

Hitachi Powdered Metals

Technical Report



Cover Photo

Line of Products Compacted using the CNC Press

Using the CNC press, near-net or net shape compacting of products with complex shapes, which had been difficult to compact with conventional presses, has become possible.

In conventional compacting, ingenuity had been applied to die operation using tool set. However, with CNC technology, die operation is controlled by a computer, simplifying powder transfer in the die.

Because it is possible to compact parts with complex shapes in a form closer to the finished product with CNC press, machining can be reduced. Considering this and other benefits, increased application of the CNC press is expected in the future.



Hitachi Powdered Metals Technical Report

The sixth edition

December 2007

Preface	1
Hisayoshi Kojima	
Review	
Recent Trends in Heat Resistant/Wear Resistant Sintered Alloys	3
Hideaki Kawata, Kunio Maki	
Research Report	
Research on Structure of Compacting Die for Reducing Ejection Force of Green Compact	12
Yoshimi Sugaya	
Features of Heat Resistant/Wear-Resistant Material EW-50	21
Hideaki Kawata	
Development of Bronze Bearing for High Load Conditions	28
Takeshi Yanase	
Development of Fe-Si-based Sintered Magnetic Cores with High Magnetic Flux Density and High Permeability	33
Aya Hamano, Dr. Chio Ishihara, Dr. Kazuo Asaka	
Development of V-P-Based Low-Temperature Glass Sealing Technology Conforming to RoHS Directive	38
Shinichi Tachizono, Kei Yoshimura, Yuichi Sawai	
Modeling of Powder Compaction Process and Severity Factor of Compaction	45
Katsuhiko Ueda, Terufumi Machida	
Commentary	
Examples of Compaction by CNC Press	55
Tomoaki Arakawa, Tadao Masuda	
Construction of Silent Chain Sprocket Production Line	62
Kazuo Iwasaki	
New Technologies	
Dynamic Pressure Bearing for Polygonal Mirror Scanner Motor	67
NIKKALOY SUTG Series with High Sliding Property and Heat Resistance	68
Flexible Forming (FF) Process Enabling Forming of Compact Parts with Complex Shapes	69
High Accuracy Assembly Method for Small Sintered Parts	70
New Products	
Compact Hydraulic Damper	71
Drive Pulley for Motorcycle Wheel Drive	72
Topics	
Introduction of the Monozukuri Center	73
Award-winning Products	74
Technical Lectures Held in FY 2006	76

Hitachi Powdered Metals Co., Ltd.

Head Office: 2-1 Minoridai 5-chome, Matsudo-shi, Chiba 270-2295, Japan
Tel: (81) 47-362-1171 Fax: (81) 47-362-1182

Tokyo Office: 7-8F Akihabara Sanwa Toyo Building, 3-16-8, Sotokanda Chiyoda-ku,
Tokyo 101-0021, Japan
Tel: (81) 3-3255-0176 Fax: (81) 3-3255-6980

Hitachi Powdered Metals (Singapore) Pte.Ltd.

Head Office No.7 Tuas Avenue 5, Singapore 639333
Tel: (65) 6861-5633 Fax: (65) 6861-5635

Hong Kong Branch Office: Suite 806, North Tower, World Finance Centre, Harbour City, Tsimshatsui, Kowloon,
Hong Kong
Tel: (852) 2366-3186 Fax: (852) 2366-9186
e-mail: Hitachi@hpmhk.com

Sintering Technologies, Inc.

Head Office: 1024 Barachel Lane, P.O. Box 588 Greensburg, Indiana 47240, U.S.A.
Tel: (1) 812-663-5058 Fax: (1) 812-663-8118

Siam HPM Co., Ltd.

Panavongs Building room No. 801, 104 Suriwongos Rod., Sipraya, Banrak, Bangkok
10500, Thailand
Tel: (66) 2236-4010 Fax: (66) 2236-4011
e-mail:siamhpm@ksc.th.com

Thai Sintered Products Co., Ltd.

Factory: 1/1 Moo 22 Suvintawong Saladang, Bangnumpriro, Chachoengsao 24000, Thailand
Tel: (66) 38-593023~6 Fax: (66) 38-593022

Hitachi Powdered Metals (Dongguan) Co., Ltd.

Cha Shan Industrial Park, Shi Da Road, Cha Shan Town, Dong Guan City, Guangdon,
China
Tel: (86)769-8617-0866 Fax: (86)769-8617-0808

Hitachi Powdered Metals Technical Report Vol. 6

Issued on : December, 2006

Published by : Hitachi Powdered Metals Co., Ltd.
2-1 Minoridai 5-chome, Matsudo-shi, Chiba 270-2295, Japan
Tel: 047-362-1171

Chief editor : Minoru Uchino

Printed by : JFE Techno-Research Corporation
1-1, Minamiwatarida-cho, Kawasaki-ku, Kawasaki,
210-0855, Japan
Tel: 044-322-6610

Editorial members

Minoru Uchino	Minoru Shirahige	Kei Ishii	Kunio Maki
Yoshihide Yuasa	Yoshiki Harioka	Osamu Murai	Michio Otani
Chio Ishihara	Hiromasa Imazato	Yuji Yamanishi	Hiroki Fujitsuka
Takahiro Jinushi	Satoshi Onodera		

All copyrights are reserved by Hitachi Powdered Metals Co., Ltd.