

SAFETY & ECOLOGY

# Press Forming: Enabling Advances in Safety and Resource Conservation

The role of a seatbelt retractor is to forcibly hold the seatbelt in place in the event of an abrupt vehicle stop. Because of the high degree of difficulty in forming the required shape, retractors are generally manufactured by sintering metal powder. However, using a press to form retractors has resulted in higher-strength components as well as the conservation of resources.

SDGs that we make efforts to contribute to



## Automotive Seatbelt Retractor Clutch

Winner of the “MF Technology Excellence Award 2020–2021” (sponsored by the Japan Forming Machinery Association)



Photo courtesy of Taiyo Industry Co., LTD.



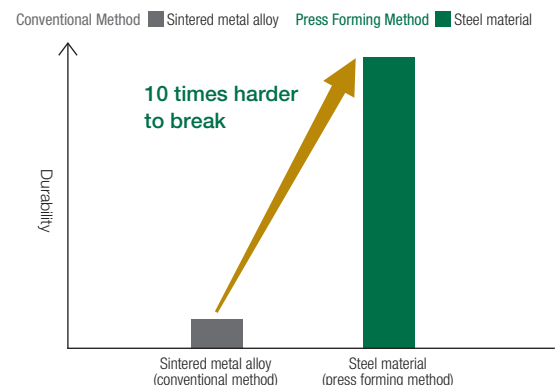
## Material Yield

# 43% improvement

Taiyo Industry Co., LTD. (Suwa City, Nagano Prefecture) has succeeded in mass-producing this component using an AIDA servo press using a forging process with over 20 stages instead of a sintering process using metal powder. This is done by taking a steel blank that is thinner than the finished product and applying a wall-thickening forming process, and this forming methodology change has improved material yield by 43%.

## Comparison of Material Properties between the Conventional Method (Sintering) and the Press Forming Method

Better durability by changing the material





	Coil Material Usage Differences	Press-Forming Differences
<b>Conventional Method</b>	<p><b>Progressive Forming</b> 4 pieces from a given length</p>	<p>Uses <math>t = 5.3</math> mm material</p>
<b>New Method</b>	<p><b>Changing the forming method reduces material waste</b></p> <p><b>Transfer Forming</b> The shorter spacing between parts enables 6 pieces to be formed from the same length, and the coil width itself is also narrower</p>	<p><b>The thin plate thickening process further reduces scrap</b></p> <p>Uses <math>t = 3.0</math> mm material</p>

ENVIRONMENT

# AIDA's Technologies Are Contributing to a Decarbonized Society

Our MSP Series high-speed precision presses equipped with AIDA's proprietary technology can stamp 300 sheets of EV drive motor cores per minute. With their outstanding accuracy and productivity, these machines have garnered 90%\* of Japan's domestic market.

SDGs that we make efforts to contribute to



MSP Series Multi-Suspension Presses



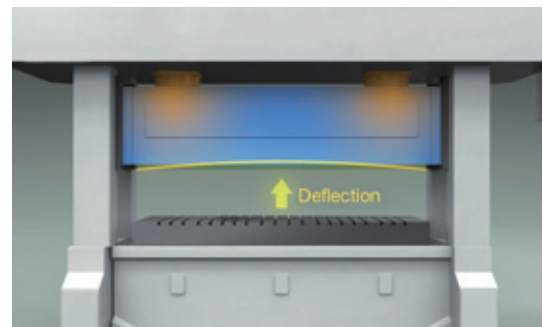
Domestic Market Share

90%\*

\* According to AIDA's research. This is based on data from the Japan Forming Machinery Association, and is calculated based on the domestic market share of dedicated high-speed progressive presses with tonnage capacities of 300 tons and higher.

As electrical vehicle performance improves, motor core plates are becoming progressively thinner with larger diameters. Our high-performance, high-speed MSP Series multi-suspension presses deliver forming capacities of 300 tons or higher, making them well-suited for manufacturing electric vehicle motor cores. MSP presses have a 90%\* market share in Japan, and are also highly regarded in Europe, the United States, and Asia.

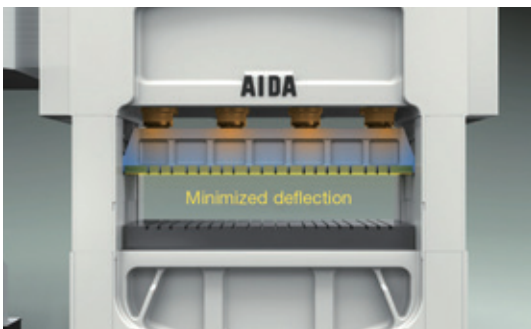
Conventional Press



The wide spacing between the points causes major slide deflection

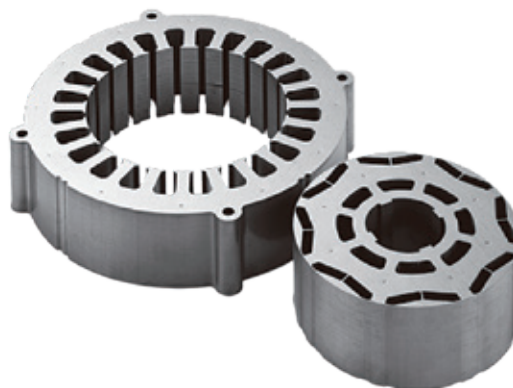


**AIDA's MSP Series**



MSP Series multi-suspension presses have narrow spacing between points, resulting in minimal slide deflection

**Motor Cores Used in Electric Vehicles**



ADVANCED TECHNOLOGY

# Digital Transformation Accelerates Innovative Manufacturing

Digital transformation is leading to the development of new business models and the creation of new value, thereby driving significant changes in manufacturing industries. AIDA continues to make inroads into not only “preventive maintenance” that uses IoT technology to monitor the service life of parts, but also “predictive maintenance” that uses AI technology to learn and to detect early warning signs of impending issues.

SDGs that we make efforts to contribute to



## Leveraging AI Technology for Predictive Maintenance

The industry’s first servo press equipped with learning functions (AI)  
DSF-N2-A Series  
(Announced in June 2021)

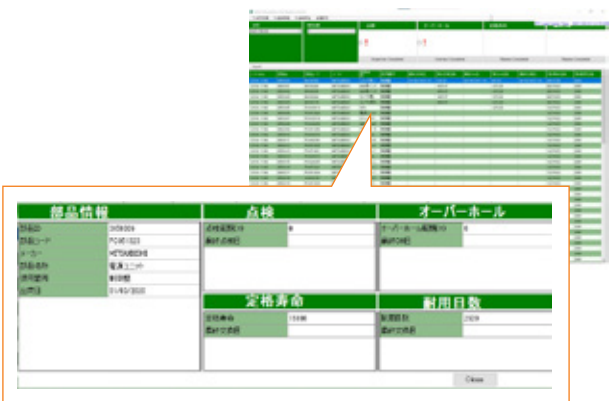


Our press machines aggregate measurement data—for example, the temperature of each part and the servo motor current and voltage values—and learn from it, enabling automatic diagnosis of the machine status and the quantification of abnormal conditions to help prevent problems before they occur.



Also equipped with SCADA functions to visualize the locations of faults in a 3D display

\* AI and SCADA functions are provided as options.



AIDA's AiCARE machine information management system updates press machine operation status and component service life information in real time

### Preventive Maintenance through Component Service Life Management

Sensors mounted on the machinery collect data in real time and provide the information needed by operators, maintenance managers, production managers, and others involved in production in an optimized format. Using actual operating status data, notifications are output when components have reached their “wear-out failure period.”