



JAPAN POWDER
METALLURGY ASSOCIATION

2022

JPMA Annual Report



Year ended December 31, 2022

Contents January – December, 2022

Executive Director Report	1
Organization of JPMA	3
Board Members	3
JPMA Secretariat	4
Activities of Committees	5
JPMA Events and International Communications	8
JPMA Publications	9
JPMA Membership	9
Statistics of Japan	10
Awards	13
PM Production in Asia	16

Executive Director Report



Yoshio Uetsuki, Executive Director

Dear Friends,

We would like to thank you for your continuous help with our JPMA activities. This 2022 annual report was created with my appreciation of your support.

2022 was a turbulent year. An optimistic outlook of recovery from the COVID-19 crisis at the beginning of the year has turned out to be an unexpected development due to soaring international commodity prices such as food and energy, accelerating inflation and economic deterioration in Europe and the United States.

In Japan, the domestic economy was affected by the decrease in automobile production and high prices of resources. However, the economy is recovering moderately under “WITHCOVID” policy.

While countries around the world are taking steps to accomplish “2050 Carbon Neutral,” Japanese powder metallurgy industry is also required to accelerate the necessary actions to go with this trend.

[Topics for 2022]

JPMA Prize was established in the fiscal year 1979, and it has the PM Field Contribution Prize and New Product prizes. During the 44th JPMA prize, PM Filed Contribution Prize was awarded to two people. The New Product Prize was awarded to five New Design Prizes, one New

Powders Prize, and one Encouragement Prize.

Regarding the major events, unfortunately the gathering of 2022 New Year Greeting and Ceremony of Awarding was canceled. However, the JPMA General Assembly in May and the Fall General Assembly in October were held as face-to-face for the first time in three years. Regular committees and events were mainly held online.

We started “First MIM Education Basic Course,” and many participants attended the lectures of the basic knowledge and KAIZEN case studies. We also launched the “1st PM Education Basic Course,” contributing to the basic education of young members. We will keep the training activities to help the development of talented members.

“New Project Activity” was launched in 2021 as JPMA’s effort to comply with Carbon Neutrality. We will design an “ideal model PM factory” in 2030 and 2050. We will promote the environmentally friendly quality of powder metallurgy products to customers.

Regarding exchanges with overseas organizations, we participated in the “World PM 2022 Congress & Exhibition” held in Lyon, France in October, and attended the meeting of PM Tripartite Organization (MPIF, EPMA, and APMA).

APMA (Asian Powder Metallurgy Association) board meeting was held on paper as the APMA conference in Korea had been canceled. Agendas below are resolved.

- MPIF/EPMA/APMA will continue to bear the cost of maintaining the GPMD (Global Powder Metallurgy Database)
- We will support the 2023 APMA conference to be held in Korea.
- We will support the JSPMIC2023 conference to be held in Japan.

JPMA and JSPM have started full-scale preparations for WORLD PM2024 YOKOHAMA. We are considering various plans that everyone

2022 JPMA Annual Report

will be satisfied with the event. We need the cooperation of PM members around the world to make this conference successful. Thank you in advance for your help and support. We look forward to seeing you in Yokohama in October 2024.

[Japanese PM production in 2022]

The global economy has followed a recovery trend since the COVID-19 crisis, but the pace of economic recovery has slowed due to high inflation and monetary tightening.

On the other hand, in Japan, economic activity was stagnant due to the decrease in automobile production with a shortage of semiconductors and high resource prices, but in the latter half of the period it was supported by personal consumption and capital investment. The real GDP growth rate (preliminary figure) for the calendar year 2022 was moderate at 1.1%, but it was positive for the second consecutive year.

Under such an economic environment, the domestic production volume of automobiles (including buses and trucks), which is a key industry, decreased by 0.1% from the previous year to 7.83 million units (Japan Automobile Manufacturers Association statistics), the same level as the previous year. Compared to 2019, it

is -19.1%, which is far behind the recovery to the pre-COVID-19 level.

The production volume of “PM Machine Parts” in 2022 decreased by 10.8% from the previous year to 69.7 thousand tons due to the rebound from last year’s production increase and inventory adjustment, and the production value decreased by 6.2% from the previous year to 106 billion yen.

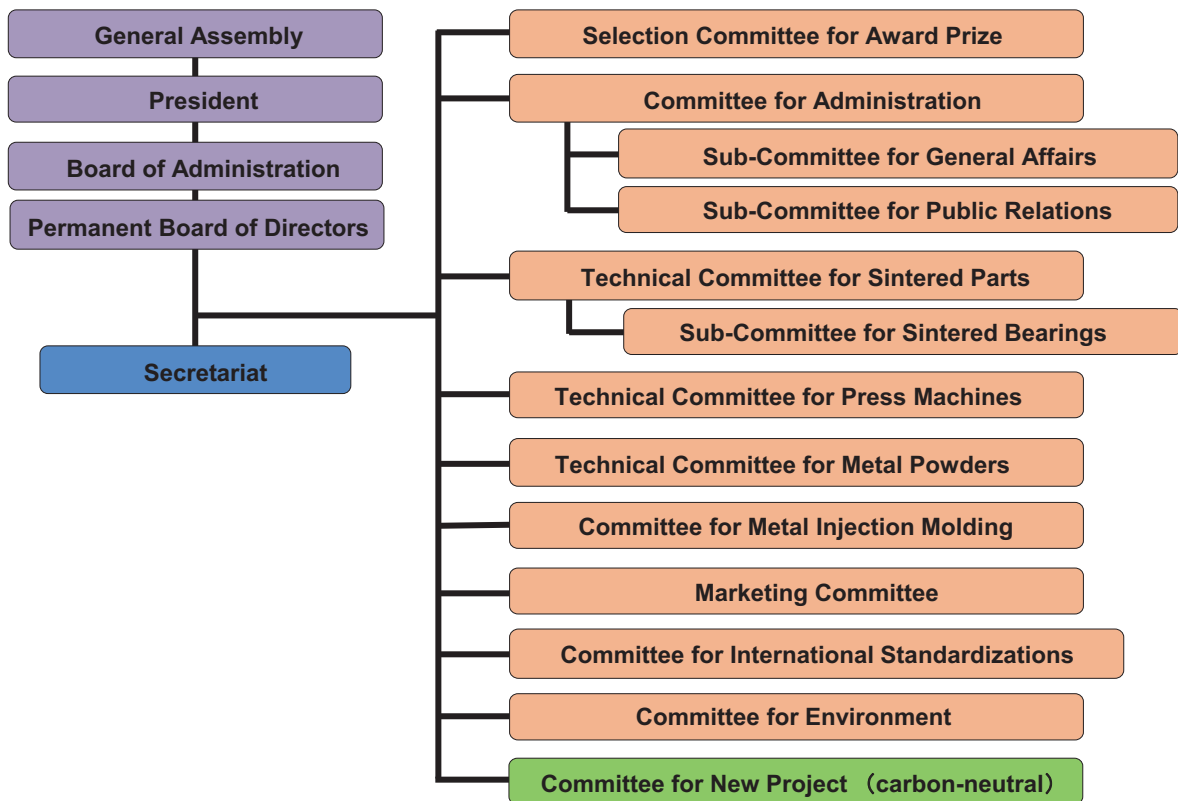
Compared to the production volume in 2019, it is -19.1%, and like automobile production, it is far below the level before COVID-19.

On the other hand, the production volume of “PM Bearings” in 2022 is 4.7 thousand tons, down 13.9% from the previous year, and the production value is 15.7 billion yen, down 9.7% from the previous year. When compared to 2019 production volume, it is down by 19.5%.

The JPMA strongly promotes PM technologies and developments, coping with Carbon Neutral, education of manpower, and cooperation with overseas PM fields, for the sake of PM field promotion.

Thank you very much for your kind cooperation with APMA, MPIF and EPMA. I hope further supports will be coming for JPMA.

Organization of JPMA



Board Members

President

Mr. Hiroshi Ii

President

DIAMET CORPORATION



Executive Director

Mr. Yoshio Uetsuki

Japan Powder Metallurgy Association

Permanent Board Members

Mr. Mitsuhiro Goto

Sumitomo Electric Industries, Ltd.

Mr. Yoichi Inoue

FINE SINTER CO., LTD.

Mr. Masashi Kikuchi

PORITE CORPORATION

Mr. Tsuyoshi Hasegawa

KOBE STEEL, LTD.

Mr. Shoichiro Tokumaru

JFE Steel Corporation

Mr. Syuzo Sonoda

FUKUDA METAL FOIL & POWDER CO., LTD.

Mr. Shoei Katano

Höganäs Japan K.K.

Board Members

Mr. Junichi Takahashi

IWAKI DIECAST Co., Ltd.

Mr. Yoshitake Nakashima

NTN Advanced Materials Corporation

Mr. Takashi Suzuki

NAPAC CO., LTD.

Mr. Masayoshi Nishimura

FUKUI SINTER CO., LTD.

Mr. Tetusya Shimizui

Daido Steel Co., Ltd.

Mr. Takayuki Yoshida

Dowa Electronics Materials Co., Ltd.

Mr. Jiro Bando

Nippon Atomized Metal Powders Corporation

Mr. Naoya Takahashi

Mitsubishi Materials Techno Corporation

Auditor

Mr. Seiji Shimizu

NTN Advanced Materials Corporation

Mr. Yasushi Mori

Nippon Atomized Metal Powders Corporation

JPMA Secretariat

Mr. Yusuke Watanuki (Manager)

General Assembly, Technical Committees, Events, Web, Publication

Ms. Tokie Sakamoto (Supervisor)

Accountant and General affairs

Ms. Naomi Enomoto (Staff)

Statistics, Events, General affairs

Activities of Committees

Selection Committee

for Award Prize

Number of Committee Members: 14 persons



Chairman: Mr. Mitsuhiro Goto
(Sumitomo Electric Industries, Ltd.)
New Chairman

*Selection Committee for JPMA Award (Development Prize)



NEW DESIGN

Net shape manufacturing of complex multi-level shaped parking parts with two-pcs simultaneous compacting
Sumitomo Electric Industries, Ltd.

Committee for Administration

Number of Committee Members: 18 persons

Sub-Committee for General Affairs

Number of Committee Members: 8 persons



Chairman: Toshitaka Masumoto
(FUKUDA METAL
FOIL & POWDER CO., LTD.)
New Chairman

*Publication of the report "Analysis of investigation results of sintered parts demand structure 2021" in June.

*Edition of the Brochure "2021 JPMA Annual Report (English)" in May and "2021 JPMA Annual Report (Japanese)" in July.

*Planning and operating of the PR meeting "JPMA Awards Special Session" at JSPM Spring online Meeting in May.

*Planning and operating of "25th Metal Powder and Equipment PR Meeting" and "40th Case Studies on Improving Production Efficiency Online Meeting" in November.

*Planning and operating of "PM information Exchange Online Meeting".

*Planning of "New Project Committee".

Sub-Committee

for Public Relations

Number of Committee Members: 8 persons



Chairman: Mr. Kosaku Fujita
(DIAMET CORPORATION)
New Chairman

2022 JPMA Annual Report

- *Planning and operating of "10th Human resources development online seminar" in July.
- *Publication of JPMA News "Funmatsu Yakin" (No409-412).
- *Planning of "1st PM Education Basic Course".
- *Planning and operating of WORLD PM2024 PR at WORLD PM2022 Lyon.
- *Deliberation of PR of JPMA Website. (New Project)

Technical Committee

for Sintered Parts

Number of Committee Members: 8 persons



Chairman: Mr. Kenichi Kato
(DIAMET CORPORATION)
New Chairman

- *Discussion of the matter for ISO/TC119, SC3 and SC5.
- *Deliberation of Measurement of surface roughness.
- *Introduction of energy saving equipment. (New Project)

Sub-Committee

for Sintered Bearings

Number of Committee Members: 3 persons



Chairman: Mr. Tomonori Yamashita
(NTN Advanced Materials Corporation)
Commission from 2020

- *Deliberation of standardization of the full filling rate.
- *Website Update for application example of Sintered Bearings.
- *Website Update for electrification example of Sintered Bearings. (New Project)

Technical Committee

for Press Machines

Number of Committee Members: 5 persons



Chairman: Mr. Junitiro Muto
(KOHTAKI PRECISION MACHINE CO., LTD.)
Commission from 2020

- *Exchange on Information for defect cases of Press.
- *Exchange on Information for newfangled Press Machines.
- *Deliberation of the simple precision inspection of Press Machines
- *Deliberation of Energy saving of Press Machines. (New Project)

Technical Committee

for Metal Powders

Number of Committee Members: 13 persons



Chairman: Mr. Tetsuya Sawayama
(KOBE STEEL, LTD.)
Commission from 2020

*Discussion of matters for ISO/TC119, SC2 and SC5.

*Deliberation of filling property for Metal powders

*Introduction of topics about "Metal Powder" by the Committee members and exchange of views mutually.

*Standardization of JIS Z 2510.

*Introduction of carbon neutral activity from member companies. (New Project)

Committee for

Metal Injection Molding

Number of Committee Members: 14 persons



Chairman: Dr. Hideki Nakayama
(CASTEM CO., LTD.)
Commission from 2018

*Investigation of the Japanese MIM market.

*Planning and operating of "1st MIM Education Basic Course"

*Standardization of JIS Z 2551.

*Planning and operating of MIM PR for 9th Metal Japan EXPO. (New Project)

Marketing Committee

Number of Committee Members: 13 persons



Chairman: Mr. Toshitaka Igarashi
(FINE SINTER CO., LTD.)
New Chairman

*Deliberation of the P/M Roadmap.

*Survey of carbon neutral trends in automotive manufacturers. (New Project)

Committee for International Standardizations

Number of Committee Members: 6 persons



Chairman: Mr. Yuji Maeda
(FINE SINTER CO., LTD.)
New Chairman

*Attendance of 2022 ISO/TC119 Meeting

*Discussion of related matters for TC119, SC2, SC3 and SC5.

Committee for Environment

Number of Committee Members: 4 persons



Chairman: Mr. Kazunori Hattori
(SUMITOMO ELECTRIC
SINTERED ALLOY LTD.)
Commission from 2018

*Investigation of 2021 follow-up survey for “Voluntary Action Plan for Environment of PM Industry”.

*Introduction of Case Studies of “CO₂ Emissions Reduction”, “Waste Product Reduction” and “KANKYO HIYARI”.

*Selection of the “Environment Awards”.

*Introduction of carbon neutral activity from member companies. (New Project)

JPMA Events and International Communications

21, January Cancellation

Gathering of 2022 New Year Greeting and Ceremony of Awarding Various Honors in 2021.

4, March

1st MIM Education Basic Course (Online)

12, March

The 17th PM Information Exchange Meeting. (Online)

19, May

2022 JPMA General Assembly.

Mr. Hiroshi Ii was elected as a new President.

The 2022 Activity Plans and Budget of JPMA.

24-26, May

JPMA Special Session at the JSPM Spring Meeting. (Online)

9, June Cancellation

Tour of Committee for Administration.

17, 24, June

1st P/M Education Basic Course. (Online)

23, September

15th APMA Board Meeting. (Written Resolution)

8, July

10th Human resources development seminar. (Online)

9-13, October

WORLD PM2022 World Congress at Lyon.

10, October

MPIF/EPMA/APMA Meeting

27, October

2022 JPMA Fall General Assembly.

Announcement of 2022 JPMA Awards.

State of Preparation for WORLD PM2024

16, November

The 40th Case Studies of Production Efficiency Improvement Meeting and the 25th Metal Powder and Equipment PR Meeting. (Online)

7-9, December

9th Metal Japan EXPO, MIM PR Seminar.

20, December

1st WORLD PM2024 Organizing Committee.

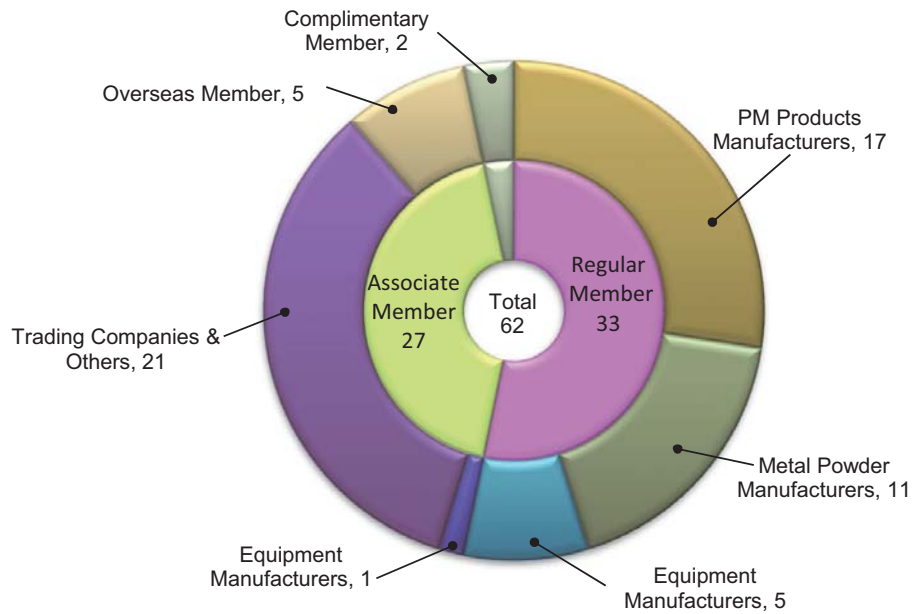
JPMA Publications

The 43th Investigation Collection Results of Sintered Parts Demand Structure.

JPMA Report, 2021 (English and Japanese).

JPMA News "Funmatsu Yakin" (No409-412).

JPMA Membership



2022 New Members

Associate Member

MOKC Co., Ltd.

Statistics of Japan

Production of PM Products in Japan

Fig1 shows the production volume change of Machine Parts and Bearings for the period from 2013 through 2022.

In 2022, Machine Parts volume was 69,743 ton, 10.8% decrease from the previous year. Bearings volume was 4,687 ton, 13.9% decrease from the previous year.

As the other products, Friction Materials volume was 927 ton, 5.7% increase from the previous year. Electric Contacts volume was 59 ton, 34.6% decrease from the previous year.

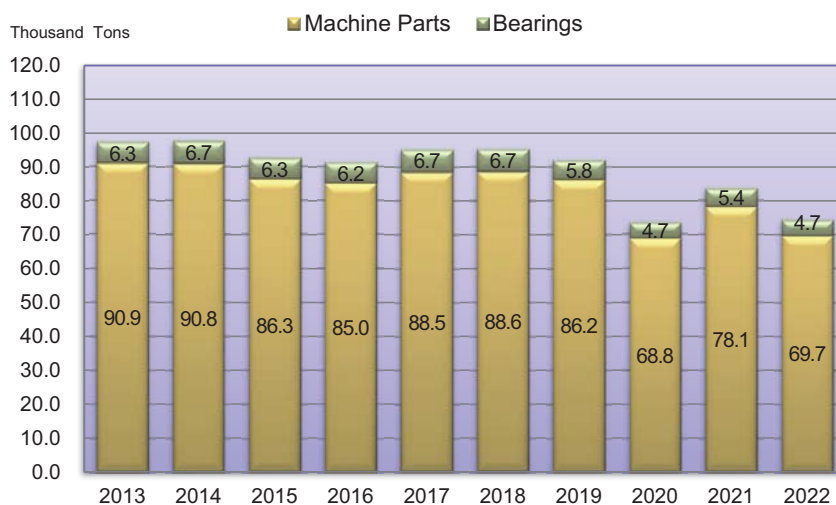


Fig1. Production of Machine Parts and Bearings (Calendar Year) (Source: METI)

Machine Parts, Bearings and MIM Parts

Fig2 shows the analysis of demand for Machine parts and Bearings for the period from 2013 through 2022.

In 2022, Machine Parts Production volume for Vehicles was 64,749 ton, 11.2% decrease from the previous year.

For Machine Parts, production adjustments were carried out repeatedly because of the complex factors such as anti-Covid-19 policies in emerging countries, Russo-Ukrainian War and unstable supply of old-generation type semiconductor chips, and consequently the order for Machine Parts for Vehicles was decreased or their production was canceled, and so Machine Parts production volume for Vehicles was decreased. It is predicted that the effect of the semiconductor chips shortage will continue until second half of 2023, and there is also the prediction that a full-fledged recovery will be after 2024.

On the other hand, the demands for machine tools, industrial robots and construction machineries are on recovery trend.

Production volume of Bearings for Vehicles was 3,237 ton, 13.0% decrease from the previous year.

By the effect of old-generation type semiconductor chips shortage same as the case of Machine Parts, Bearings decreased in their production volume. However, 52.7% of Bearings for Vehicles are used for electrical equipment (see Fig.3), and so it is considered that the uses of Bearings adapted to the electrification of vehicles will be increasing in future.

For MIM parts, the demands for semiconductor chips manufacturing equipment and medical

2022 JPMA Annual Report

equipment remained at high level since the previous year. In some demanders the decrease in order quantity could be seen, but it is predicted that the sales of MIM parts come to the same level with that in the previous year on the whole.

In the whole PM industry, the steep rises of fuel cost and raw material cost become obvious, and every PM manufacturer focuses on the energy saving measures and the automation of manufacturing processes.

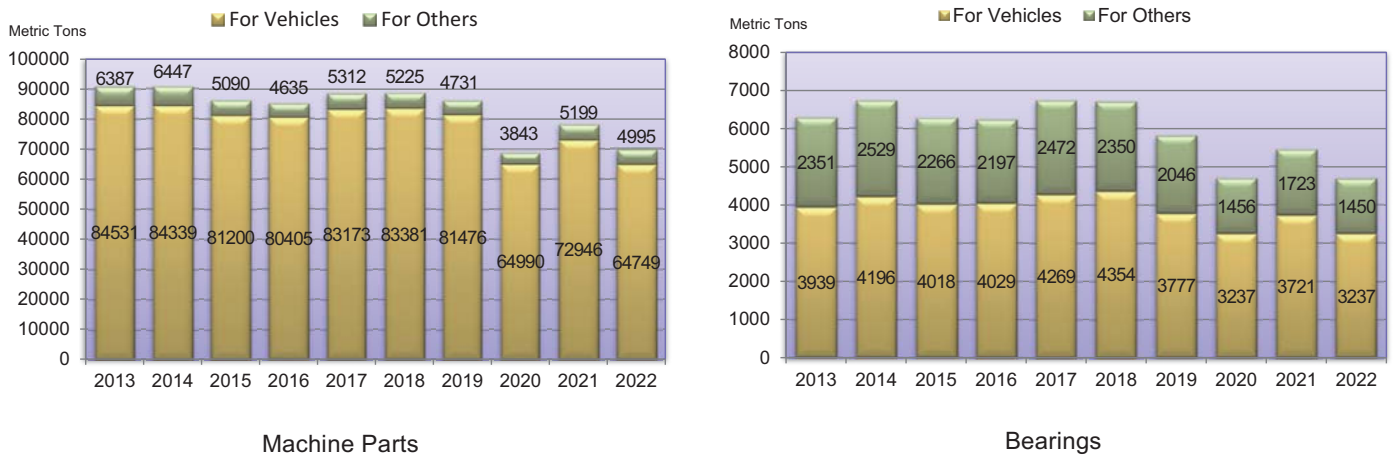


Fig2. Analysis of Demand for Machine Parts and Bearings (Calendar Year) (Source: METI)

Fig3 shows the use breakdown of Machine Parts and Bearings in vehicle in 2021 based on the demand structure survey by JPMA.

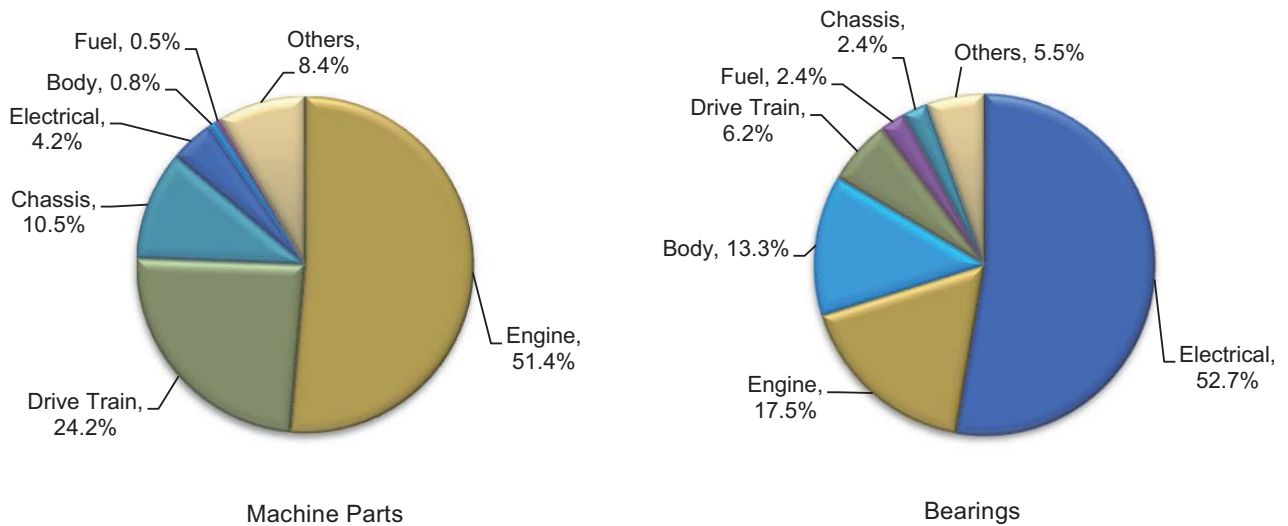


Fig3. Breakdown of Machine Parts and Bearings for Vehicles (2021) (Source: JPMA)

Fig4 shows the weight of sintered parts calculated for one car and the car production in Japan for the period from 2012 through 2021.

The weight of sintered parts calculated for one car in 2021 was 9.5kg in Japan, 16.8kg in U.S. and 9.0kg in Europe.

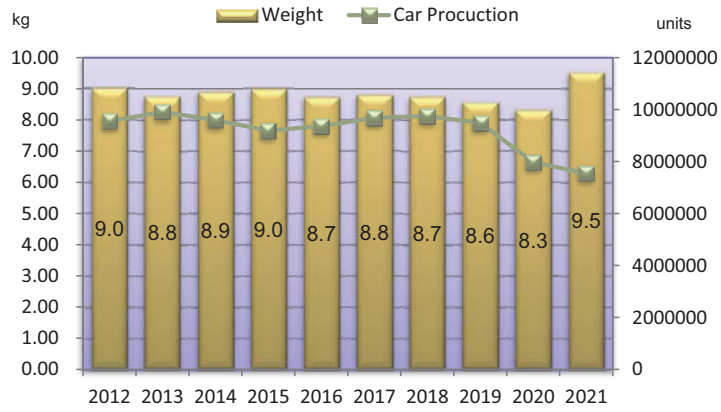


Fig4. Weight for sintered parts calculated for one motor car (Source JPMA and JAMA)

Production of PM Powders in Japan

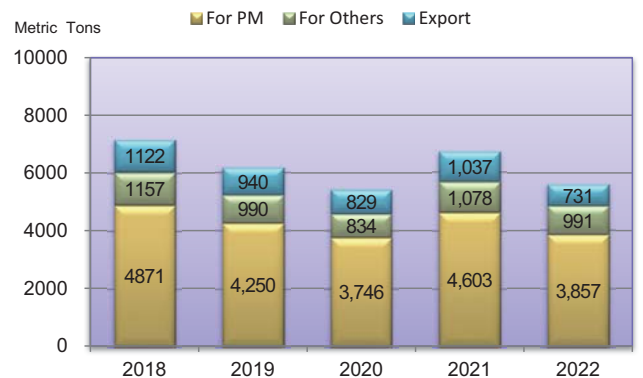
Fig5 shows the Shipment of Iron and Copper Powders for the period from 2018 through 2022 and Shipment of Other Powders for the period from 2017 through 2021.

By the effect of decreasing in demands for Machine Parts and Bearings, the Shipments of Iron and Copper Powders were decreased as well. Especially on the Shipment of Metal Powder for export, the rate of decline was increased by the effect of anti-Covid-19 policies in the destination countries for export.

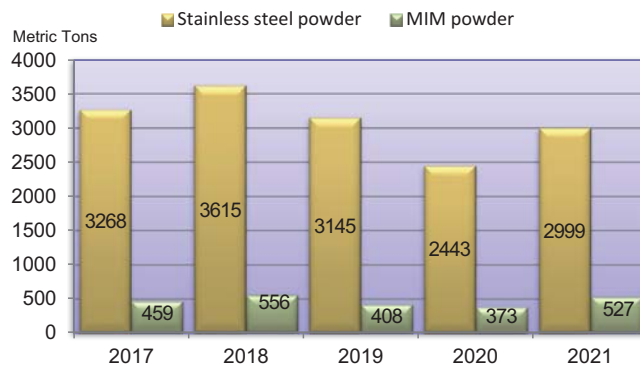
On the other hand, for Stainless steel powders and MIM Powders we have not yet got the data of 2022, but it is presumed that the shipment of Stainless steel powders was decreased and the shipment of MIM powders remained at the same level with that in the previous year.



Shipment of Iron Powders (Calendar Year)



Shipment of Copper Powders (Calendar Year)



Shipment of Other Powders (Fiscal Year)

Fig.5 Shipment of Metal Powders (Source JPMA)

JPMA Awards

Personal Prize

Mr. Nobuhiro Hashimoto
Former SUMITOMO ELECTRIC INDUSTRIES, LTD.

2019-2022
Chairman and Permanent Board Member



Mr. Carl-Gustav Eklund
Former Höganäs Japan K.K.

2008-2022
Permanent Board Member and Board Member



Development Prize

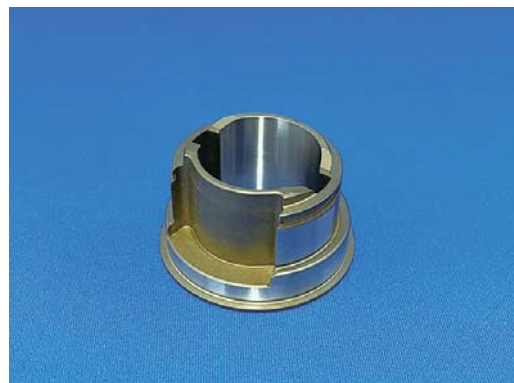
New Design

Net shape manufacturing of complex multi-level shaped parking parts with two-pcs simultaneous compacting.



SUMITOMO ELECTRIC INDUSTRIES, LTD.

Mass production of high accuracy and thin-wall product for electric VVT



FINE SINTER Co., LTD.

Planetary Braze Carriers for MT with Improved Endurance Fatigue Strength



SUMITOMO ELECTRIC INDUSTRIES, LTD.
Development of housing sprockets for electric VVT that achieves both high hardness and high accuracy



SUMITOMO ELECTRIC INDUSTRIES, LTD.

Eco-friendly parking parts with laser hardening



SUMITOMO ELECTRIC INDUSTRIES, LTD.

New Powders

High Thermal Conductivity Metal Powders for Additive Manufacturing



Daido Steel Co., Ltd.

Effort Prize

Sintered bearing for Electric Parking Brake motor



Porite Corporation

Prize for Distinguished Service of the Committee Activities

Mr. Hiroaki Hirai

TAIYO WIRE CLOTH CO., LTD.

2003-2022

Member of Committee for Administration

Member of Committee for 50th Anniversary Edit

Member of Sub-Committee for PM2012



Mr. Masatoshi Kikukawa

FUKUDA METAL FOIL & POWDER CO., LTD.

1998-2022

Member of Committee for Metal Injection Molding



Mr. Tatsuya Kajino

Porite Corporation

2014-2022

Chairman and member of Marketing Committee



Recognition of Superior Employees

2022 prizewinner numbered 13 persons

(9 member companies)

Environment Prize

Reduction of CO₂ basic unit

FINE SINTER Co., LTD.

Kawagoe Plant

(Saitama Prefecture, Japan)



PM Production in Asia

PM Production (Source JPMA, PMAI, KPMI, TPMA and CMPMA)

(Metric Tons)

AREA		2020	2021	2022	22/21(%)
Japan	Iron-base	71,467	81,137	72,363	89.2
	Copper-base	2,126	2,453	2,068	84.3
	Total	73,593	83,590	74,431	89.0
China	Iron-base	164,619	188,236	166,923	87.1
	Copper-base	11,268	13,539	12,580	92.9
	Total	175,887	201,775	176,503	87.5
Korea	*Iron-base	58,681	63,538	64,820	102.0
	Copper-base	1,118	872	566	64.9
	Total	59,799	64,410	65,386	101.5
Taiwan	Iron-base	30,700	31,000	26,000	83.9
	Copper-base	1,980	1,800	1,000	55.6
	Total	32,680	32,800	27,000	82.3
India	Iron-base	32,000	36,000	45,000	125.0
	Copper-base	8,500	9,800	12,000	122.4
	Total	40,500	45,800	57,000	124.5
Malaysia	Iron-base	3,063	3,354	3,342	99.6
	Copper-base	111	132	151	114.4
	Total	3,174	3,486	3,493	100.2
Singapore	Iron-base	1,105	1,337	1,077	80.6
	Copper-base	313	370	214	57.8
	Total	1,418	1,707	1,291	75.6
Thailand	Iron-base	13,514	16,036	14,208	88.6
	Copper-base	55	60	41	68.3
	Total	13,569	16,096	14,249	88.5
Indonesia	Iron-base	4,543	5,433	5,825	107.2
	Copper-base	62	0	0	—
	Total	4,605	5,433	5,825	107.2
Total	Iron-base	379,692	425,433	396,558	93.2
	Copper-base	25,533	29,664	28,620	96.5
	Total	405,225	455,097	425,178	93.4

*Included "Others"