NEWS RELEASE

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AIDA ENGINEERING, LTD.
Toshihiko Suzuki
Representative Director and President

Product Launch of the BEX Series--Dedicated Presses for Forming Metal Separators for Fuel Cell Bipolar Plates

AIDA ENGINEERING, LTD. (Representative Director and President: Toshihiko Suzuki) has begun selling BEX Series presses as dedicated machines for forming metal separators for the bipolar plates used in fuel cells and electrolyzers (water electrolysis devices). With a design based on AIDA's high-rigidity, high-precision UL Series presses, BEX Series presses are precision forming machines especially designed for the high-precision forming of thin plates.

■ Development Background

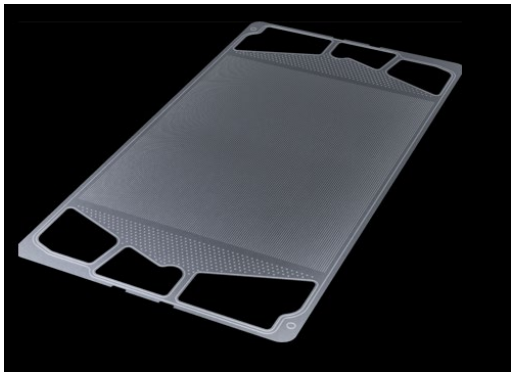
Fuel cells are power generation devices that can continuously extract the electricity generated by electrochemical reactions between hydrogen and oxygen, and they are used in FCVs (fuel cell vehicles) and ENE-FARMs (home energy-use fuel cells), etc. Furthermore, the development of electrolyzers is also progressing in preparation for a future hydrogen-based society, and demand for the bipolar plates required for these devices is expected to increase.

Separators are critical components for bipolar plates, and they have narrow, tightly-spaced channels that allow hydrogen and oxygen to pass through them. Mass production is possible using cold-forming presses to form metal plates, such as stainless steel plates.

High-precision product accuracy is required when forming metal separators, and there were many issues that arose because the designs of conventional presses made it difficult to achieve the needed product accuracy. AIDA participated in a bipolar plate subcommittee at a European research institute and studied the various elements required of presses in order to form metal separators, and this led to the development of the BEX Series.

The following challenging issues must be resolved when forming separators.

[Separator Forming Challenges]
- Forming high-precision slots (channels) that have tolerances measured in microns.
- Suppressing warpage of plates that are 0.1 mm thick.
- A trimming processes to keep burr height to a minimum.
- Maintaining stable, high-precision forming even during continuous production.



■ Product Features

AIDA has newly developed the BEX Series of optimal high-precision presses for forming separators. The series design is based on AIDA's innovative UL Series high-precision presses with their 9-point support design, high-rigidity ring frames, and zero-clearance slide gibs.
Though BEX presses have a 1-point design for accommodating loads at the center of the press, they also provide a wide area to accommodate multi-stage forming.

[Unique Press Features That Enable Separator Forming]

(1) A 1-point design created specifically to accommodate centrally-concentrated forming loads.
- A 1-point design that can handle high loads coupled with a high-rigidity frame to enable high-precision channel forming in the center of the press.
- Rigidity that is approximately two times better than UL Series presses. Bed deflection when forming in the center of the press has also been reduced by approximately 50%, and frame elongation has been reduced by approximately 30%.

(2) The Optimal Design and Functionality for High-Precision Multi-Stage Forming
- Provides a wide area that can accommodate the multi-stage forming of separators.
- The wide side opening allows material feeders for progressive applications to be located in close proximity to the die.
  In the case of transfer applications, it assures high rigidity even with its large openings that can accommodate externally-mounted transfers.
- A zero-clearance slide gib system eliminates lateral shifting of the slide to achieve the high-precision perpendicularity and parallelism needed for stable high-precision forming.
- Excellent bottom dead center accuracy is maintained by means of automatic die height adjustments during production (accuracy is ±0.05 mm or better) and by an oil temperature control unit that keeps the press frame at a constant temperature.

Note: BEX Series presses are offered with either servo press specifications or mechanical press specifications.

■ Product and Sales Overview
- Product Launch: June 2024
  Press Capacities: 8000 kN, 12000 kN, and 16000 kN
  ※Please contact AIDA for details about available models, sales regions, and specifications.
- Sales Target: 5 presses/year

[Remarks] In October 2024, a 1600-ton BEX Series press will be permanently installed at AIDA's Italy factory to enable die trials by European research institutes and customers.

Please note that this information is subject to change without notice.

< Inquiries Relating to This Subject >

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