Special Purpose Machinery for the Minting Industry

Coinmaster 4™

Homogenous and Bi-Metal High Speed Coining Press

HME Minting

Our Minting Heritage

From the early years of automated coin production, HME has offered unrivalled expertise in the supply of Minting Machinery. Today our presses produce precision engineered coins for leading Mints throughout the world.

HME MINTING INNOVATION

With in excess of 350 machines sold to over 34 mints worldwide, HME minting presses have an established reputation for offering technical solutions to a wide variety of coining, embossing, forming and sizing requirements.

Extending this reputation into a new era of coining technology, the all new and patented Coinmaster 4™ homogenous and bi-metal coining press sets new standards in minting press performance. Based on the revolutionary new Twin-Link drive system, the Coinmaster 4™ offers fully variable operating speeds of 350 – 850 strokes per minute, state-of-the-art blank control and the latest in networked I/O machine control systems.

The Coinmaster 4™ has been designed in close cooperation with the Royal Mint in order to ensure that it meets the demands of today's modern high speed minting operations. New technologies have been carefully introduced to protect industry standards, thereby ensuring that the new generation of HME Coinmaster™ presses can efficiently operate along side minting presses of other makes.

SERVICE AND SUPPORT

HME's design and manufacturing facilities enable the Company to offer a total service from initial concept through to site installation and commissioning. All major research and development work for the Coinmaster™ range is conducted in-house and is supported by a well equipped Computer Aided Design Department covering mechanical, electrical, hydraulic and software engineering disciplines.

Main (left): Aerial Photograph of the Company's 8-acre Wakefield site.

Above (Top): Technical Design Department

Above (Bottom): 3D Model of Coinmaster 4™

Below: Lord Digby Jones, UK Minister of Trade, (second left) visits HME to observe the new Coinmaster 4™ minting press.

Key Design Features

Utilising state of the art technology, perfected over years of in-house research and development, HME minting presses have been designed to provide smooth and balanced running at high speeds.

Main (Right): HME Coinmaster 4™ in operation at the Royal Mint in Llantrisant, Wales.

Above: Main frame and Twin-Link mechanism during press build.

Below: Copy of a Patent pertaining to the HME Coinmaster 4™.

HME TWIN-LINK DRIVE SYSTEM

The Coinmaster 4™ is the first commercially available minting press to utilise a link drive system that is inherently balanced throughout its entire operating speed range. This revolutionary Twin-Link mechanism has been designed and engineered by HME to eliminate the harmonic interference under acceleration that is commonly associated with existing "secondary" or counterbalanced machines that utilise knuckle-joint systems.

Following successful operating trials of the mechanism at the British Royal Mint, and enhancements to the lubrication system, motor drive system, and blank pusher mechanism, Coinmaster 4™ has pushed back the productivity boundaries of circulation coin production.

HME PATENTED FEED SYSTEMS

Patents have been granted on new Coinmaster 4™ feed systems, capable of feeding coins at rates far in excess of today's industry standard press speeds.

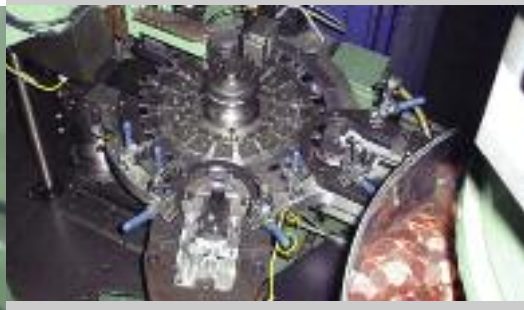
KEY FEATURES OF THE COINMASTER 4™ INCLUDE:

- New Twin-Link drive ensuring smooth and balanced operation at ALL speeds.
- Near perfect 130° dwell of the Twin-Link mechanism at bottom dead centre allows reliable coin ejection and feeding.
- New mechanical bowl feed system together with an in-line sorter incorporated into the feed system.
- A sixteen-station dial feed plate serviced by a single or dual blank pusher mechanism.
- State-of-the-art blank control, utilising an optimised linear speed profile for moving the blank from the stack into the dial plate.
- Improved pneumatic ejector system.
- Siemens "profibus networked I/O control system with full colour TFT LCD display.

Highly Commended
"Best Metalforming Machine Tool"
MACH International Machine
Tool Awards

Quality Engineering

HME has a reputation in the market place not only for the technical and innovative nature of its products, but also for the workmanship, longevity, service and finish of its machinery.



KEY DESIGN FEATURES (CONT)

FRAME

Of heavy-duty one piece, cast alloy steel construction, fully stress relieved before machining for highest accuracy. Compact and space saving frame design analysed using finite element principles to ensure maximum strength with minimum deflection and excellent damping characteristics.

MAIN DRIVE

By means of a AC motor, incorporating infinitely variable speed settings, driving a balanced flywheel by means of a multi-groove belt. The flywheel rotates on anti-friction roller bearings and is supported on a quill rigidly attached to the press frame, thereby avoiding unbalanced crankshaft loading. A 'Crawl' mode is available for tool setting purposes with a cycle speed of 30 strokes per minute.

SLIDE

Constructed of a high tensile high-grade aluminium alloy to give maximum strength and minimum weight. Slide guidance by precision, pre-loaded roller bearings with prismatic adjustment to achieve 'play-free' operation with minimal friction.

TWIN-LINK DRIVE SYSTEM

The Twin-Link drive system has been designed to produce an optimum 'motion profile' for both coining and feeding at high speeds. An exceptional near perfect 130° slide dwell at bottom dead centre allows accurate and reliable coin ejection and feeding. The system also provides for positive contact of all linkage components at all stroke positions.

To further enhance press operating life, the unique Twin-Link drive incorporates full dynamic balancing over the entire speed range, eliminating the need for special foundation requirements.

Main (left): Coin blank feed mechanism for bi-metal coins.

Above (Top): Dual Feed Pusher system with feed tubes removed for illustration.

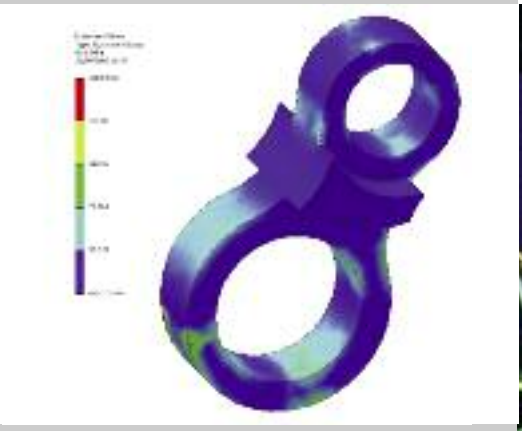
Above (Bottom): The latest 3D CAD design technology is used in the development of the HME Coinmaster 4™ feed systems.

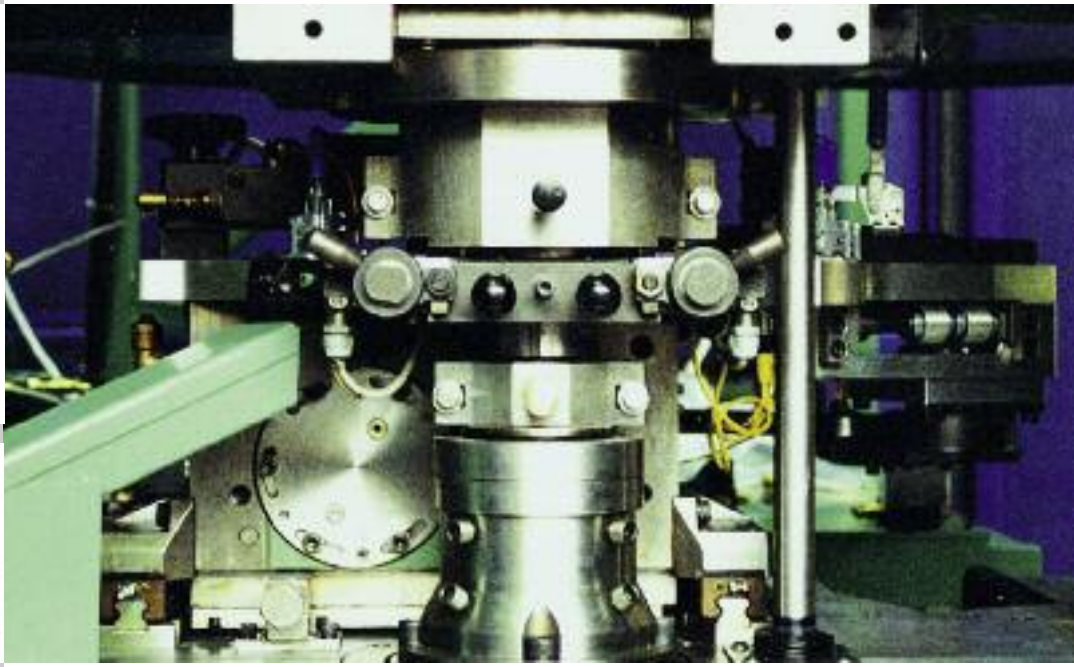
Below: Twin coin blank feeders on a Coinmaster™ bi-metal press.

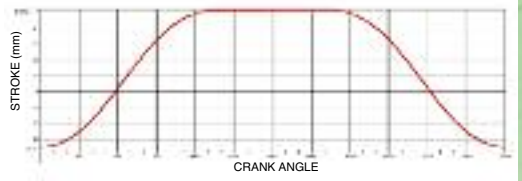
Bi-Metallic Press

Operational Efficiency

In a competitive industry, HME minting machinery gives our customers an efficient route to improved productivity. With over 350 machines sold worldwide, Coinmaster™ presses have become an industry standard in the minting market. The all new Coinmaster 4™ continues this tradition by setting new standards in high speed coin production.





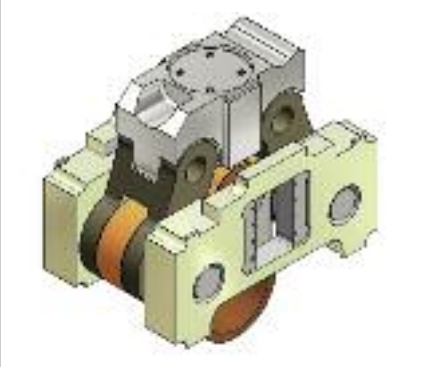


Main (Right): Tool area of press showing tooling dies and collars in situ.

Above (Top) : Stress analysis of upper link.

Above (Bottom): Slide displacement graph showing extended slide dwell for reliable coin blank feeding and ejection.

Below: Schematic arrangement of the Twin-Link drive mechanism and slide.



Twin Link System

KEY DESIGN FEATURES (CONT)

CRANKSHAFT BALANCING

The crankshaft runs in maintenance free hydrodynamic 'DYN' alloy phosphor bronze bearings. The rotating crankshaft is fitted with two counter balanced masses to eliminate the force produced by the crank pin and coupling head. The mirror effect design of the Twin-Link drive automatically produces a balanced system. Anti-vibration mounts specifically calibrated and designed are fitted under the feet of the press to prevent forces being transmitted to the factory floor.

LOW INERTIA CLUTCH & BRAKE

High efficiency low inertia combined pneumatic friction clutch & brake unit to achieve immediate motion arrest.

BLANK FEED SYSTEM (HOMOGENOUS AND BI-METAL)

The blank feed mechanism comprises a mechanical rotary bowl feed mounted on pre-loaded linear guide rails enabling the bowl to be retracted for accessibility. The blank discharge chute is adjustable to accommodate varying sizes of blanks and incorporates a blank sorting station to reject rogue blanks. The blanks are channelled into a vertical feed chute from where the bottom blank is fed by a pusher mechanism into the indexing dial plate. The dial plate is equipped with an overload protection system and can be retracted along with the indexing gear to facilitate a die change. (Push button controls). Backlash free indexing gear ensures high positional accuracy. Twin coin blank feed bowls are available for bi-metal coin production. Blank feed change parts are available for alternative diameters of coin blank.

TOOL HOLDERS (COIN PRESS TOOLING)

The tool holders are designed and supplied to suit our customers existing coining tools (dies and collars). The bottom tool holder incorporates both precision spherical alignment and lateral tool adjustments. Both top and bottom coining dies, and collar, are provided with quick release clamping systems to provide a changeover system that ensures minimum press downtime.

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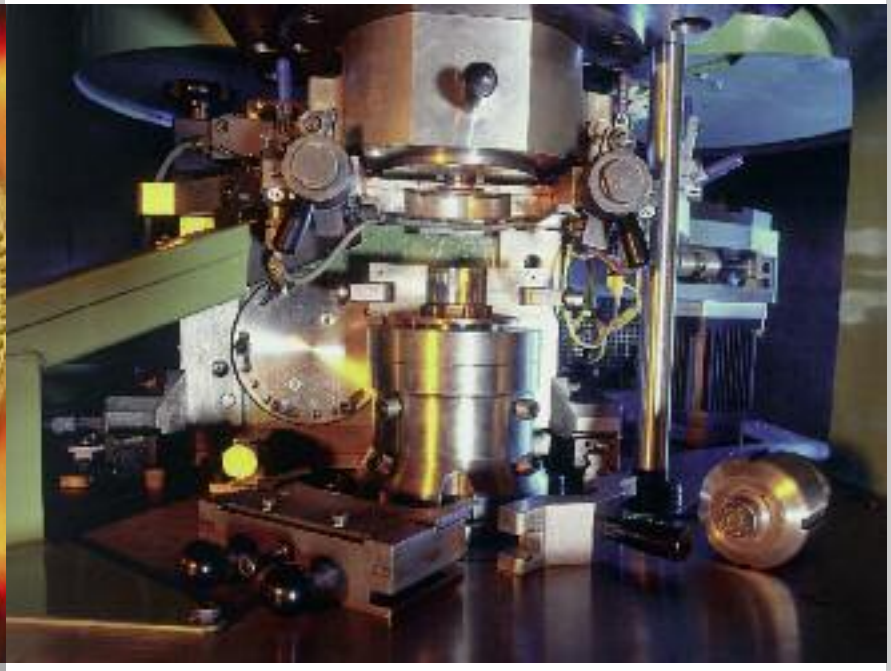
MACH International Machine
Tool Awards

Optional Extras

HME takes particular pride in its ability to design and manufacture bespoke machinery and complete turnkey solutions. 'Special' minting presses can be manufactured to custom specification, and optional extras added where required.



Main (left): Tool space area of press utilising the industry standard tool change system.

Above (Top): Typical HMI screen image.

Above (Bottom Left): Sample rings produced on the Coinmaster 4™.

Above (Bottom Right): Siemens PLC based Human Machine Interface (HMI).

Below: Full front access to the Coinmaster 4™ facilitates tool changing and maintenance.

KEY DESIGN FEATURES (CONT)

AUTOMATIC COIN BLANK SORTING MECHANISM

The inclined feed chute from the mechanical rotary bowl blank feed incorporates a coin blank sorting mechanism.

EJECTOR MECHANISM

The ejector system is a pneumatically locked mechanism with pivoting displacement connected directly to the slide. A fine adjusting device is incorporated for accurate setting.

CONTROL TECHNOLOGY

Using HME's extensive experience of PLC and CNC microprocessor technology, a comprehensive system is offered to control all major machine functions, thereby ensuring faster production set up times. Full diagnostics, tool data sets cam settings, auto wedge positioning and press speed are amongst the features available through the Siemens PLC based Human Machine Interface (HMI).

LUBRICATION

Press lubrication is achieved by a fully automatic re-circulating oil system complete with cooling circuit.

ACOUSTIC ENCLOSURE

The machine is provided with an integral Acoustic Enclosure incorporating a forced ventilation system which can be arranged to provide either a positive or negative pressurisation. Lighting, viewing windows and interlocked access doors are provided for maintenance and press setting purposes. The measured sound level outside the enclosure under normal operating conditions will not exceed a peak reading of 85dBA.

Technical Specification

Above: Front view of the optional HME fast Hydraulic Tool Clamping System.

Below: Automatic Coin Blank Sorting Mechanism.

HME COINMASTER 4™ - HSC 160

Nominal Rating	1600 KN	
Maximum Coin Diameter	34 mm	
Maximum Coin Thickness	3.5 mm	
Stroke	8.5 mm	
Number of Strokes (Variable)	350 to 850 spm	
Crawl Speed	30 spm	
Tool Holder Adjustment	4 mm	
Ejector Force	30 KN	
Ejector Stroke	6.2 mm	
	Press	Press with Enclosure
Width	1770 mm	2080 mm
Depth	1870 mm	2210 mm
Height	2520 mm	2780 mm
Net Weight	9000 kgs	9400 kgs

KEY DESIGN FEATURES (CONT)

COINING FORCE ADJUSTMENT

A motorised wedge adjustment mechanism is incorporated into the upper tool holder. This adjustment is pushbutton controlled and can be operated whilst the press is in operation. Adjustment positions can be stored in the press control memory and recalled for automatic positioning of the upper coining tool.

OTHER OPTIONAL FEATURES INCLUDE

LOAD MEASUREMENT

Coinmaster 4™ can be supplied complete with a coining load measurement system. The system measures coining load at each press stroke, and can be used in conjunction with the Coining Force Adjustment to apply the optimum coining pressure to each coin blank.

Load display monitor.

RING PRODUCTION

Tool and tool holder packages are available for ring production. Bi-metal rings can be produced at normal press operating speeds. The outer ring and inner core are discharged seperately.

HYDRAULIC TOOL CLAMPING

Fast hydraulic tool clamping can be offered improving the HME hydro-mechanical fail-safe facility. This system can also be retrofitted to all models of Coinmaster presses.

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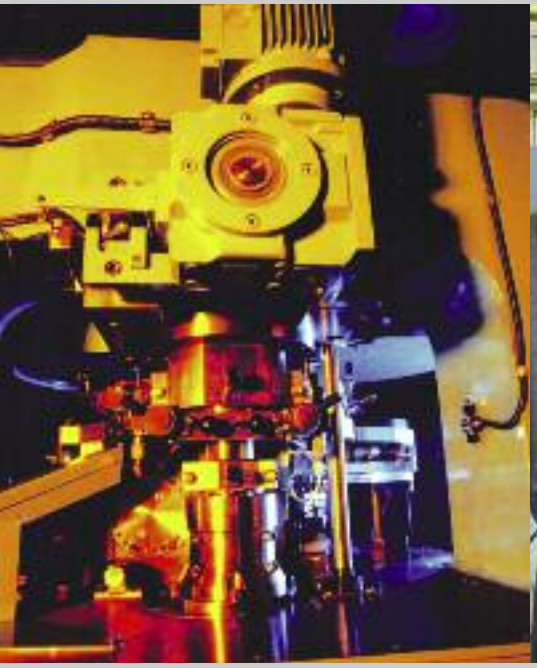

His Royal Highness, the Duke of Kent, KG (left), inspects circulation coins produced on a HME Coinmaster 4™ Minting Press with HME Chairman, Ian Ridgway.

HME Minting

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