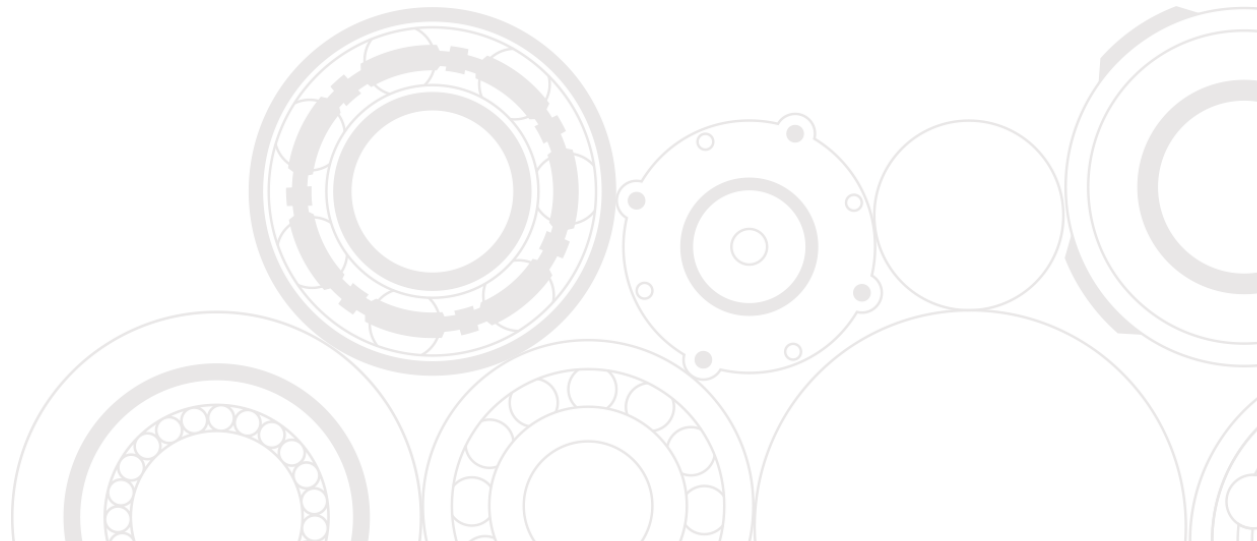


*Passion to Exceed Precision*

JAS Interconnect  
June , 2016

# NMB OVERVIEW





## About Minebea

Established

Established as Nippon Miniature Bearing Co., Ltd. in 1951

Net Sales

5.0 Billion US Dollars

Number of Employees

63,000

Locations

42 Subsidiaries and affiliates  
28 Manufacturing plants  
43 Sales offices in 13 countries

The Minebea logo is positioned in the bottom right corner. It features the word "Minebea" in a large, bold, blue, italicized sans-serif font. Below it, the tagline "Passion to Exceed Precision" is written in a smaller, blue, italicized sans-serif font, with the word "Passion" in red. The background of the slide is a collage of various mechanical components, including bearings, gears, a fan, a hard drive, a keyboard, and a speaker, all arranged in a circular pattern around the central text.





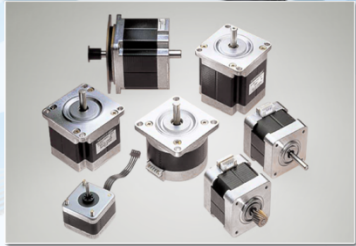
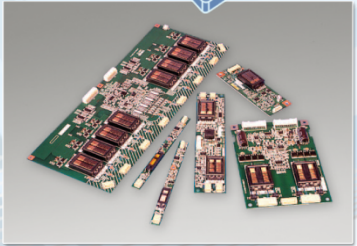
# Products and Applications





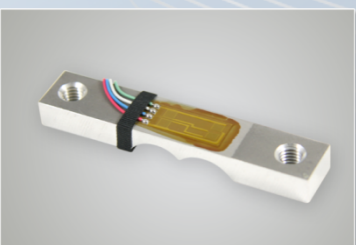
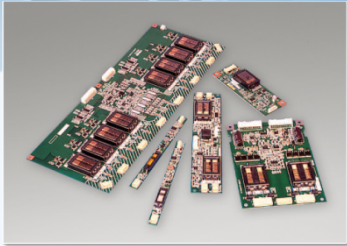
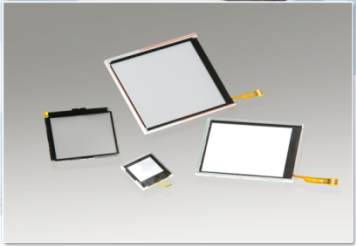
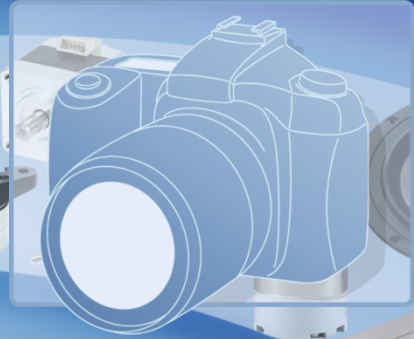
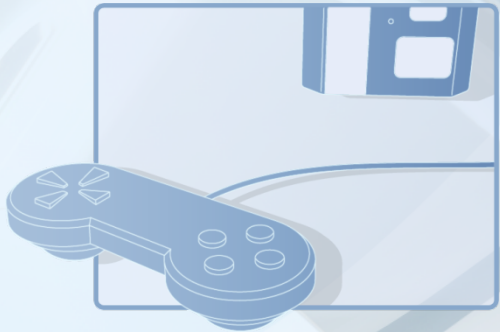


# Computing & Office Automation





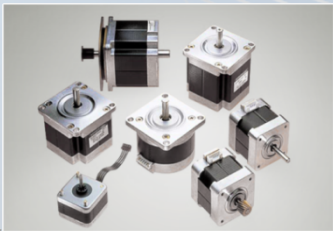
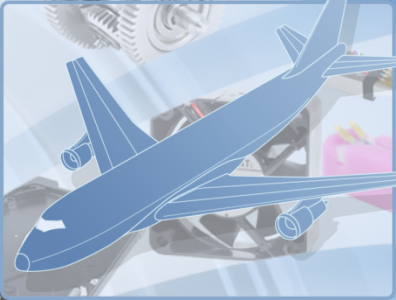
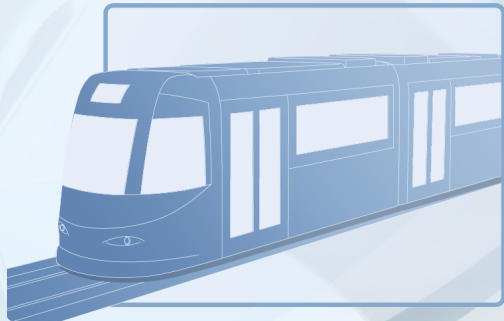
# Consumer Electronics







# Transportation & Aerospace



**Minebea**  
Passion to Exceed Precision



## Minebea Manufacturing Technology

- **Vertically Integration Manufacturing System**
  - **Ultra-precision Machining Technology**
  - **Technology development to support mass production & high quality**
  - **Mass production oriented examination & analysis equipment**
  - **Each factory is equipped with R&D center**
- 

# NMB Vertical Integration = Control of Quality and Supply Chain

- **Bearings** - NMB is the World Leader in Quality and Market Share
- **Injection Molding** - Impellers, Housings, Bobbins - All In House, Tools Made by Die Division or Tooling Partners in Japan
- **Metal Stamping** - Stator Stacks Manufactured in the Fan Factory
- **Magnetic Ferrites** - Manufactured by NMB Thailand
- **PCBA's** - Populated by Auto-SMT machines in the Fan Factory
- **Windings** - Automated system in the Fan Factory

# NMB Fan Capabilities

- Existing Product Line
  - AC Tubeaxial Cooling Fans in Common Sizes: 60, 80, 92, 120 & 173mm
  - DC Brushless Tubeaxial Cooling Fans: 40, 50, 60, 80, 92, 120, 173mm, 175mm, and 200mm Sizes
  - Blowers: Radial, Centrifugal, Crossflow, Custom
  - Temperature Sensing Fans, Speed Sensing Fans, Alarm Features
- Manufacturing and R&D Locations
  - Shanghai, China (DC & AC)
  - Sendai, Japan (Blowers) including R&D
  - Karuizawa, Japan (AC/DC) including R&D



# Manufacturing Location



- Capacity: 12M pcs per month
- Employee: 3550
- **Intensive vertical integration**
- Highly automated, high volume manufacturer
- World class manufacturing

Shanghai, China

# NMB Relocates U.S. Headquarters

From beautiful sunny California

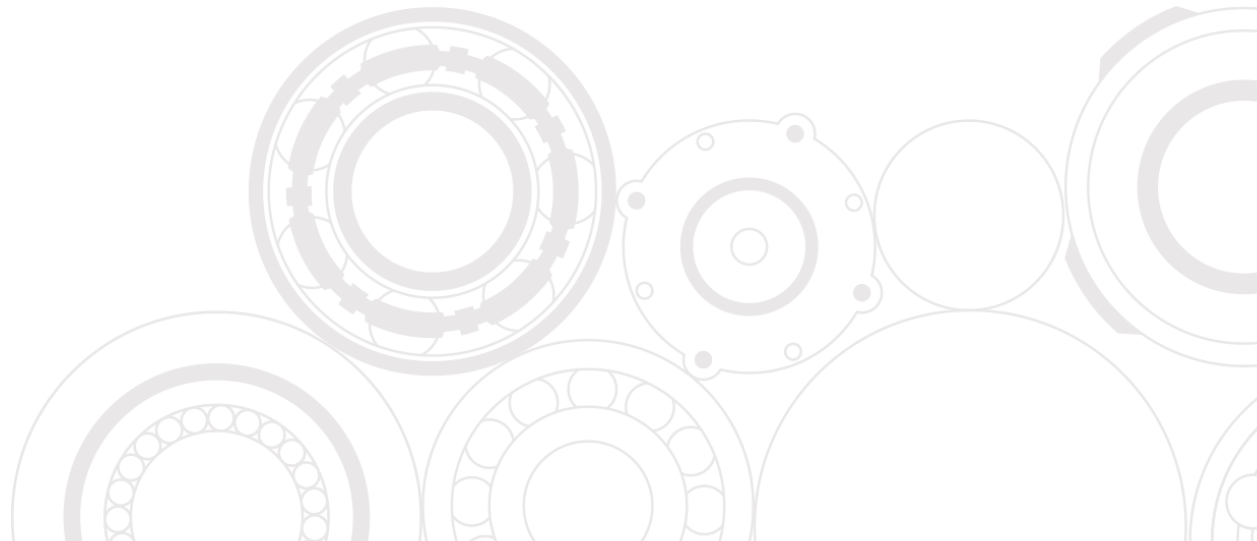
TO

Centrally located Novi, MI



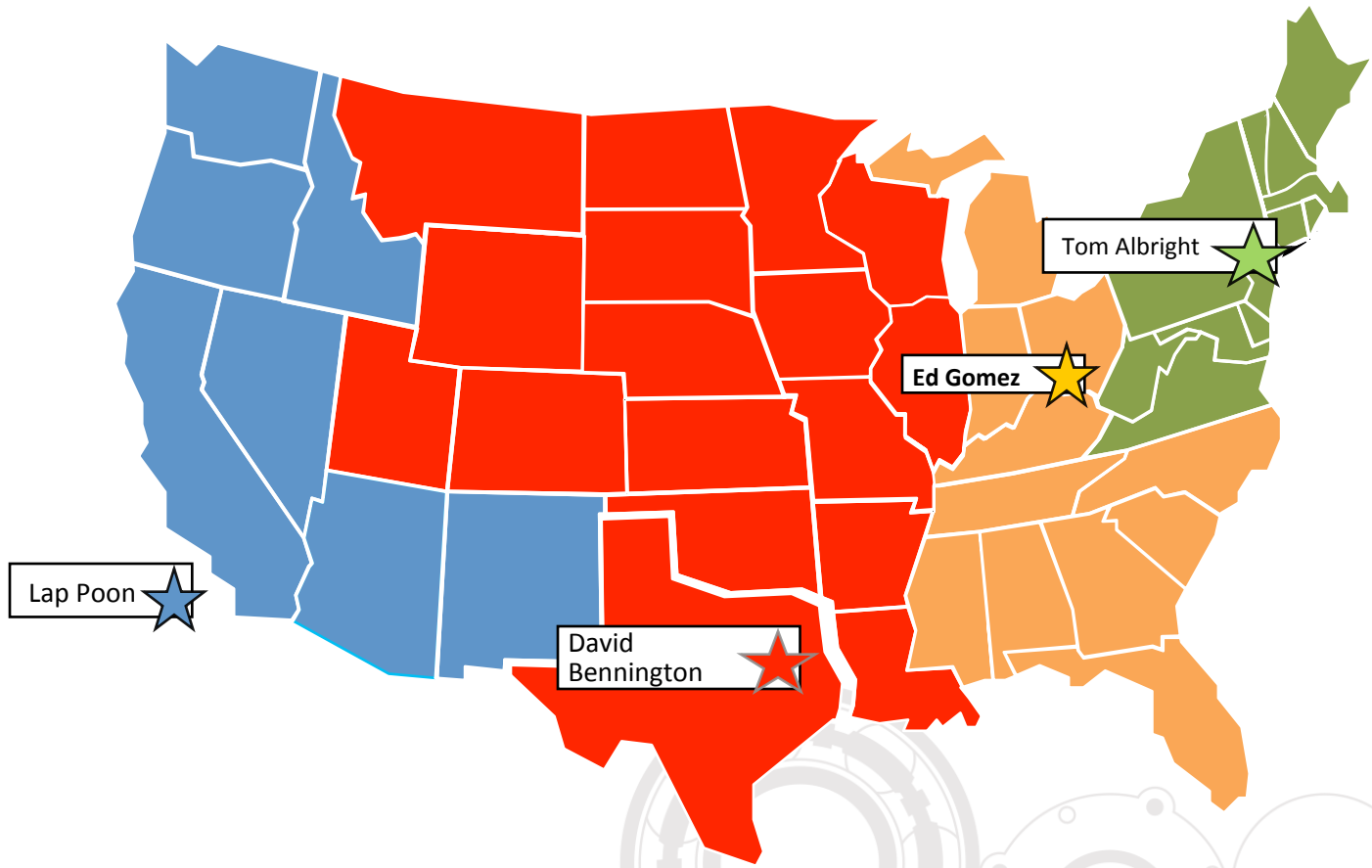
# Fan Business Unit Co-located

- Product Management
- Quality Assurance
- Factory Coordination
- Customer Service
- Program Management
- Engineering





# Regional Sales Map



# Target Markets

**General**



**Industrial**



**Refrigeration**



**Medical**



**Tel/Server/  
Storage**



**SB**



**VL /AC**



**JL /JB/JX**



**SB / BM**



**FB/ FT/WB**

# Fan Motor Features

## Standard

- Low Noise
- High Air Flow
- High Pressure
- Low Energy Use
- Dual Ball Bearings
- High Reliability
- Impedance Protection
- Safety Approvals

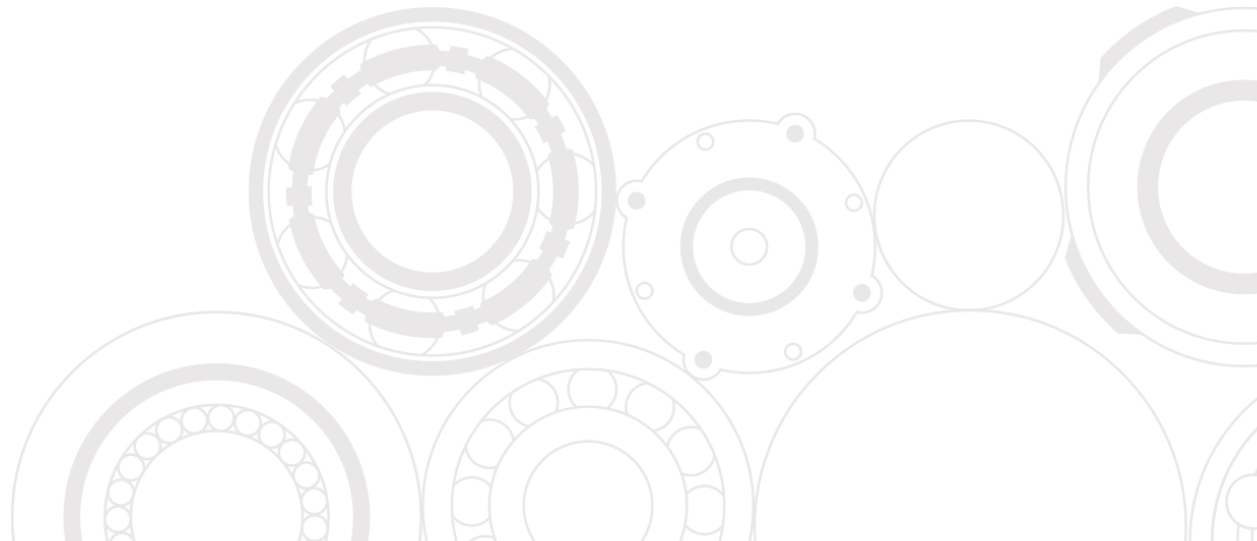
## Custom/Options

- IP 21 / IP69K weather resistant
- AC-DC power conversion
- Speed control
- Surge Protection
- Anti spark motors
- Cable assembly




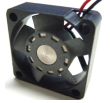





# Why NMB

- Low Risk
- Product Offering
- Quality
- Competitive Pricing
- Vertical Integration
- Website



# New Sleeve Bearing Fans

## (25mm ~ 50mm Range)

Item	Fan Series		Rated	Speed	Max Air Flow		Max Static Pressure		Noise	Sample Schedule	MP Schedule
			Voltage	(min <sup>-1</sup> )*	(m <sup>3</sup> /min)*	(CFM)*	(Pa)*	(inH2O)*	(dB(A))*		
1	02510SS		5V / 12V	13,000	0.07	2.5	60	0.24	25	EQ3-2016	LQ3-2016
2	03010SS		5V / 12V	9,500	0.12	4.2	53	0.21	27	EQ3-2016	LQ3-2016
3	03510SS		5V / 12V	10,000	0.14	4.9	50	0.2	28.5	EQ3-2016	LQ3-2016
4	03515SS		5V / 12V	8,000	0.16	5.6	38	0.15	24	LQ2-2016	Q3-2016
5	04010SS		12V/24V	7,500	0.19	6.7	50	0.2	29	LQ2-2016	Q3-2016
6	04015SS		12V/24V	8,300	0.21	7.4	68	0.27	32	LQ2-2016	Q3-2016
7	05015SS		12V/24V	6,550	0.42	14.8	51	0.2	35.5	LQ2-2016	Q3-2016

\*\*\*: Average value in free air

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# New Sleeve Bearing Fans

(25mm ~ 50mm Range)

## Benefits:

- **Cost saving – approx ~ \$0.50 price range/ savings vs ball bearing fans**
- **30K to 40K life hours (L10) of continuous use – Each fan has its own life hours:**
  - **40Khrs@40°C - 04015SS / 05015SS**
  - **30Khrs@40°C - 04010SS / 03515SS / 03510SS/ 03010SS/ 02510SS**
- **Higher speed and better performance than current sleeve bearing fans sold today**

# New Sleeve Bearing Fans

(25mm ~ 50mm Range)

## Applications:

- **Home Security** – Alarm Control Panels, Security System
- **Home Electronics** – Printers, Computers, DVDs, Cameras, Audio/Video Equipment, Set-Top Box, Robots, Battery Charger
- **Home Appliances** – Air Purifier/Humidifier, Induction Heat cooking
- **Test and Measurement Equipment** – Medical, Engineering
- **Gaming Machines** – Slots/Video
- **Kiosks** – Airport, Libraries, Health Clubs, Movie Theaters, Banks
- **Electronic Enclosures**



# IP69K Line Up

Item	Fan Series	Dimension	Rated	Speed	Max Air Flow		Max Static Pressure		Noise	Sample Schedule	MP Schedule
		mm (inches)	Voltage	(min <sup>-1</sup> )*	(m <sup>3</sup> /min)*	(CFM)*	(Pa)*	(inH2O)*	(dB(A))*		
1	04020VA	□40×20 (□1.6×0.8)	12V/24V	11,000	0.35	12.4	142	0.57	42.0	EQ3-2016	Q3-2016
2	04028VA	□40×28 (□1.6×1.1)	24V	13,000	0.41	14.5	210	0.84	44.5	EQ3-2016	Q3-2016
3	06015VA	□60×15 (□2.4× 0.6)	24V	5,600	0.55	19.4	67.7	0.27	36.5	Q3-2016	Q3-2016
4	06020VA	□60×20 (□2.4× 0.8) sm imp	24V	6,900	0.70	24.7	100	0.40	42.0	EQ3-2016	Q3-2016
5	06025VA	□60×25 (□2.4×1.0)	24V	9,200	1.11	39.2	244	0.98	54.0	EQ3-2016	Q3-2016
6	06025VA	□60×25 (□2.4×1.0) Al Cas	12V	9,200	1.09	38.5	235	0.94	53.0	Q3-2016	Q3-2016
7	06038RA	□60X38 (□2.4×1.5)	24V	12,500	1.93	68.1	480	1.92	61.0	EQ3-2016	Q3-2016
8	08038RA	□80X38 (□3.1×1.5)	24V	7,500	3.00	105.9	355	1.42	59.5	EQ3-2016	Q3-2016
9	09225VA	□92×25 (□3.6×1.0)	12V/24V	5,600	2.73	96.4	150	0.60	51.0	EQ3-2016	Q3-2016
10	09232VA	□92×32 (□3.6×1.2) sm imp	24V	7,000	3.00	105.9	275	1.10	59.0	EQ3-2016	Q3-2016
11	09238RA	□92X38 (□3.6×1.5)	24V	7,200	4.32	152.5	300	1.20	62.5	EQ3-2016	Q3-2016
12	12038MA	□119×38 (□4.7×1.5)	24V	4,700	5.13	181.1	213	0.85	59.5	EQ3-2016	Q3-2016
13	12038VA	□119×38 (□4.7×1.5)	24V	6,400	6.90	243.6	370	1.48	64.0	EQ3-2016	Q3-2016
14	15025PA	φ150×172×25(φ5.9×6.77×1.0)	24V/48V	3,750	6.80	240.0	145	0.58	64.0	EQ4-2016	Q4-2016
15	15050VA	φ150X172X50(φ5.9×6.77×2.0)	24V/48V	4,600	9.80	345.9	312	1.25	68.0	EQ4-2016	Q4-2016
16	17250VA	Φ172x50(φ6.77×2.0)	24V/48V	4,600	9.80	345.9	312	1.25	62.0	EQ4-2016	Q4-2016







\*\*": Average value in free air

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# NMB Fan Motors meets IP69K Extreme Harsh Environments

- Water-resistive, high performance , low power, long life Axial fans meets IP69K requirements.
- Suitable for extremely harsh (outdoor / indoor) applications: Factory Automation, Refrigeration, LED Lighting, Inverters, Telecom, etc.
- Available in 16 Axial Fan sizes
- Available input voltage: 12VDC, 24VDC and 48VDC
- cUL, VDE, and RoHS compliant
- Using NMB IP69K rated Fans for cooling ensures ease of equipment maintenance and reduces downtime required for equipment maintenance.

# R and F Series Fans

SERIES	Dimension	Model	Rated	Speed	Max Air Flow		Max Static Pressure		Noise	
	mm (inches)		Voltage	(min-1)*	(CFM)*	(m3/min)*	(inH2O)*	(Pa)*	(dB(A))*	
R150	φ150×172×51 (φ5.9×6.77×2.0)		R150A3-051-D0790	48	9,300	555.0	15.7	6.6	1,646.0	85.0
			R150A4-051-D0590	24						
			R150H1-051-D0560	24	6,500	473.0	13.4	3.2	798.0	73.0
R172	Φ172x51 (φ6.77×2.0)		R172A0-051-D0790	48	9,300	585.0	16.6	6.1	1,524.0	82.0
			R172A8-051-D0590	24						
			R172A7-051-D0690	36	9,500	600.0	17.0	6	1,510.0	82.0
			R172H3-051-D0560	24	6,500	473.0	13.4	3.2	798.0	73.0
R200	Φ200x51 (φ7.90×2.0)		R200A0-051-D0760	48	6,500	783.0	22.2	4.1	1,028.0	74.0
			R200A4-051-D0550	24	5,000	590.0	16.7	3.3	828.0	67.0
F175	Φ175x69 (φ6.89×2.7)		F175A1-062-D0750	48	5,600	550.0	15.6	5.3	1,313.0	78.0
			F175A3-062-D0550	24	5,300	520.0	14.7	4.8	1,198.0	77.0
			F175H1-061-D0750	48	5,400	625.0	17.7	4.7	1,167.0	78.0
			F175H3-061-D0540	24	4,700	541.0	15.3	3.7	913.0	74.0
			F175P1-061-D0750	48	5,400	610.0	17.3	4.2	1,046.0	78.0
			F175P5-061-D0540	24	4,700	541.0	15.3	3.5	870.0	74.0
F225	Φ225x99 (φ8.86×3.9)		F225A2-092-D0730	48	3,600	756.0	21.4	3.6	904.0	79.0
			F225A4-092-D0530	24						
			F225C1-092-D0720	48	2,400	555.0	15.7	1.6	410.0	66.0
F250	Φ250x99 (φ9.85×3.9)		F250A3-072-D0730	48	3,100	862.0	24.4	3.1	777.0	81.0
			F250A5-072-D0520	24	2,900	806.0	22.8	2.7	664.0	78.0
F280	Φ280x129 (φ11.03×5.1)		F280A1-113-D0720	48	2,400	1,333.0	37.8	2.4	607.0	81.0
			F280A3-113-D0520	24	2,150	1,173.0	33.2	2.0	489.0	77.0

\*\*\*: Average value in free air  
CONFIDENTIAL

# R and F Series Fans

## Applications:

- **Telecom** – Routers, Switches, Base Stations, Storage, Server Racks, Modular Data System, Electronic Enclosures
- **Medical** - CT Scanners, MRI, X-Ray, Ultrasound Machines
- **Heat Exchangers**

## Benefits:

- High Efficiency & Low Noise
- Superior Aerodynamic Performance
- Control Flexibility
- Easily Customized



# New Fan Search Screen

## FANS

Home > Product Catalog > Fans

- AC AXIAL ▾
- DC AXIAL ▾
- BLOWERS ▾
- WEATHER RESISTANT AC AXIAL
- MOTORIZED IMPELLERS ▾
- FAN ACCESSORIES ▾

### PART SEARCH

NMB PART NUMBERING SYSTEM ▸

SUBMIT

### NEW FANS



HIGH POWER COOLING R AND F SERIES



UV/WET LOCATION COOLING FANS



COMPACT HIGH SPEED FANS



POPULAR SB SERIES



VISUAL FAN SELECTOR

# Mobile Optimization

## Mobile Users

### Mobile (Sessions)

2015 ~ 2016

- 157,931
- 21% increase from 2015

### Mobile (Sessions)

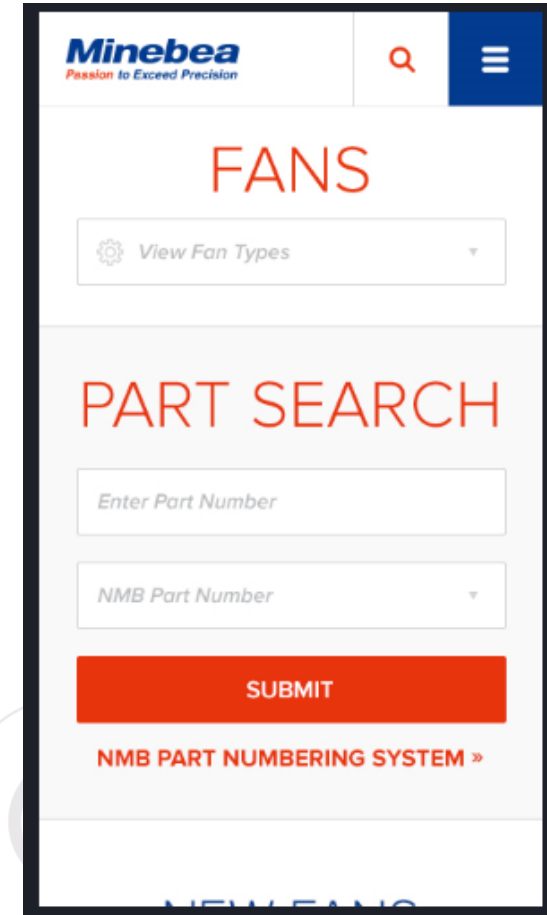
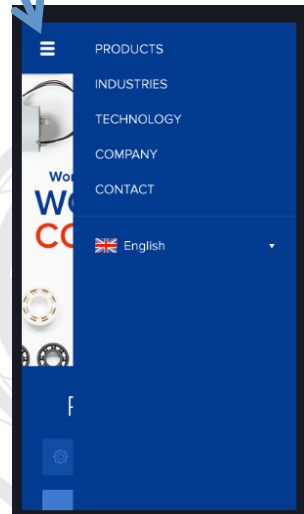
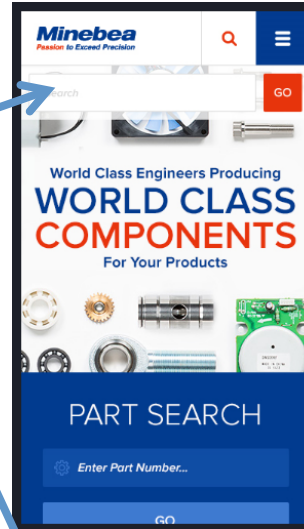
2014 ~ 2015

- 130,285
- 53.7% increase from 2014

### Mobile (Sessions)

2013 ~ 2014

- 84,719



# Focus = Growth

- **New Products Launch**
  - Introduction of Sleeve Bearing Fans!
  - Roll-Out of IP69K!
- **New Manufacturers' Reps**
  - APM Naltron (Florida) and ComRep (Dixie States)
  - SJ/The Bay expansion
- **New Part Numbering Transition**
  - New P/N inventory transition & balance will be very important.
  - NMB collateral (data sheets, web site, etc) is up-to-date!

# SUMMARY

