

Feature: Creating New Added Value

Supporting widespread adoption of more eco-friendly vehicles to help address climate change is a critical issue for AIDA. In terms of both hardware and software, we are creating added value to leverage the power of technology for manufacturing electric and fuel cell vehicles.

AIDA'S SOLUTIONS FOR EVs & FCVs



“MSP-4000-430”

Wide-Area MSP Series Press for Forming Large Motor Cores for EVs

Motor cores are made by stacking hundreds of thin electromagnetic steel sheets together. This “lamination” process typically involves the forming of small depressions and matching protrusions (dowels) in steel sheets that are then pressed together to form the lamination. In recent years, an “adhesive lamination” methodology has been making headway. This is where an adhesive is used to bond the steel sheets into a laminate; and this method has gained popularity due to the greater use of ultra-thin sheets to further reduce the weight of EVs while also boosting motor efficiency. Because the adhesive process is an additional stage, there is a greater need for wide-area presses. In addition, because extra forming stages are required to form increasingly complex motor shapes, there is an even greater demand for wide-area presses.

With a stamping capacity of 4,000 kN and a 4,300 mm forming area, our MSP-4000-430 press was developed to meet the dual requirements of high precision and a wide forming area.

Examples of Critical Components

Made Using AIDA Presses



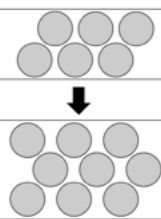
“BEX Series”

Dedicated Forming Press for Fuel Cell Metal Separators

We developed the BEX Series as dedicated presses for forming metal separators for the bipolar plates used in fuel cells, electrolyzers, and other equipment. The separators feature narrow, tightly spaced channels that allow the passage of hydrogen and oxygen and which must be fabricated to a high tolerance of a few microns on a thin (0.1 mm) metal sheet. Building on the innovative design of our UL Series of precision-forming presses but designed with higher rigidity, the BEX series can mass-produce metal separators with high precision.

FOCUS

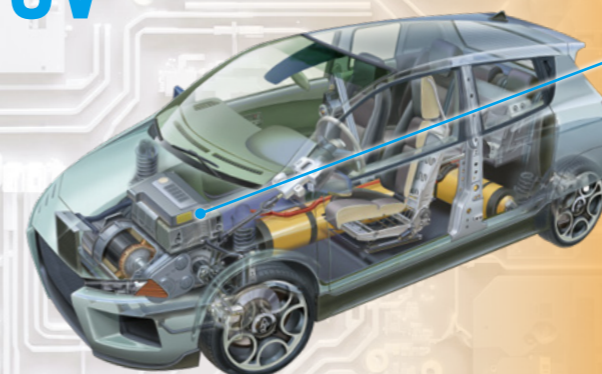
A More Eco-Friendly Manufacturing Process Using an “MSP-4000-430”



This model can form 600-mm-wide sheets that cannot be formed using a conventional press, enabling a three-row blanking layout rather than the usual two rows. Besides significant productivity gains, it also increases material yields by approximately 3%.

With the same power consumption, this press achieves higher yields and greater productivity while using less material.

FCV



Metal Separators for Fuel Cells

Groove Cross-Section

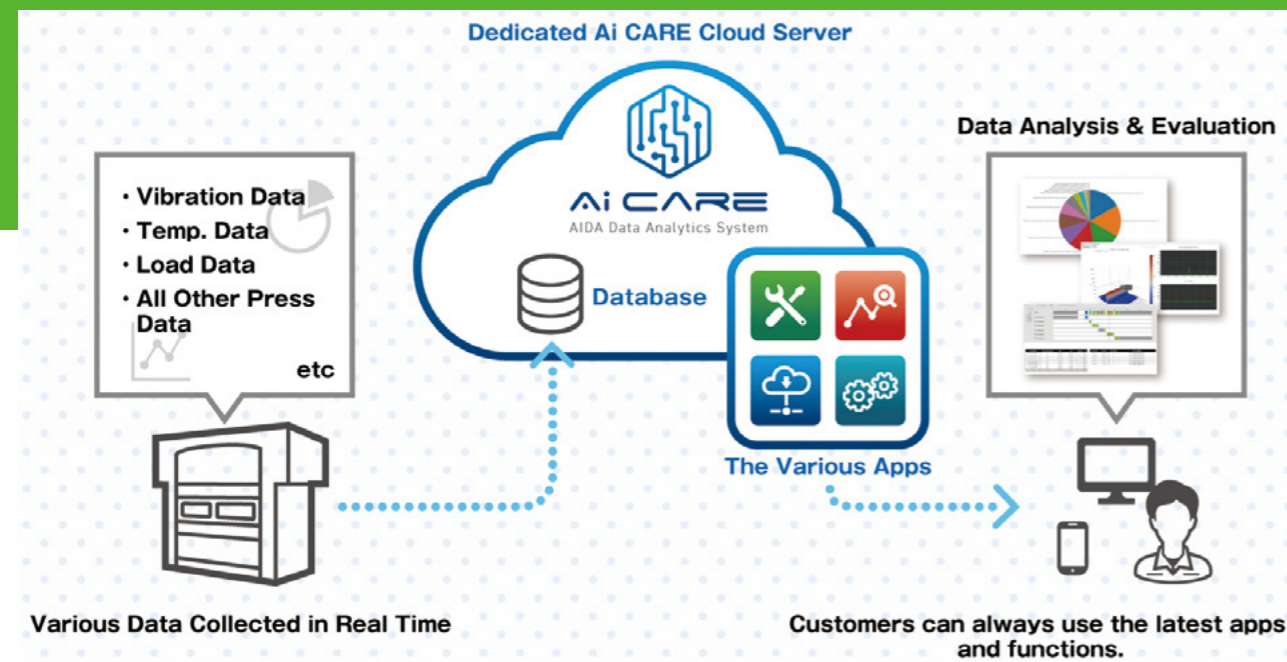
1.1mm 0.3mm

Digital transformation (DX) is ushering in a new era of manufacturing. To help address the societal issue of labor shortages, AIDA is adding value via the development of smart support systems for optimizing production that do not rely on individual experience or intuition.

AIDA'S SOLUTIONS FOR DX / AI

The AIDA Ai CARE Data Analytics System

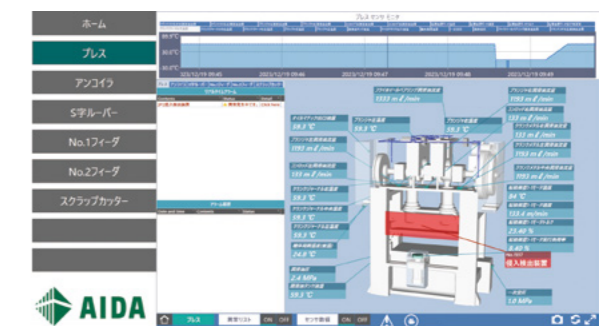
In April 2024, we introduced a major evolution of our Ai CARE service, changing to the “AIDA Data Analytics System” from the previous “Machine Information Management” system. Besides leveraging IoT to enable users to visualize the press operation data stored in the cloud, the new system also analyzes the data—something previously not offered—and provides valuable information for decision-making. In addition, through a generative AI-based interactive dialog service, the system enables even non-expert users to resolve issues quickly by asking questions and receiving AI-generated responses. These functions were achieved by leveraging AIDA's wealth of experience and knowledge accumulated over many years. This system is the next step in applying AIDA's know-how as a metalforming systems leader.



SCADA* Real-Time Monitoring System for Press Systems

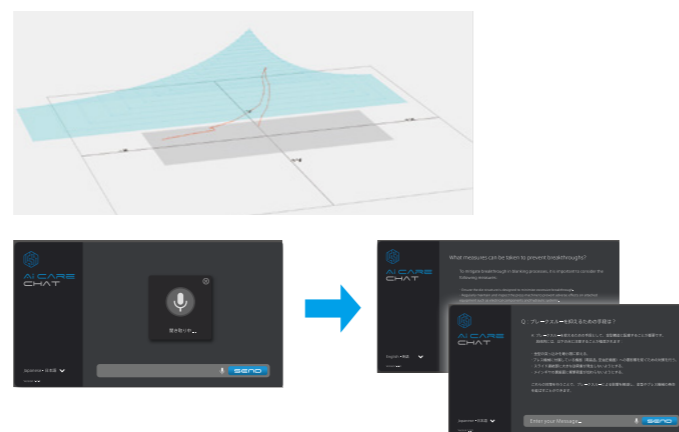
* Supervisory Control And Data Acquisition

The networked SCADA system collects information about the operational settings of presses (such as the die height and press speed), production loads, operating times, bearing temperatures, lubricant flow rates, motor currents, various alarms, and other data. These are converted into 3D visualization models for easy monitoring that show the status of the press and related devices in real time. Aside from showing where a problem has occurred, the system can also be used for pre-startup inspections, etc.



Examples of Ai CARE Functions

- Die-related data are analyzed using AIDA apps to constantly monitor loads as well as die life and die conditions. Die maintenance can be scheduled in a timely manner because the system predicts the expected die life.
- The system gathers information to address operational issues through interaction with an agent (“Ai CARE Chat”) that includes the generative AI program ChatGPT sourced from OpenAI. The AI supplies customers with the expertise and intelligence that AIDA has accrued regarding press operation as well as forming methodologies.



ADMS-SE* Simulation Software

* AIDA Digital Motion System – Simulation Edition

The ADMS-SE system provides a virtual 3D simulation for optimizing press motion while also preventing interference between the die and transfer feeders. Originally developed for servo presses, we have adapted the system so that it can also be used with mechanical presses, and we have begun selling it as a stand-alone system.

