

MINEBEA

~ HDD Spindle Motor Business, Now and Future ~

March 23, 2001

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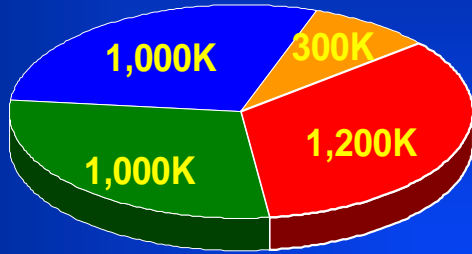
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- 3 . RO (Ball) Bearing Motor Precision Improvement and Production Quantity
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R&D Center Senior Manager Akio Okamiya

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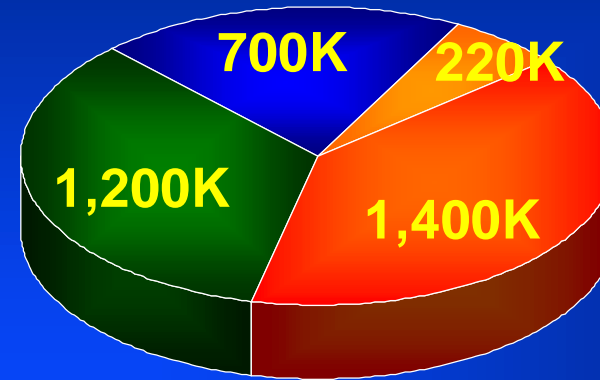
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1. Production Results for CY2000

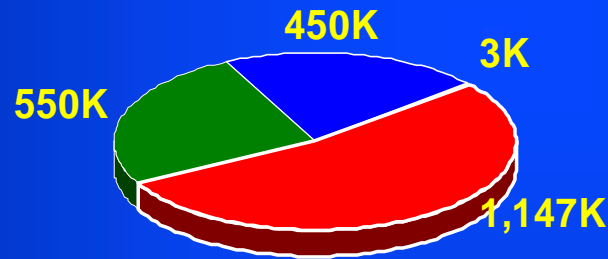
Announced on March 24th, 2000



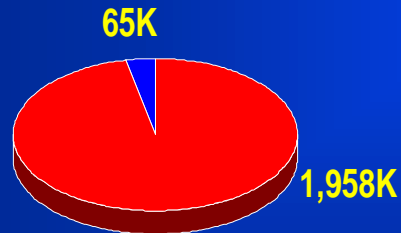
2000 CQ3
3,500Kpcs / Month



December 2000
3,520Kpcs/Month



April 2000
2,150Kpcs / Month



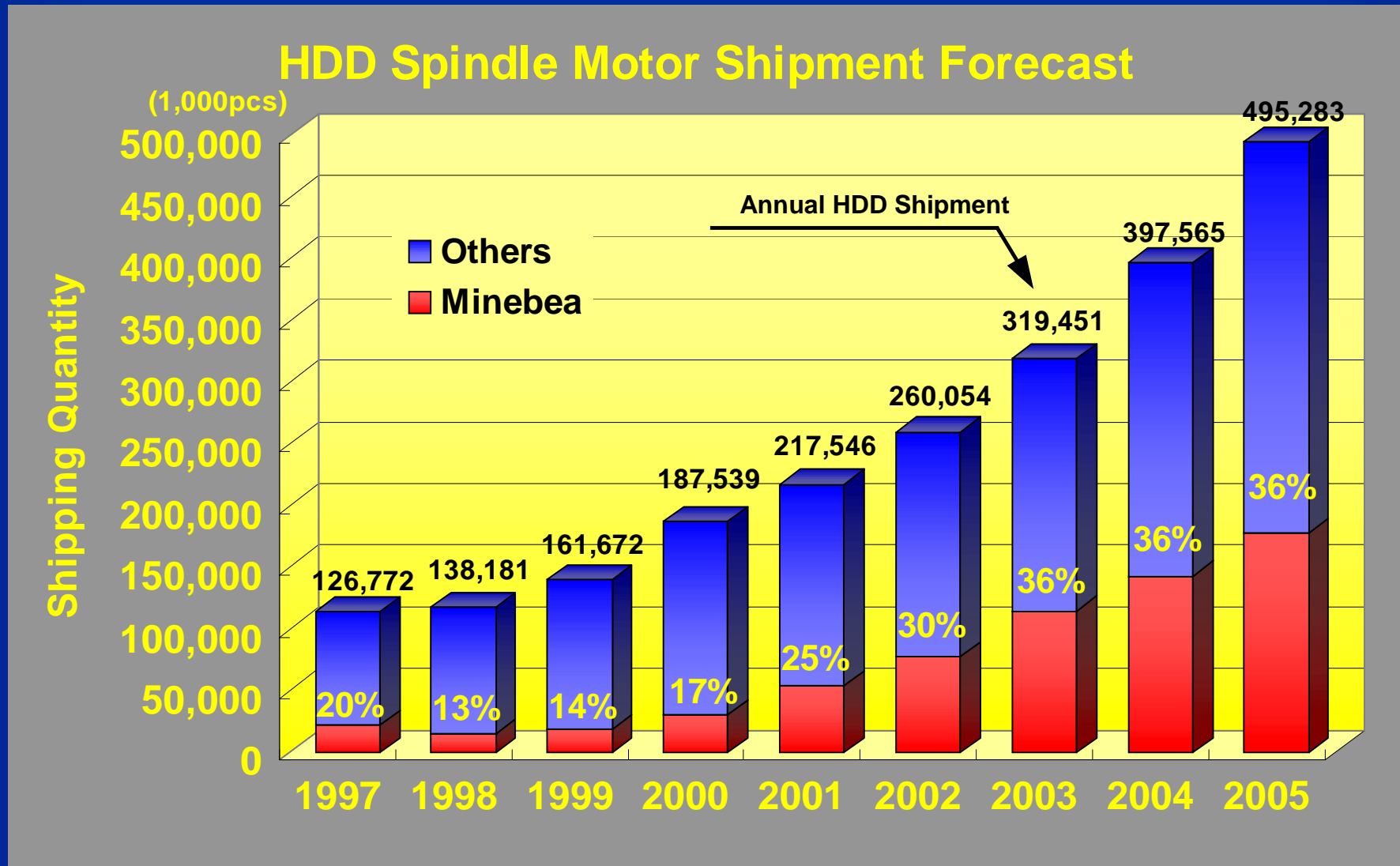
1999 CQ1
2,022Kpcs / Month

- 3.5-inch Low-End, STB/AV/Desktop PC
- 3.5-inch High-End, Desktop PC/PC Server
- 2.5-inch Mobile
- 3.5-inch High-End, Enterprise/Host Server

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2. Spindle Motor Production Forecast



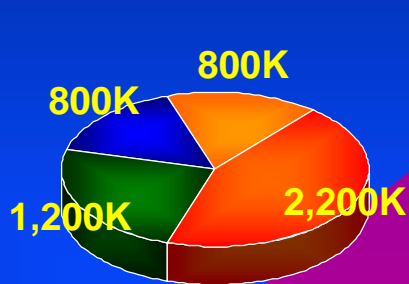
Annual HDD shipment quantity from Pixie Pinnacle Corporation

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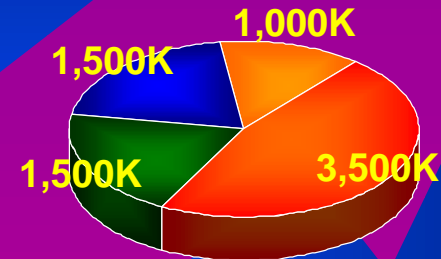
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2. Spindle Motor Production Forecast

2003
10,000Kpcs/Month

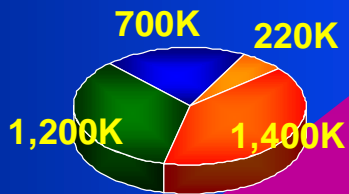


2001 CQ4
5,000Kpcs/Month

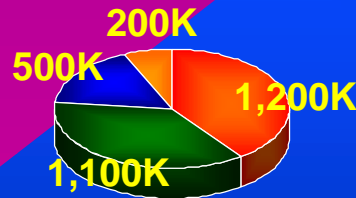


2002 CQ4
7,500Kpcs/Month

Including FDB Motor, estimated at 1,000K/Month to 1,500K/Month in 2001 CQ4







December 2000
3,520Kpcs/Month



2001 CQ1
3,000Kpcs/Month



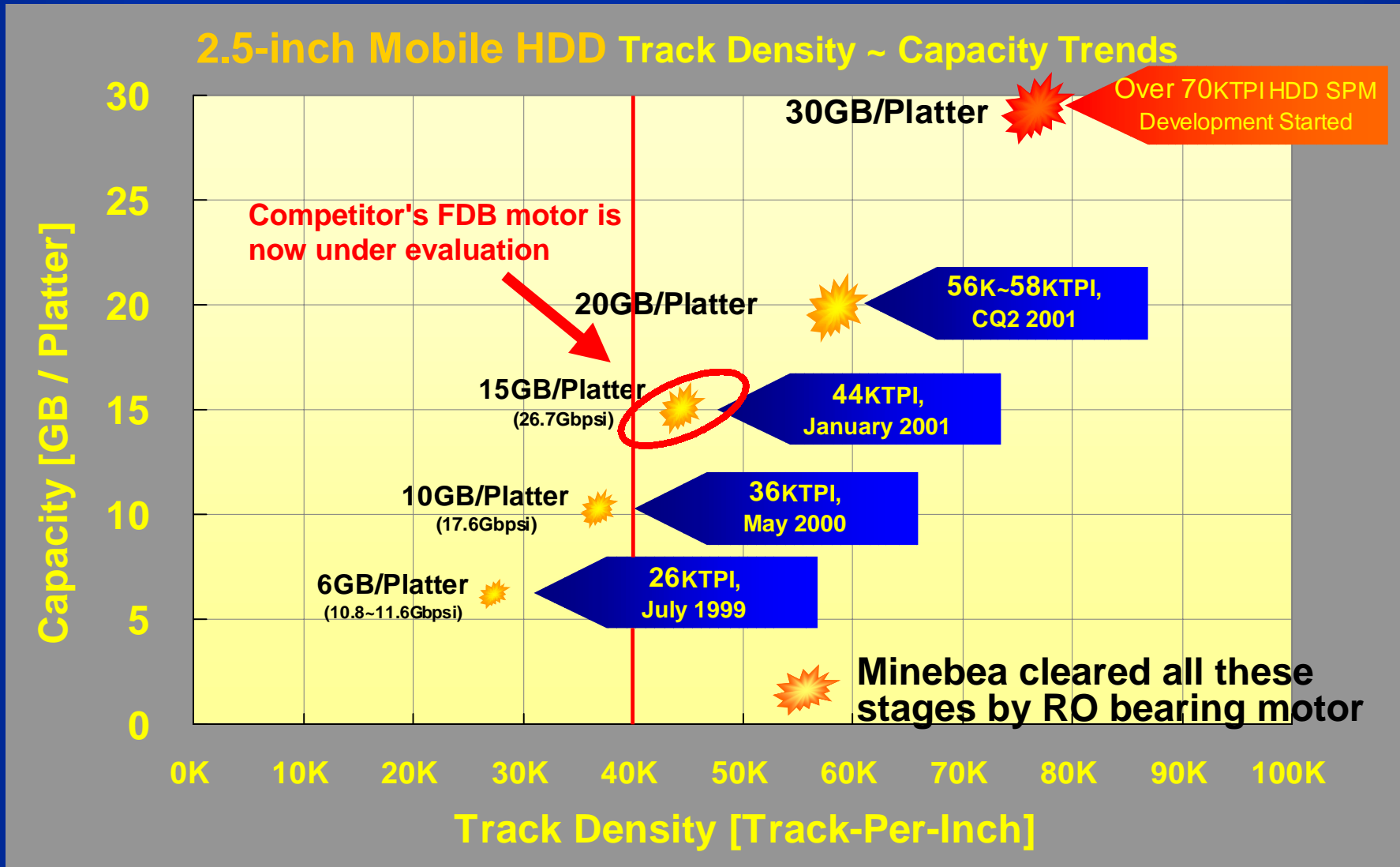
1999 CQ1
2,000K/Month

-  3.5-inch Low-End, STB/AV/Desktop PC
-  3.5-inch High-End, Desktop PC/PC Server
-  2.5-inch Mobile
-  3.5-inch High-End, Enterprise/Host Server

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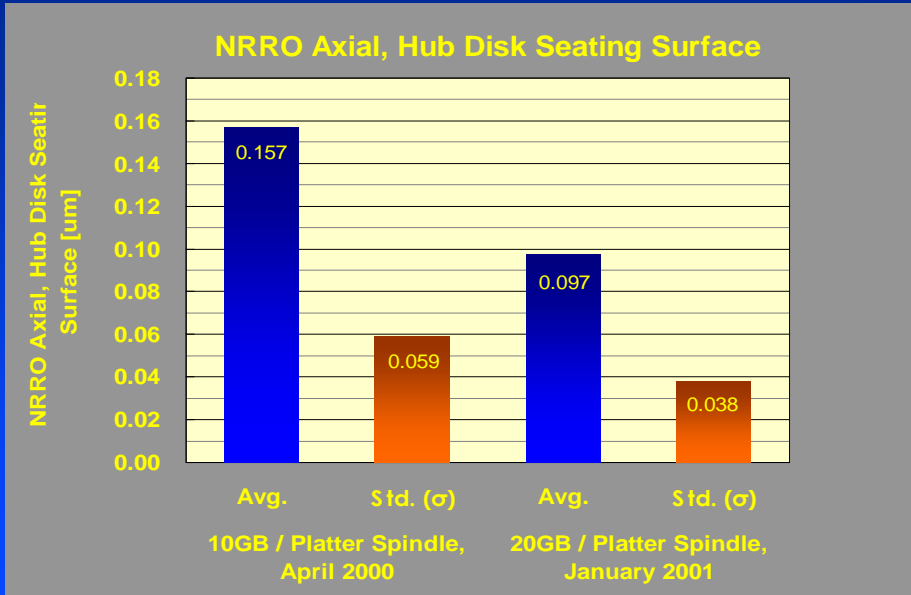
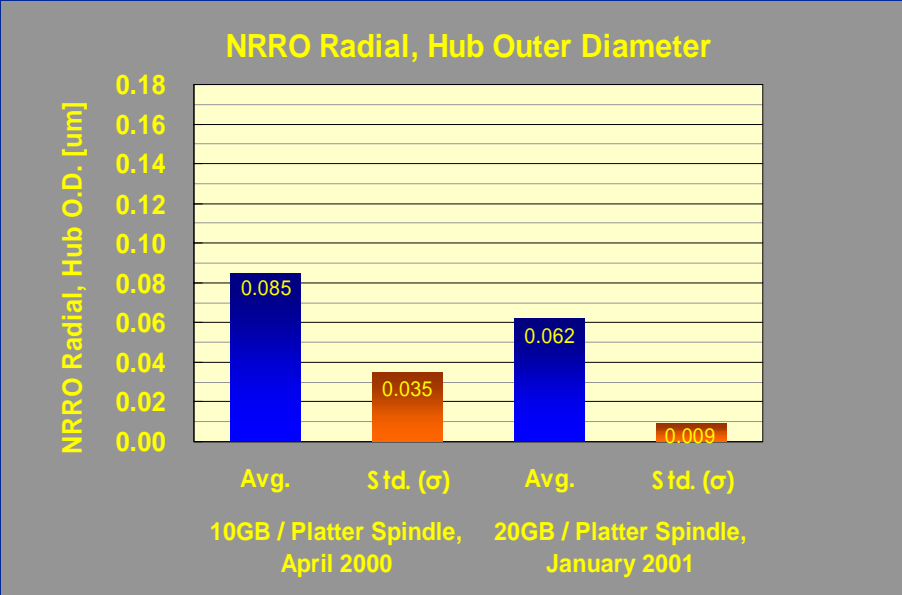
3. RO (Ball) Bearing Motor Precision Improvement and Production Quantity



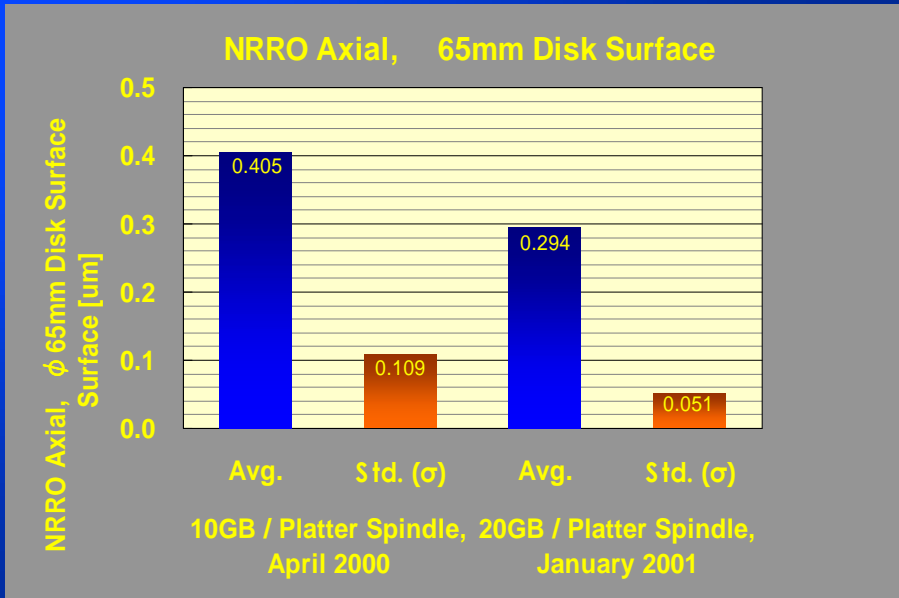
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3. RO (Ball) Bearing Motor Precision Improvement and Production Quantity



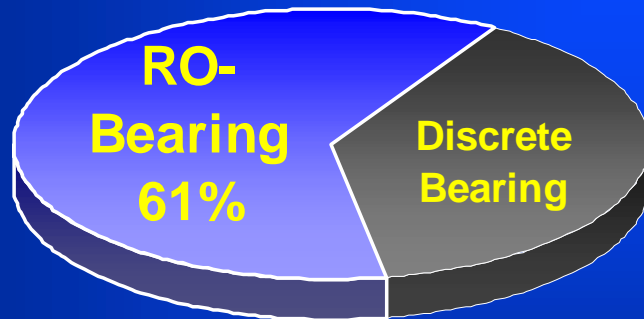
Minebea aims at further improvement in precision of RO Bearings.



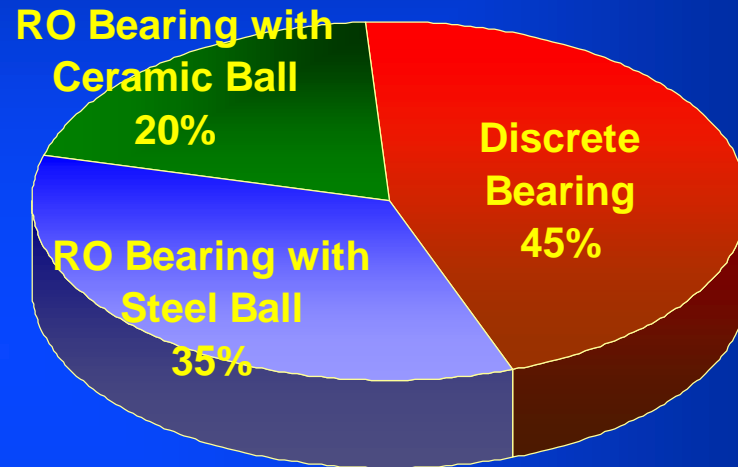
RO Bearing Motor Production Ratio

**RO Bearing Motor
Production Quantity 1,920K
Ratio Of 55% in December 2000**

**Announced on
March 24th, 2000**



**2000 CQ3
3,500Kpcs / Month**



**December 2000
3,520Kpcs/Month**

FDB Motor Update (1)

Products :

Mass Production

3.5-inch Low-End

**Soon Be Ready for
Mass Production**

2.5-inch

**Soon Be Ready for
Mass Production**

3.5-inch High-End

Seagate Type Only

For The Moment, FDB Motor Production Is For Seagate Type Only. Through This Production, Minebea Is Committed To Do Everything To Establish Reliability.

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FDB Motor Update (2)

Production Capacity

At The Moment

April 2001 And After

500K/Month



1,000K/Month

Current Production Quantity : 50K/Month ~ 100K/Month

Accumulated Capital Expenditure : 5 Billion Yen

(Machinery : 2 Billion Yen, Factory Building 3 Billion Yen)

Quality(Reliability), Cost Competitiveness, Supply Capability And Time-To-Market Activity Are Important When The Market Recognizes FDB Motors.

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4. Fluid Dynamic Bearing (FDB) Motor

Minebea Thai Ltd.

New Facility for HDD Spindle Motor & Fluid Dynamic Bearing

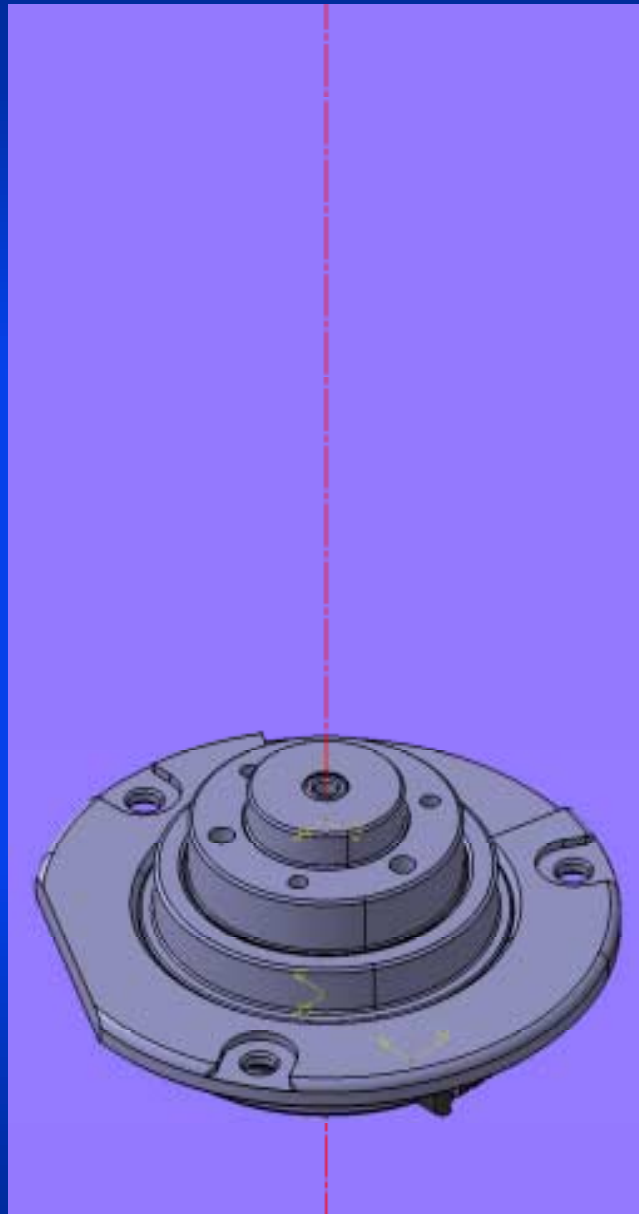


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4. Fluid Dynamic Bearing (FDB) Motor

**An Example of
Single-Plate FDB motor
for 3.5inch Low-End,
STB/AV/Desktop PC**

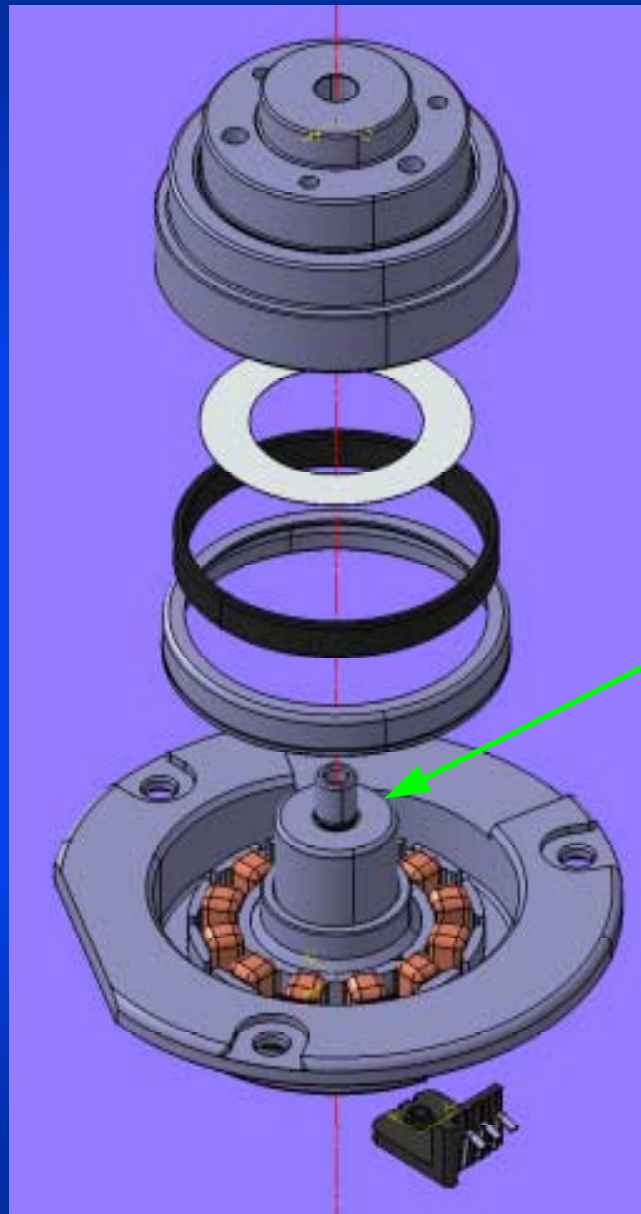


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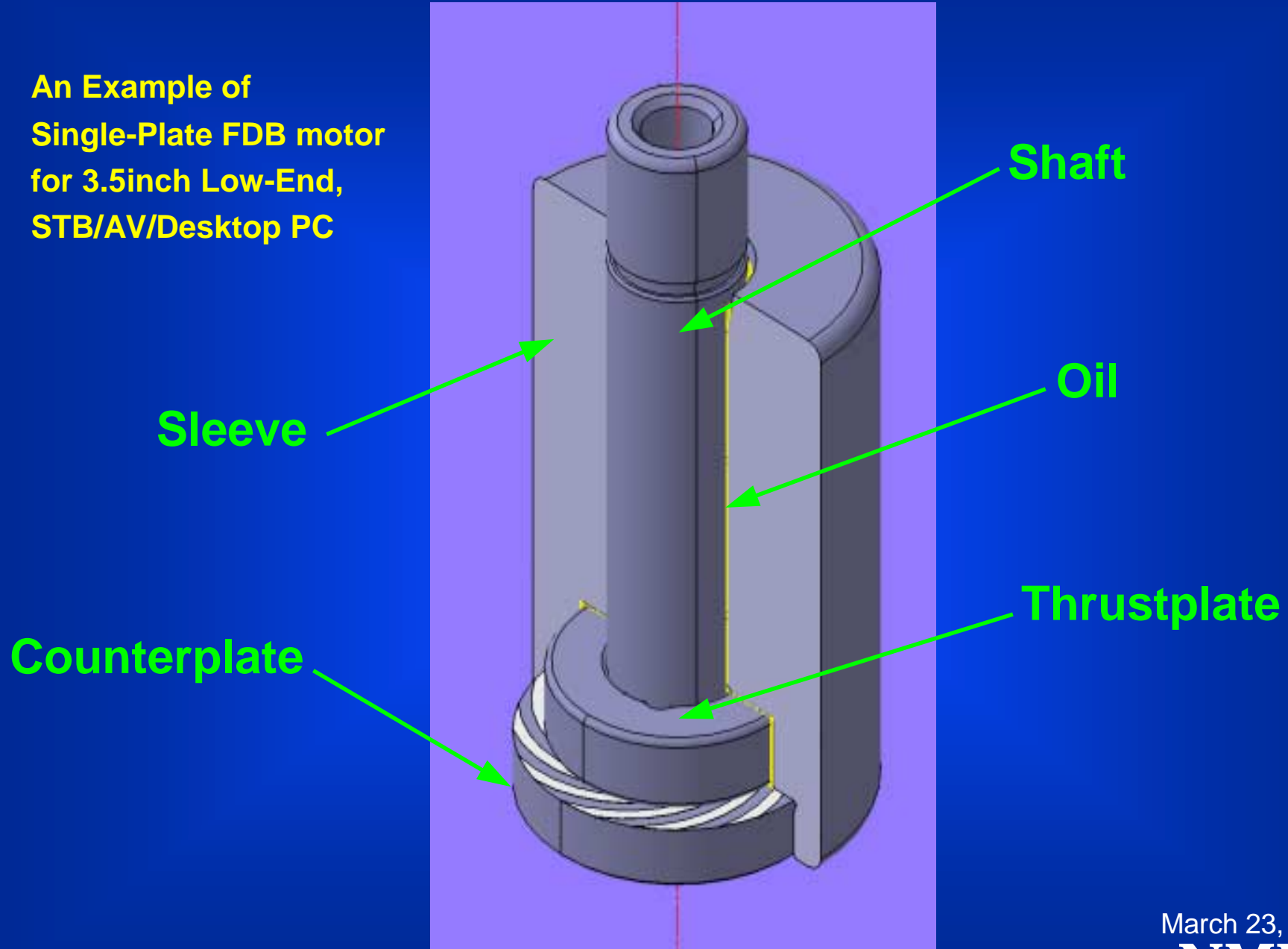
FDB

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STB/AV/Desktop PC

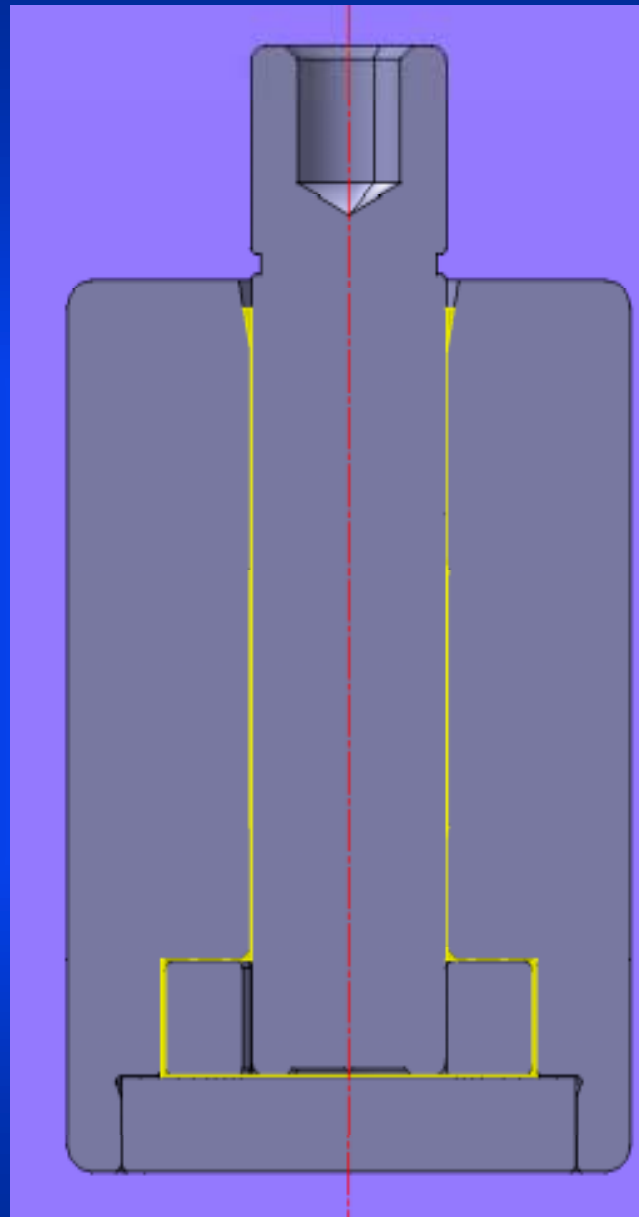


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4. Fluid Dynamic Bearing (FDB) Motor

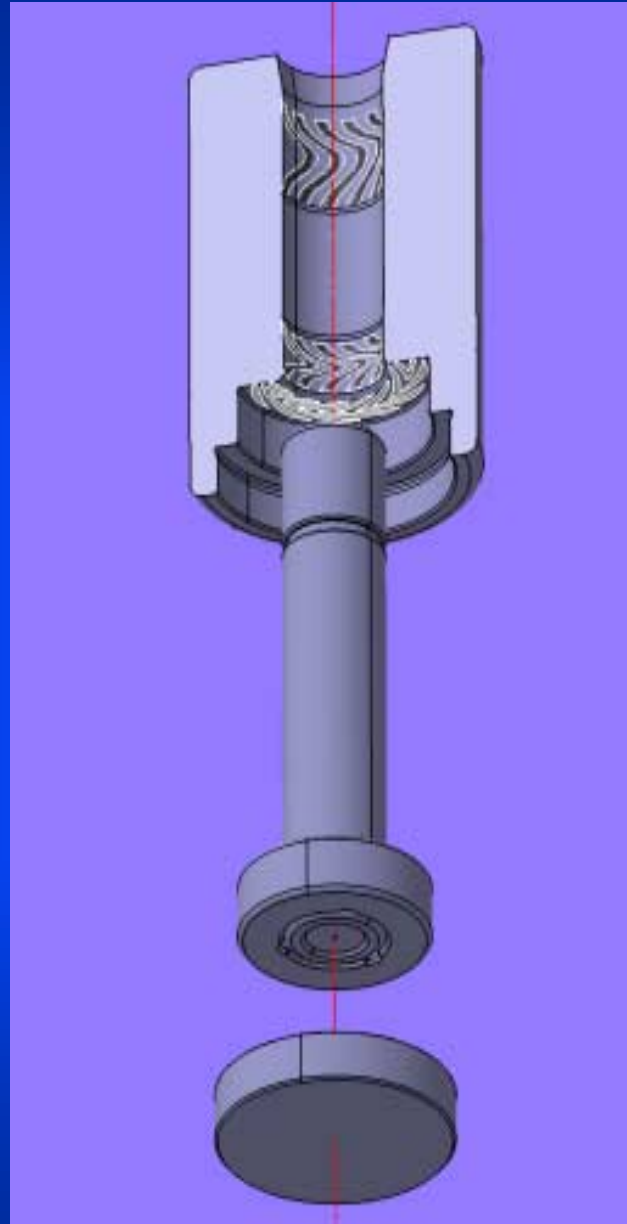
**An Example of
Single-Plate FDB motor
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STB/AV/Desktop PC**



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4. Fluid Dynamic Bearing (FDB) Motor

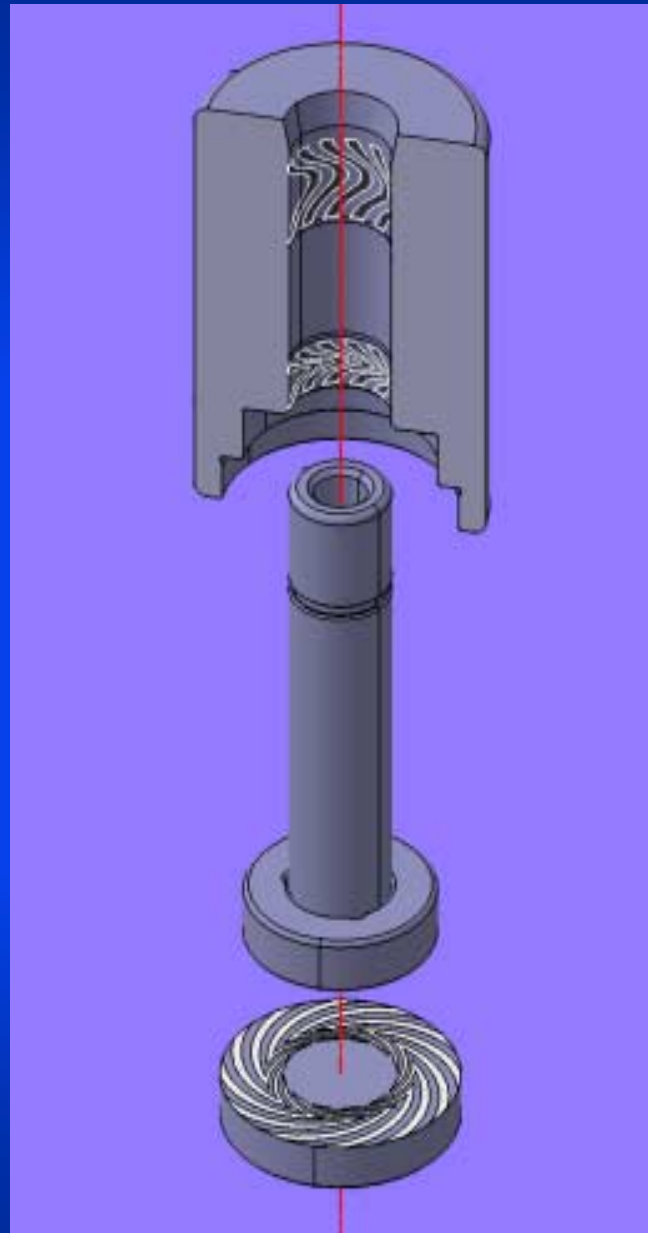
**An Example of
Single-Plate FDB motor
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STB/AV/Desktop PC**



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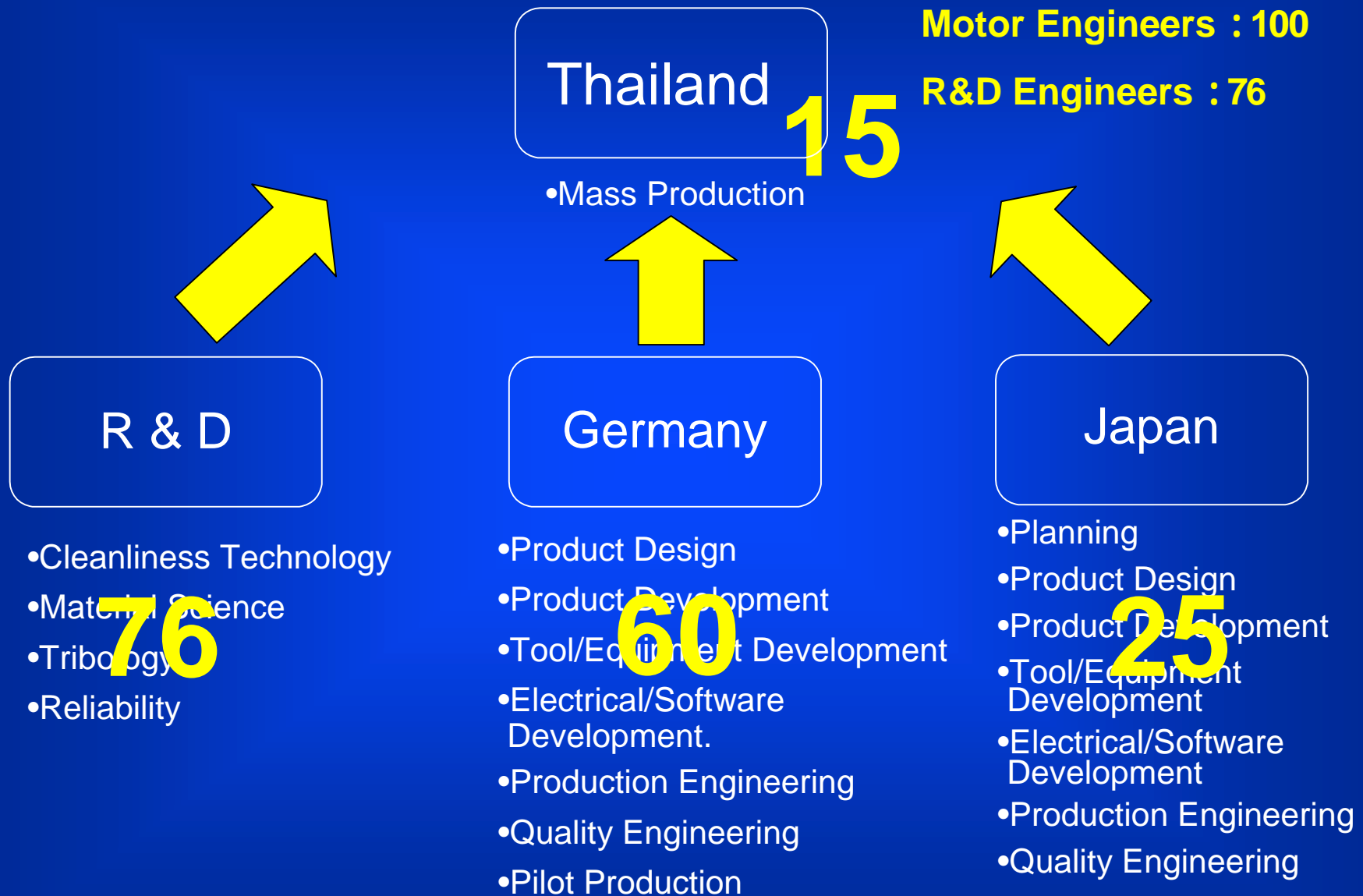
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**An Example of
Single-Plate FDB motor
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STB/AV/Desktop PC**



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5. Minebea's R&D and It's Engineering Organization



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5. Minebea's R&D and It's Engineering Organization

Precision Motors Deutsche Minebea GmbH "PMDM"



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6. Summary

- 1. Minebea's HDD spindle motor business is growing steadily.**
- 2. The mainstream of Minebea's spindle motor business in 2001 is RO bearing motors.**
- 3. Minebea's FDB motor has advantages in both productivity and reliability.**
- 4. Minebea sees that FDB motors will be recognized in the market in CQ3 2001 and after.**
- 5. RO bearings have made a big advance in performance during the past 12 months.**
- 6. Minebea is able to manufacture and supply HDD spindle motors with any kinds of bearings, discrete ball bearing, RO ball bearing with steel or ceramic balls, or fluid dynamic bearing.**

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