Delta -E New Product Introduction

2021.

Content

- Market Requirement
- New Series Product
- Technology for new product

Content

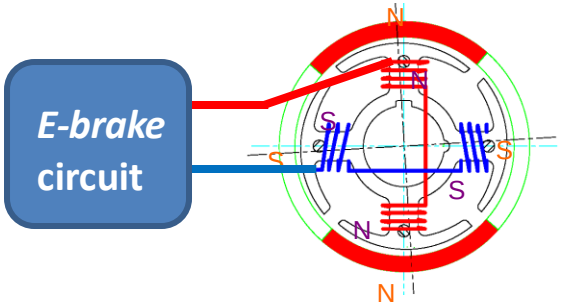
- **Market Requirement**
- New Series Product
- Technology for new product

Market Requirement

CPU Thermal Design Power

2017 CPU TDP 165W~250W → 2020 CPU TDP 300W+

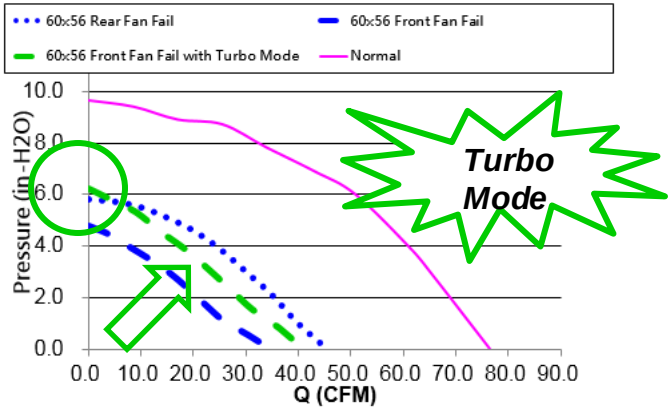
High Performance Fan



➢ Advanced communication design

(Dual Rotor Fan ; New GFB-**E** Series)

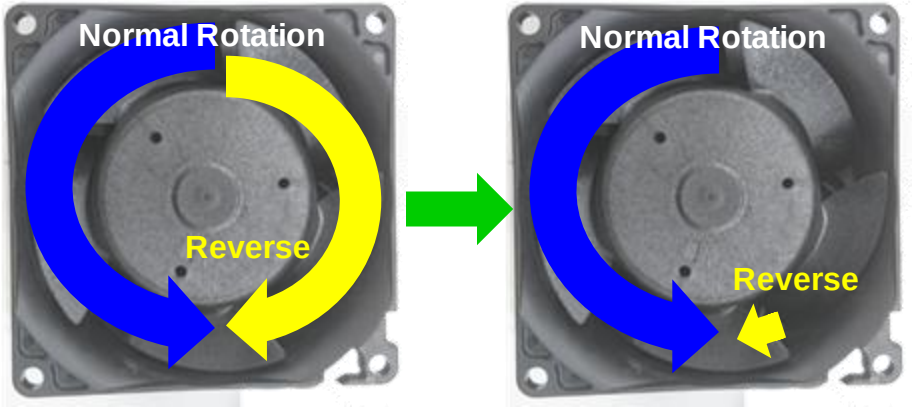
- Higher fan performance at fail mode
- Fan turbo function can be started automatically



➢ Electronic-Brake Function

(Single Rotor Fan ; New PFB-**E** Series)

- Decrease fan reverse speed at fail mode
- Reduce flow leakage at fail mode



Content

- Market Requirement
- **New Series Product**
- Technology for new product

New –E Series

New Product Series
PFB-E & GFB-E

New impeller / structure design

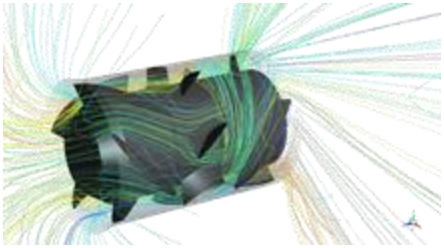
New motor design

New firmware design

New control circuit design

High

Fail mode Performance

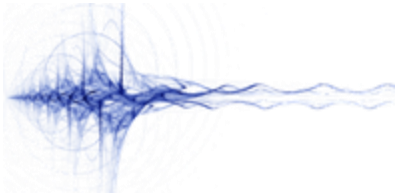


Low

Power Consumption

Low

Rotating Vibration



PFB-E 40x28mm, 60x38mm, 80x38mm
32000rpm, 25500rpm. 16800rpm

GFB-E 40x56mm, 60x56mm, 80x56mm, 92x56mm
29500/25500, 22300/24500, 16300/15500, 11200/11400rpm

Content

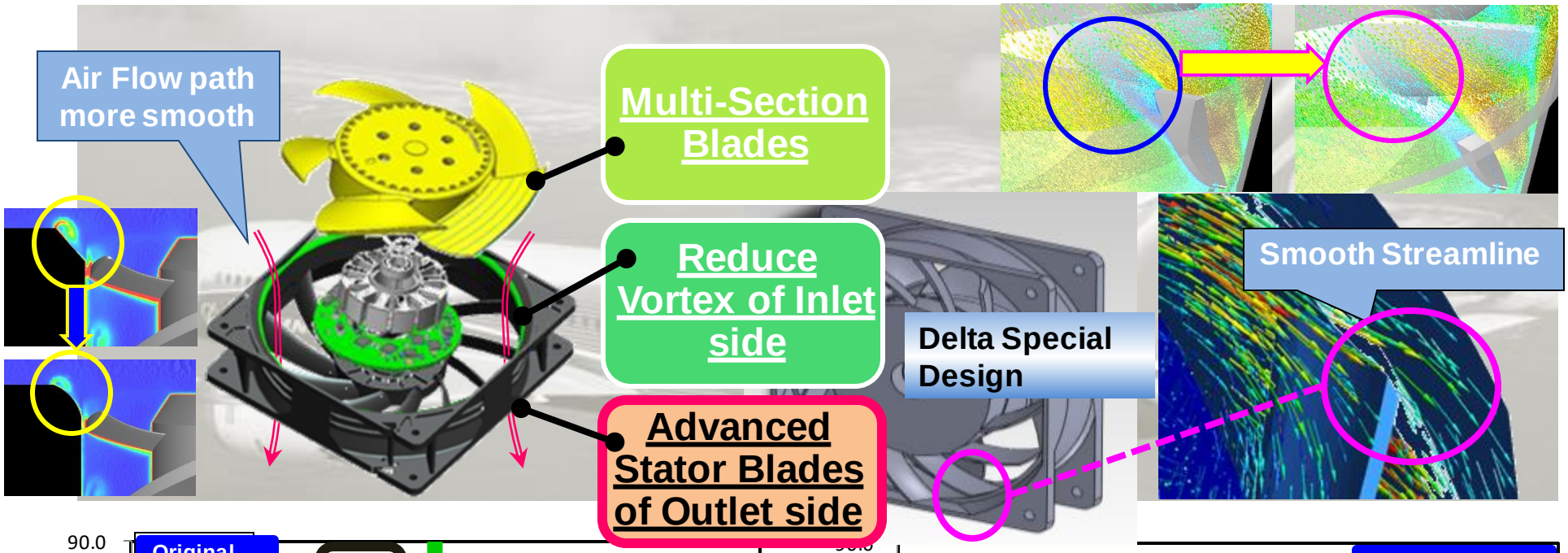
- Market Requirement
- New Series Product
- **Technology for new product**

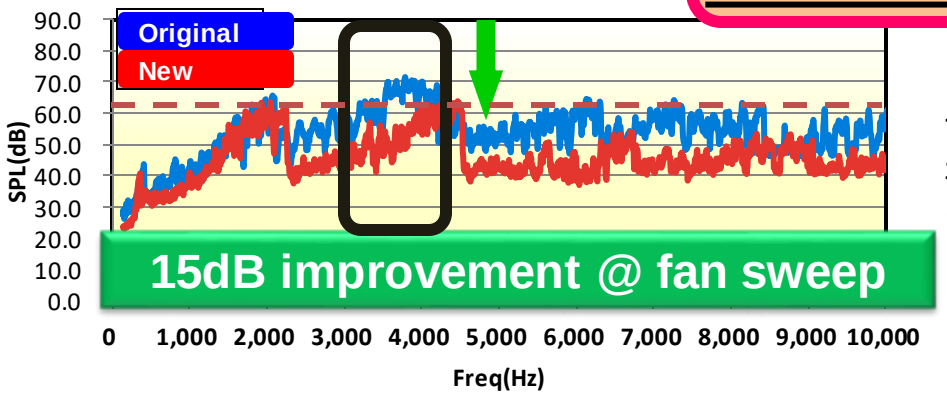
Technology for New Product

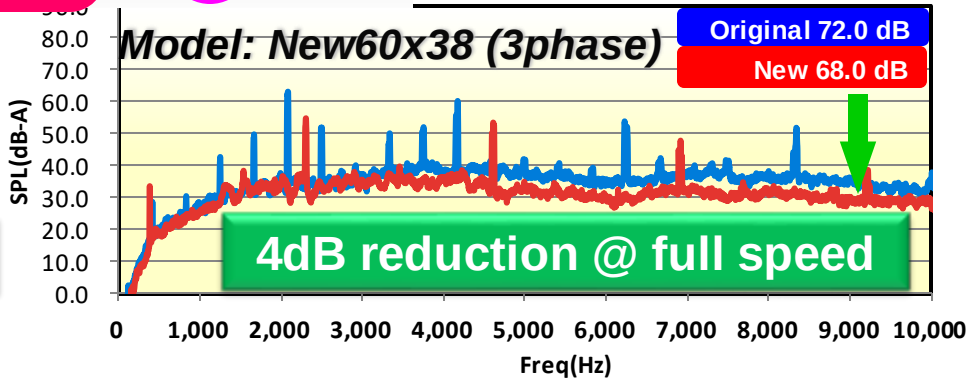
Aerodynamic

Arc Intake & Cornerless Design

- Air Flow Path Optimization







- **Flow field Tech. Integration with more smooth flow path to get lower acoustic.**

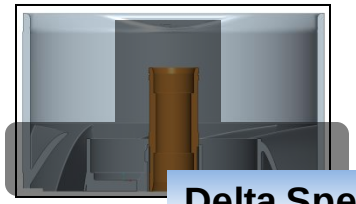
Technology for New Product

Optimum design of Supporting Structure

Robust frame

- Lower Vibration

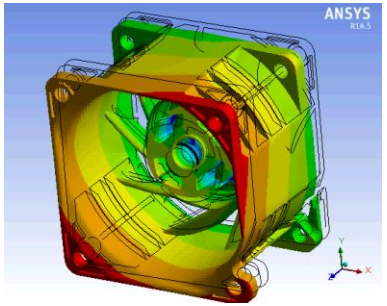
A . Fan Supporting Structure with High Young's Modulus



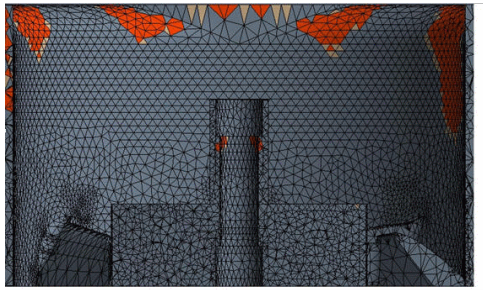
Delta Special Design

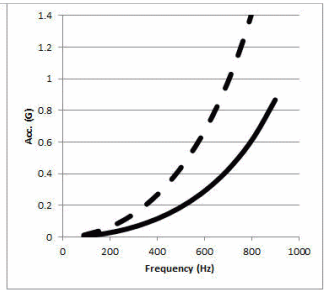
High Young's Modulus

Raise Fundamental Frequency to avoid resonance

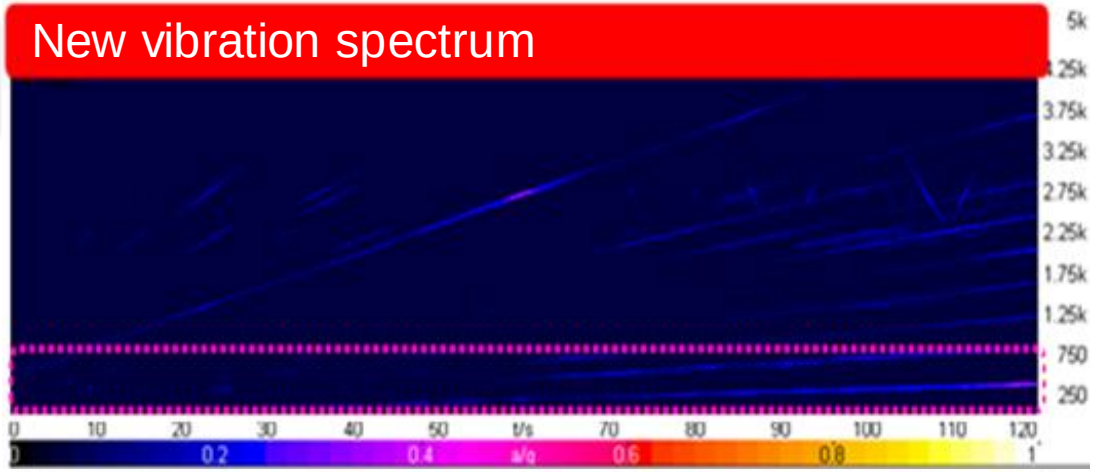


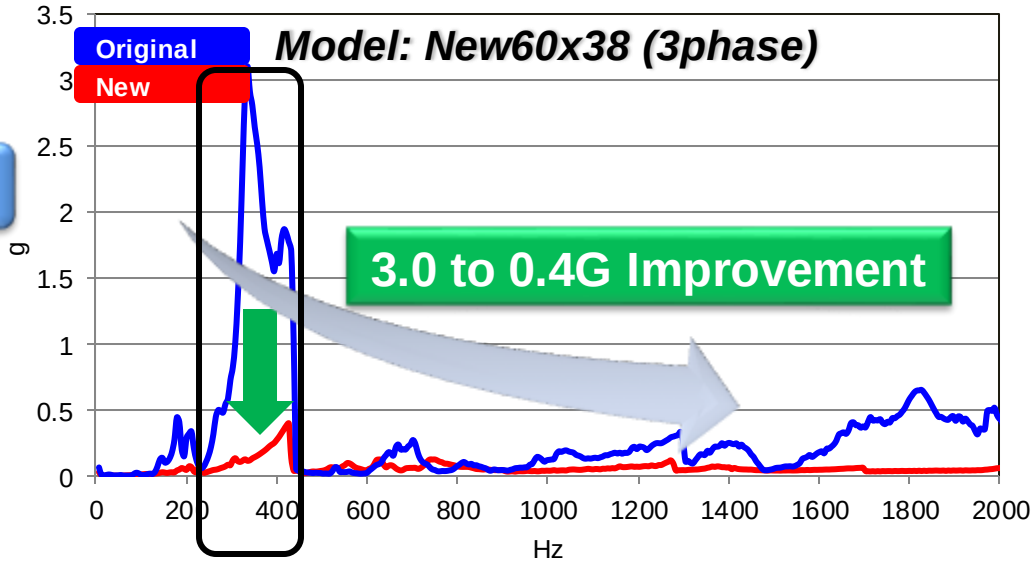
B. Topology Optimization





New vibration spectrum





- **Optimum supporting structure by topology tech. with robust design**

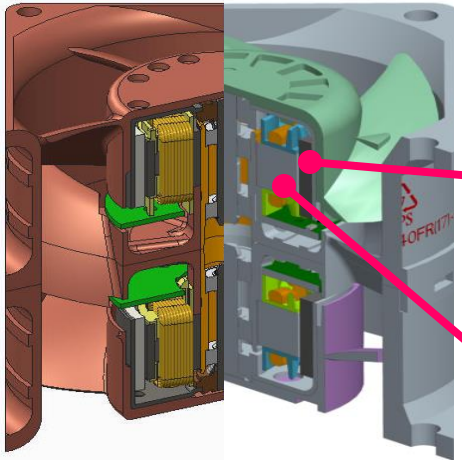
Technology for New Product

High Efficiency Ultra High Speed Motor

Three Phase Motor

- Lower Core Loss

Original	New

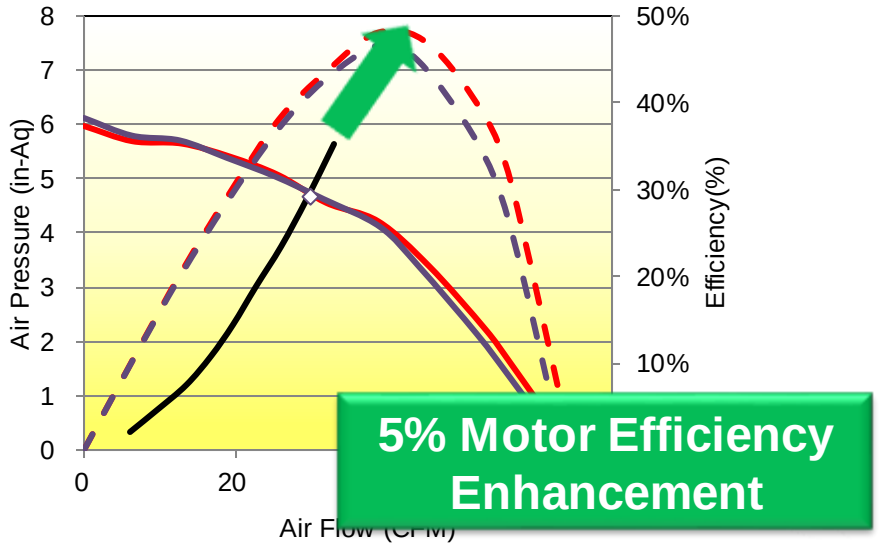


Core loss = Hysteresis loss + eddy current loss

$$P_{core} = K_h f B_m^2 + K_e f^2 B_m^2$$

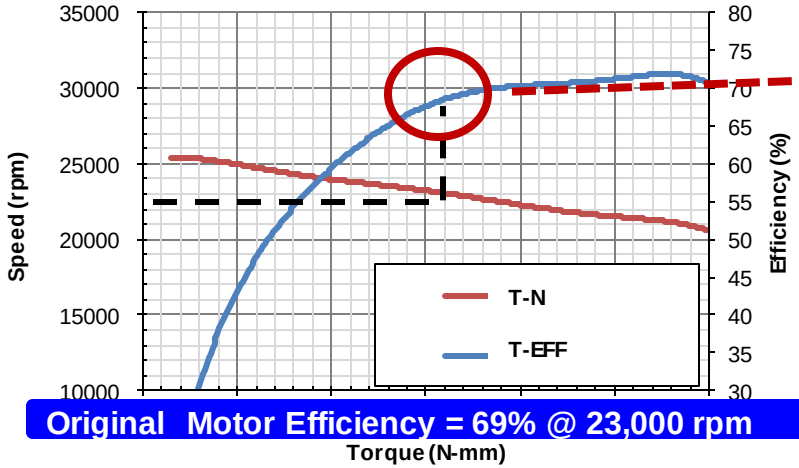
Strong Magnet Materials

High Efficiency Motor

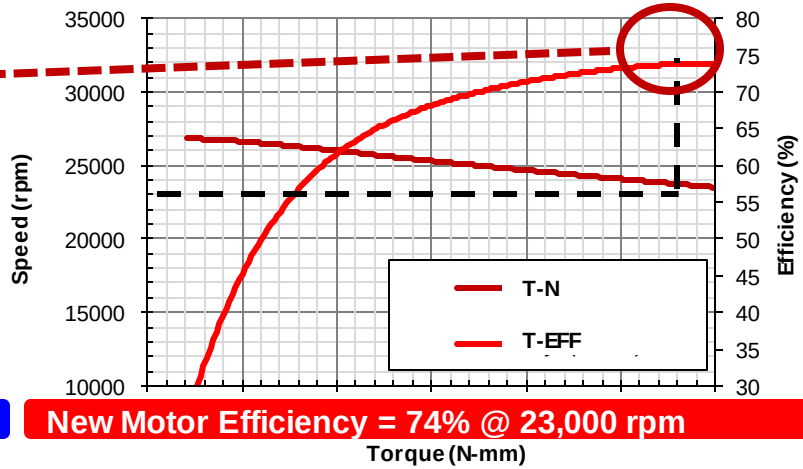


5% Motor Efficiency Enhancement

Model: New60x56 (3phase)



Original Motor Efficiency = 69% @ 23,000 rpm



New Motor Efficiency = 74% @ 23,000 rpm

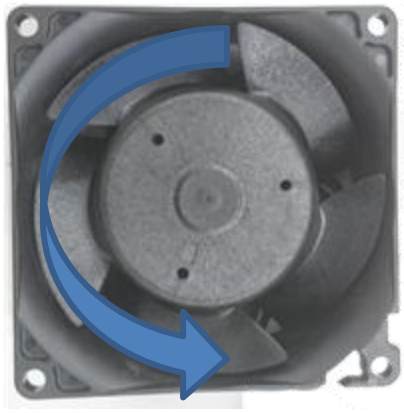
- **New motor design has higher efficiency in ultra high speed.**

Technology for New Product

E-Brake Function

- Electronic-Brake

Normal rotation



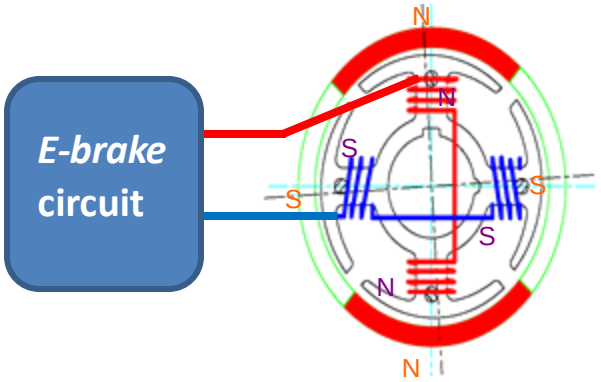
Fail Mode

Stop or reverse rotation

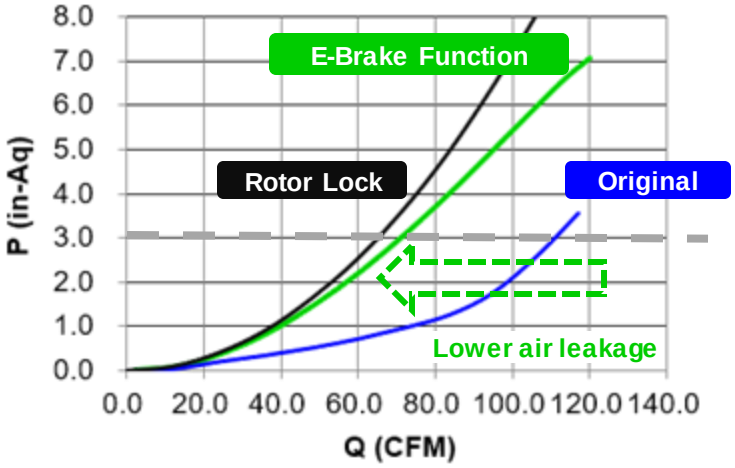
E-Brake

When the E-brake circuit is activated, the Motor will be short and then braking the Rotor.

- When fan failed and rotor stop or reverse spin, it will trigger the braking function.
- Braking function need system power support continually.
- Brake function can provide high fan resistance to lower air leakage.



Fan Resistance



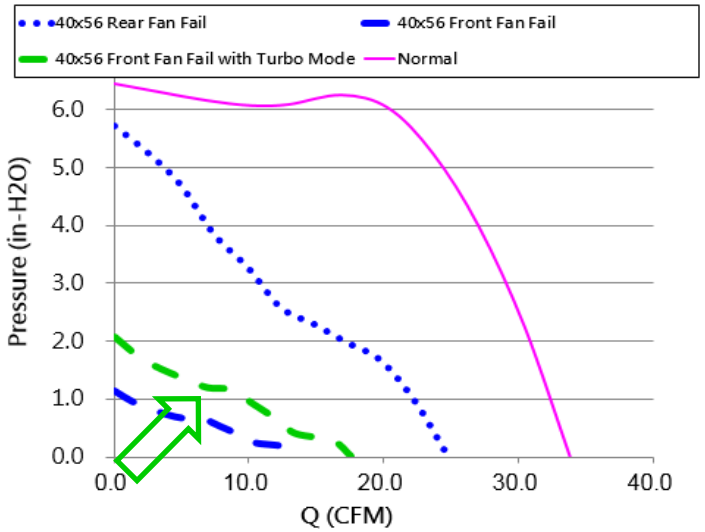
Technology for New Product

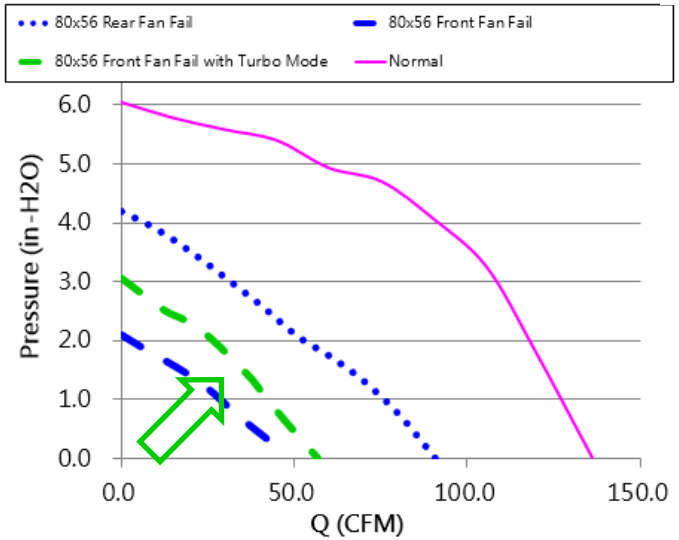
Rear Fan Turbo Mode

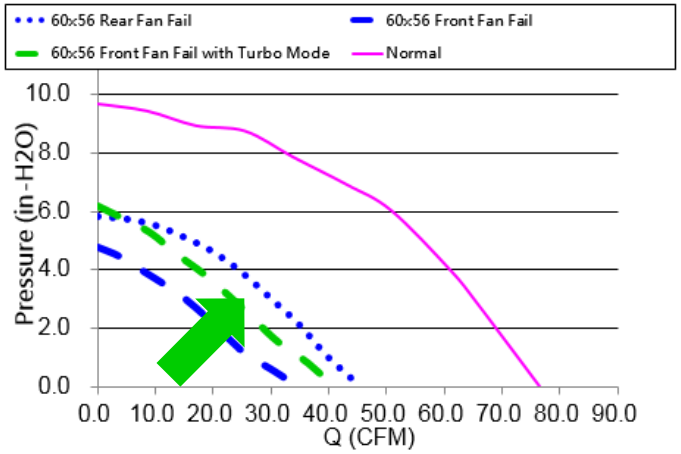
➢ Rear Fan Turbo Mode

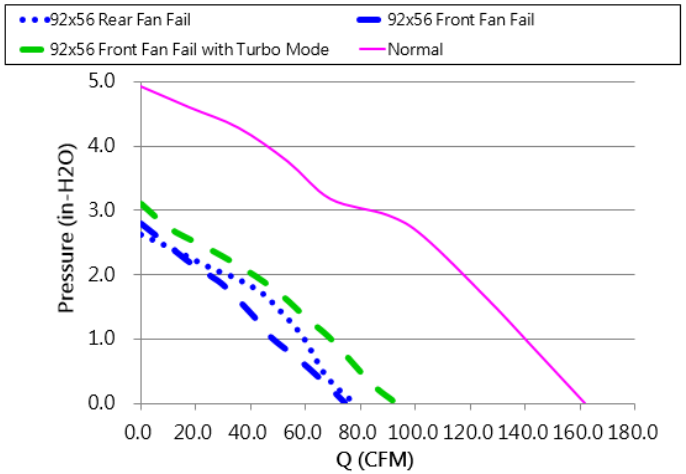
- Advanced **communication** between two rotors
- When front fan failed, rear fan can auto detected and triger turbo function
- Rear fan will speed up **over PWM100%** in turbo mode

Turbo Mode Auto Start









Smarter. Greener. Together.

To learn more about Delta, please visit
www.delta-fan.com