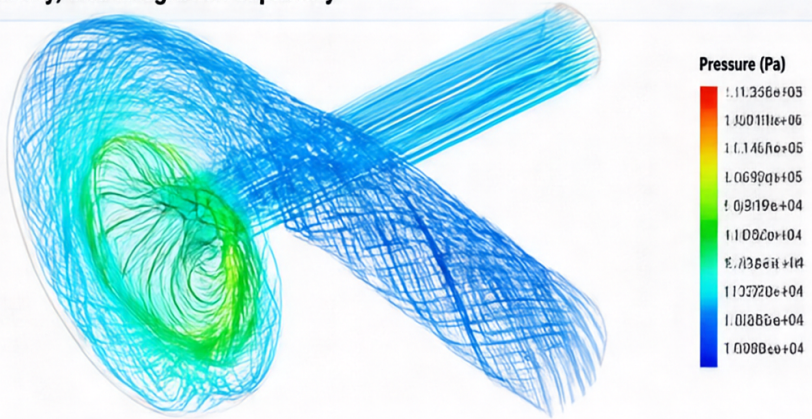


# Simulation Design + Test-Bench Validation: Creating a Closed-Loop Development Process for High-Speed Centrifugal Compressors

Through high-speed motors, centrifugal impellers, volute flow passages, and test validation, continuously optimize overall efficiency, stability, and integration capability.

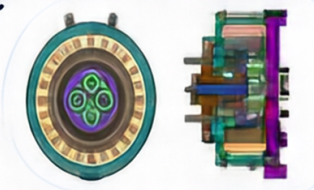
## 01 Impeller-Volute Flow-Field Simulation

Observe internal flow paths and optimize the impeller, diffuser, and volute structure to reduce local flow losses.



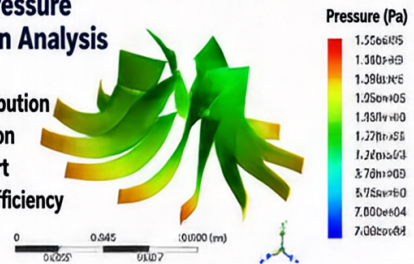
## 02 High-Speed Motor Electromagnetic Simulation

Analyze magnetic circuits, torque, and loss distribution to provide a design basis for high-speed, high-efficiency operation.



## 03 Impeller Pressure Distribution Analysis

Evaluate pressure distribution and aerodynamic loads on blade surfaces to support impeller structural and efficiency optimization.

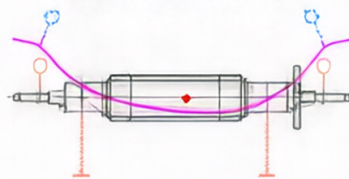


## 04 Single-Impeller Rotor Dynamics Analysis

Evaluate critical speed, vibration modes, and deformation response to support rotor-system stability design.

### Critical-Speed Prediction

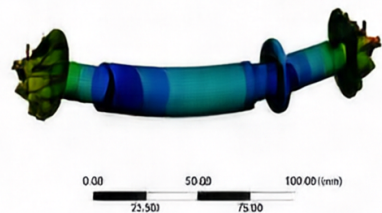
Critical speed = 185447 rpm = 3090.45 Hz  
(Damped mode shape, modal order = 3)



### Total Deformation / Modal Response

Total Deformation (mm)

Max  
12.648  
55.005  
45.542  
35.300  
19.807  
16.000  
17.425  
Min



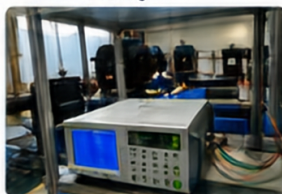
## Validation Capabilities

### Standard Pipeline Testing



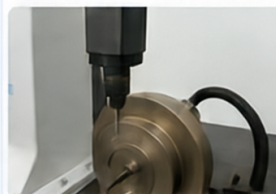
10 m+ Test Pipelines |  
DN100 / DN200 / DN300 |  
Standard Orifice Flowmeters

### Electrical Performance Testing



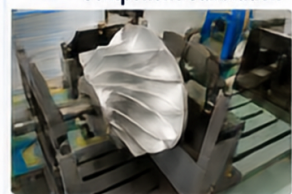
Power Analyzer |  
Motor Test Bench

### Precision Inspection



Coordinate Measuring Machine |  
Critical-Dimension and  
Profile Inspection

### High-Speed Rotating Component Calibration



Impeller Calibration |  
Dynamic Balancing Calibration

**R&D Closed Loop:** Simulation Design → Prototype Manufacturing → Precision Inspection → Test-Bench Validation → Field Application → Iterative Optimization

From design calculation to measured validation, ensuring that product performance is analyzable, testable, and reproducible.



# APPLICATION SCENARIOS

Designed for air-knife systems, shrimp-pond aeration, recirculating aquaculture, and related applications, delivering compact, efficient, and easily integrated solutions.

## HIGH-SPEED CENTRIFUGAL BLOWER

CORE SOURCE FOR -KNIFE SYSTEMS



### CORE AIR SOURCE FOR AIR-KNIFE SYSTEMS

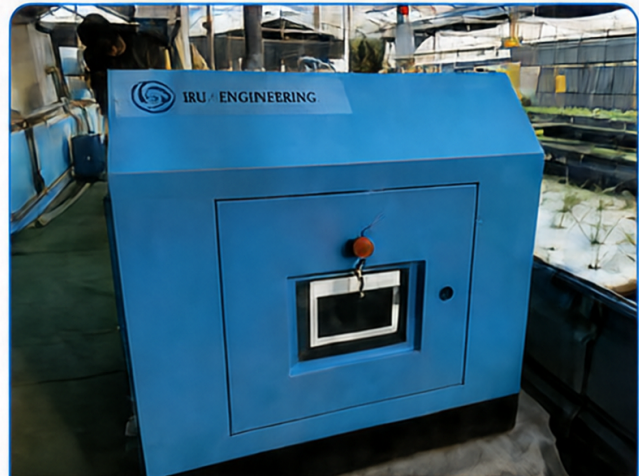
Ideal for air-knife system integration, with a compact structure for continuous operation and easy system integration.

SILENCER FILTER



### SHRIMP-POND AERATION

Designed for shrimp-pond aeration, providing a stable on-site air supply.



### RECIRCULATING AQUACULTURE

Compatible with recirculating aquaculture systems for convenient equipment integration and on-site deployment.

## MORE APPLICATIONS



FISH & SHRIMP  
AERATION



RECIRCULATING  
AQUACULTURE



AIR-KNIFE DRYING /  
BLOW-OFF



BUILT-IN EQUIPMENT  
INTEGRATION



GAS  
CONVEYING



PHARMACEUTICAL /  
ENVIRONMENTAL EQUIPMENT



MORE FIELD APPLICATION CASES ARE BEING ADDED. SELECTION AND INTEGRATION RECOMMENDATIONS ARE AVAILABLE FOR YOUR OPERATING CONDITIONS.





# Complete Series Selection and Replacement Recommendations

Side-by-side comparison of models, operating conditions, and replacement power for traditional 30 kPa blowers

| Model       | Motor Power KW | Pressure | Flow Rate | Recommended Replacement for 30 kPa Regenerative Blowers / Roots Blowers |
|-------------|----------------|----------|-----------|-------------------------------------------------------------------------|
| IBIT24-25   | 4              | 23 / 30° | mFh       | Traditional Motor Power                                                 |
| IBIT25.5-25 | 5.5            | 20 / 25° | 750       | 75 kW                                                                   |
| IBIT27.5-25 | 7.5            | 25       | 800       | 18.5 / 22 kW                                                            |
| IBIT229-25  | 9              | 20 / 30° | 1,300     | 22 / 30 kW                                                              |
| IBIT215-25  | 11             | 25       | 1,250     | 30 / 37 kW                                                              |
| IBIT225-25  | 15             | 25       | 1,800     | 15 kW                                                                   |
| IBIT225-25  | 25             | 25       | 3,400     | 90 / 110 kW                                                             |
| IBIT235-25  | 35             | 25       | 4,400     | 110 / 132 kW                                                            |
| IBIT240-25  | 40             | 25       | 5,000     | 132 kW                                                                  |
| IBIT245-25  | 45             | 25       | 5,600     | 32 kW                                                                   |
| IBIT255-25  | 55             | 25       | 6,800     | 114 kW                                                                  |

Note: Values separated by a slash indicate rated pressure / maximum pressure. Recommended replacement power for 30 kPa regenerative blowers / roots blowers is for reference only, final selection must be verified according to actual site conditions.

## Measured Evidence: 4 kW Replaces 7.5 kW

Two validated operating conditions demonstrate that lower shaft power can meet operating requirements.

### Conclusion

Under validated operating conditions, lower shaft power achieves the same target operating condition.

## Operating Condition 1

**300ml/h · 15kPa**

1.8kW vs 3.5kW

**Approx. 48.6% Energy Savings**

## Operating Condition 2

**180m³/h · 30kPa**

3.0kW vs 5.0kW

**Approx. 40.0% Energy Savings**

## Test Reference Near 18 kPa Traditional Regenerative Blower Test Points vs. 7.5 kW High-Speed Centrifugal Test Point

### 9.8 kW Regenerative Blower

IBI: 17.19kPa · 641.88m³/h · 10.5kW

IBI: 19.22kPa · 74.82m³/h · 5.99kW

### 12.5 kW Regenerative Blower

18.50kPa · 756.31m³/h · 16.5kW

IBI: 18.34kPa · 791.7m³/h · 6.13kW

### 15 kW Regenerative Blower

18.433kPa · 800.48.23m³/h · 16.5kW

IBI: 21.99kPa · 755.46m³/h · 6.75kW

Note: Pressure points differ, this is not a direct like-for-like comparison.



**General Specifications:**

Rated Voltage  
380VAC



Protection Rating  
IP65



Insulation Class  
H



Cooling Method  
Air Cooled



## Company Information

**ibi compressor**



## Company Address

Chang'an Town, Haining City, Jiaxing, Zhejiang Province  
Intersection of Xiuchuan Road and Chongchang Line