# HOW TO GET THE BEST OUT OF YOUR PRESS EQUIPMENT

Press equipment are highly durable; it can remain in service for over 30 years with proper maintenance. While it involves inspecting the machine's condition and maintaining its original performance through servicing, preventive maintenance offers much more benefits for the machine shop.

Early detection of potential malfunctions through inspection and making adjustments or repairs can prevent sudden stoppages of press equipment and minimise the impact on production. Additionally, planned inspections before signs of failure and replacing equipment before it reaches the end of lifespan can ensure stable and long-term operation. This is known as preventive maintenance.

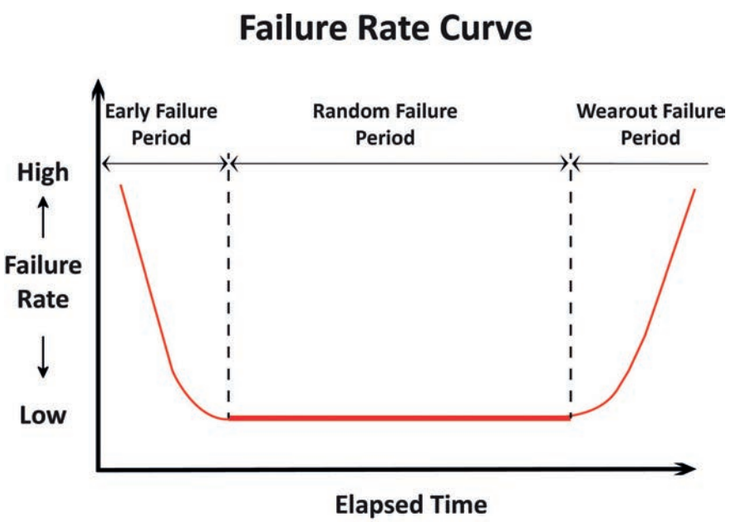
## Why Preventive Maintenance?

The press maintenance, including preventive maintenance, is always included in the press machine's manual. It explains daily, monthly, and yearly inspections, including specific voluntary inspections. However, these instructions are based on general usage conditions, so they often only include the necessary minimum items. To take the first step in preventive maintenance, companies should create inspection checklists based on their specific work conditions and environment, taking into account equipment's unique circumstances. The checklist should include specific inspection items based on press equipment malfunction history, enabling the checklist to maximise the effectiveness of preventive maintenance.

Press machines are often used for extended periods and are structurally susceptible to overloading (Crank mechanism can theoretically generate an infinite force at the bottom dead center). Additionally, they are subjected to significant shock and vibration during operation, making them extremely rugged equipment used in challenging environments.

As an indicator of the occurrence rate of malfunctions accompanying the passage of time in machinery and equipment, there is a graph called the "bathtub curve" (failure rate curve) based on its shape. This graph is divided into three: the "early failure period" in which the failure rate decreases with time, the "random failure period" in which failures occur rarely and independently of time, and the "wear-out failure period" in which the failure rate rapidly increases with time.

The primary measure for preventive maintenance is the regular replacement of parts before reaching the end of its lifespan. Press equipment malfunctions can be difficult to detect, leading to sudden system shutdowns. While the equipment lifespans are typically listed in the user manual, they can be greatly influenced by factors such as frequency of use and operating environment. Therefore, even if the equipment appears to be functioning normally, regular replacement is recommended. Regular maintenance







and replacement of components is essential for ensuring the smooth operation and longevity of machinery.

## Optimising Equipment Performance

AIDA emphasises on the recommended replacement intervals for various parts that require preventive maintenance. These intervals are based on manufacturer's guidelines and are intended to prevent unexpected breakdowns and prolong equipment life. For example, terminal and auxiliary relays, should be replaced every 1-2 years, while batteries and cooling fans should be replaced every 2-3 years. Graphic operation terminals should be replaced every 3-4 years, and electromagnetic and magnetic contactors should be replaced every 5 years. Push buttons and limit switches, as well as clutch brake solenoid valves, power units, amplifiers, and programmable controllers, should also be replaced every 5 years.

Servo capacitor units have a longer replacement interval of 10 years. By adhering to these recommended replacement intervals, company can avoid costly repairs and downtime, and ensure the reliable and efficient operation of the press equipment. At the instance of customer is not confident of conducting an effective preventive maintenance exercise, AIDA can be contacted for assistance. AIDA has the necessary measuring equipment such as TES and expertise to inspect the press machine. A detailed report with recommendation(s) will be submitted to the customer in order to plan the necessary repairs. This inspection will facilitate the 'predictive maintenance' of the machine, enabling a scheduled repair and minimising disruption to production.

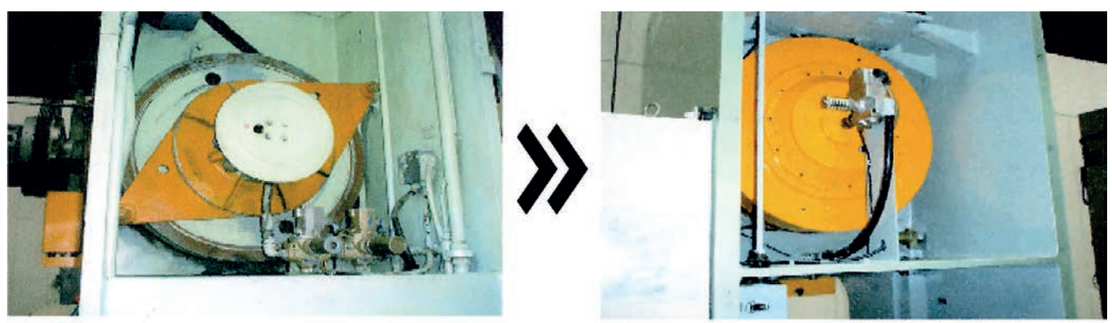
Press Modernisation includes elements of retrofitting, renewal, replacement, etc., and goes beyond the realm of maintenance, allowing for the upgrading and rejuvenation of press machines and peripheral equipment. By carrying out press modernisation, press equipment functions and accuracy can not only be maintained but also evolved.

Here are some examples of Press Modernisation:

## Dry Clutch and Brake Converted to Wet Type

By converting dry clutch and brake (C&B) systems to wet type, it significantly reduce lining wear and extend their lifespan. Wet-type C&B systems are essentially maintenance-free through proper lubrication management (annual oil changes), resulting in reduced downtime and cost for maintenance and inspections.

Additionally, the structure of the system, with the friction plates enclosed in a sealed space,



Dry Type C&B

Wet Type C&B

eliminates the dispersion of lining wear powder into the surrounding environment. This not only reduces environmental impact, but also allows the lining to maintain stable performance unaffected by the surrounding conditions.

Furthermore, in line with modernising peripheral equipment, we recommend upgrading outdated C&B solenoid valves to the latest monitor-equipped double-type solenoid valves, improving safety performance. Additionally, adding a fixed-position stop device or flywheel brake and converting the main motor (fixed-speed or outdated variable-speed motor) to an inverter can also enhance safety and achieve energy savings.

## Press Machine Equipment Servo Conversion

Recent advances in servo motor technology have been remarkable. As a servo technology leader, AIDA has been incorporating servo motors into press equipment for over 20 years and has a track record of ultra-large presses with a capacity of 30,000 kN or more. Leveraging its expertise in manufacturing servo motors, AIDA also performs modernisation projects by converting existing mechanical presses to servo presses.

While the focus of servo conversion is on improving functionality, the old control panel, operation panel, and most control devices are replaced with the latest ones, including the motor. For example of general-purpose machines, the clutch and brake and flywheel are replaced with servo motors and capacitor units. AIDA's servo conversion modernisation projects also include additional safety functions that conform to the latest structural standards.

By performing modernisation projects, not only can the life of press machines be extended, but additional functionality and performance improvements can also be achieved. Even in cases where the cost of introducing the latest technology may be prohibitive for new equipment, it is possible to introduce the latest servo technology and make effective use of the idle equipment. AIDA conducts over 300 modernisation projects annually both domestically and internationally, ensuring customers' press equipment is taken care of by the best experts in the industry. The team of experienced professionals is dedicated to maximise the efficiency and productivity of customers' equipment while minimising downtime and operationa

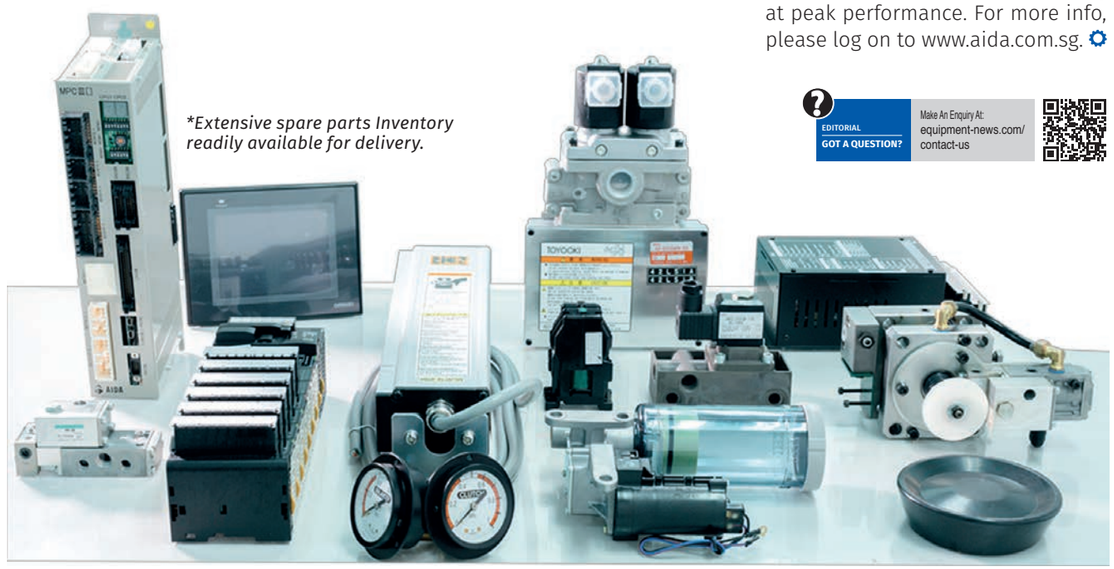
AIDA is committed to provide the best support to customers for press equipment needs, and that includes reliable spare parts and accessories. To ensure customers in Asia have easy access to these vital spare parts, AIDA has set up a dedicated spare parts supply centers in Singapore, Malaysia, Thailand, Indonesia, India, Vietnam, and the Philippines. This comprehensive supply network ensures all major spare parts and accessories are readily available for immediate deliveries. AIDA understands the importance of having access to reliable spare parts and accessories and takes pride in maintaining an extensive inventory of high-quality products that are ready to ship immediately. With a fast and efficient response, customers can get the parts they need to keep their press equipment operating at peak performance in no time.


**Servo Press Conversion by AIDA Self-developed low speed high torque servo motor*




AIDA Greater Asia Spare Part Supply Centers are managed by a team of highly experienced professionals who are dedicated to ensuring that customers receive the right parts quickly and efficiently. It is equipped with state-of-the-art technology and logistics systems that allow for accurate inventory management and speedy order fulfilment. AIDA's commitment to providing reliable spare parts and accessories transcends offering an extensive inventory. It ensures all products are of the highest quality and meet stringent safety standards. Customers can be rest assured they are receiving genuine spare parts engineered to perform at the highest level.

With AIDA's comprehensive network of spare parts supply in Asia, customers can be confident that they have the support they need to keep their press equipment operating at peak performance. For more info, please log on to www.aida.com.sg.



**Extensive spare parts Inventory readily available for delivery.*