DCC1000 - DCC4500

LK COLD CHAMBER DIE-CASTING MACHINE

Website: www.lktechnology.com
IMPRESS-II Series
High performance large tonnage die-casting machine

L.K., the leading die-casting machine manufacturer in China, has made use of the most up-to-date technology, and integrated with the experience of Chinese and overseas die casters in die casting practice, thus developing the IMPRESS-II series die-casting machine. The machine has consisted of advanced injection, die closing and control function, suitable for casting various kinds of large die-casting components, like automotive and motor cycle components (e.g. engine block, air valve cover, cam-shaft block, oil pan housing, gear box housing, gear box cover, instrument panel, etc.), escalator step/moving walkway pallet, industrial/highway light housing and construction components, etc.

Control Unit
- Stable PLC control system
- High precision position transducer for die closing/ejector
- LK professional control system for diecasting process
- Casting production management
- Advanced data storage and monitoring function

Hydraulic Tie-bar Extraction
- Only one tie-bar extraction for standard machine.
Hydraulic tie bar extraction is able to extract tie bar automatically in order to allow large die installation

Energy Saving
Optimal hydraulic circuit design with pressure feed-back control, resulting in greater efficiency, minimised pressure charge time, and reduced energy consumption.

Injection Unit
- Fast injection and intensification by proportional control
- Individual hydraulic circuit and accumulators for fast injection and intensification
- Plunger head auto lubrication device
- Non-contact type injection encoder
- High quality hydraulic sealing technology for reliable operation

Clamping Unit
- Whole piece structural casting platen design
- Regeneration circuit for die clamping
- Independent back pressure die open control
- Gear-type die height adjustment mechanism

Safety Door
Electric door without top rail frame reduces labour and enhances ease of die installation.

Remarks: Injection safety guard is optional.
Stable and high performance injection system

Features

- Fast injection and intensification by means of high precision proportional control valves, easy to manipulate and with high repeatability.
- Fast injection speed and changeover position are under accurate control with quick response.
- Injection and intensification are powered by individual hydraulic circuit without interference to each other.
- Injection position by means of high precision non-contact type position transducer, switching in speed-position is under high accuracy control.
- LK patent design injection mechanical system, over 10 years of real practice, prove to be tough, durable and less maintenance.

- Slow speed phase: can be controlled precisely to avoid air trap, reduce porosity problem.
- High speed phase: can easily reach desired high speed to achieve filling and forming of the casting.
- Intensification phase: can be adjusted according to the process required, increase the density of the casting and do not cause distortion.

Powerful and durable die closing system

Features

- Platen are machined on large size CNC to ensure high precision dimensions and tolerance.
- With large size CMM to check and ensure the machining quality.
- Years experience of large tonnage of die-casting machine die closing mechanism design and manufacturing, being proved by thousands of users for practical and less maintenance.
- The tie bars are made by high quality high tensile steel with LK patent optimal design, guarantee using for years.

New design platen

Displacement Analysis
- High rigidity
  - By means of super FEA software to optimize the design.
  - New whole piece platen design, result in high rigidity and raise the platen structure quality.

Stress Analysis
- High strength
  - Optimum design of the new type whole piece platen has high strength, increase the working life of the machines.
Die-casting control system with powerful function

**Features**

- With the reliable and less maintenance PLC platform, the control is stable and proven.
- The L.K. most advance professional die-casting control software, furnished with the big size colour LCD display, offers easy-to-use menu, monitoring screen with rich data and powerful control interface. This leads to easy manipulation of the machine for different kinds of die-casting processes and techniques.
- Selected control components for long working life purpose.
- Featured with production management and monitoring software, fulfill nowadays production control and management’s need, fit in the automotive industry and large enterprise production management modules.
- The control system is designed from the view of users, integrated with full and redundant safety interlock to ensure safety.

**Add-on software system [Option]**

**LK-NET management system**

LK-NET is developed by L.K. for central management of all machines in the production floor. By means of the networking technology, the system can centralize all data collection and thus reduce expensive labour.
- Network for monitoring production process data
- Network for monitoring injection process
- Network for collecting production status and data
- Network for management of die parameters

**LK-MONITOR system**

LK-MONITOR is developed by L.K. based on the global internet networking technology for remote managing die-casting machines.
- L.K. Technical persons can remote access customer's die-casting machines which are located in any location in the world
- Able to achieve remote on-line monitoring, modify and de-bug machine program
- By means of internet, on-line service can be provided to users for solving problems

**Advanced control system [Option]**

**LK-SMART injection control system**

- Intelligent setting on speed and position
- Advanced injection curve display and monitoring
- Advanced data feedback monitoring and SPC for production management and PM preparation
- Advanced production management to achieve high efficiency and reduce management cost

**Real-Time Injection control system**

- Well hydraulic design with precise control system
- Accurate injection speed control
- Injection curve display with multi-stage injection control
- Constant injection acceleration reduces air trap problem
- Braking control reduces flash

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**Main Features of Advanced Control Systems**

- The speed can be repeated for every shot despite the influence of outside variables, the quality control of casting can be ensured.
- By means of the closed loop control, the system can reduce the speed like a brake when come to the end of filling, therefore, reduce flash problem and elongate the die life.
- The control system is able to achieve closed loop control for multi-stage real speed value setting. The speed can be real-time controlled in the slow phase. Only real-time control can control immediately in the high speed phase, while smart control can only control in the next cycle. The injection process can be put into real operation to solve any kind of filling problems.

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**Comparison of advanced control with standard control**

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<tr>
<th>ITEM</th>
<th>Real-Time Control Injection System</th>
<th>Smart Control Injection System</th>
<th>Standard Control Injection System</th>
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<tr>
<td>Control</td>
<td>Closed loop control, Automatic feedback and correction</td>
<td>Closed loop control, Automatic feedback and correction in next cycle</td>
<td>Open-loop control Parameters deviate because of the internal correction</td>
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<tr>
<td>Injection Stage</td>
<td>Multi-stage Injection</td>
<td>5-stage speed control with intensification</td>
<td>3-stage speed control with intensification</td>
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<tr>
<td>Speed Repeatability &amp; Accuracy</td>
<td>≦±2%</td>
<td>≦±3%</td>
<td>≦±5%</td>
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<tr>
<td>Control System</td>
<td>Efficient IPC with large storage</td>
<td>PLC with storage at 1000 shots data</td>
<td>PLC with limited storage</td>
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</table>
L.K. offers highly integrated, automated and efficient die-casting cell.

Flexible robot—offering high efficiency and flexible automation solution

- Kuka
- ABB
- FANUC

Options
- Other type of controller/PLC available
- Injection curve display
- Air Conditioner for control cabinet
- Energy saving servo pump
- US
  - Extra Core Pull
  - Auto Safety Door
  - Squeeze Pin
  - Clamping force monitoring
  - Smart die height auto adjustment
  - Air blow for shot sleeve

- Conveyor
- Safety fence
- Working platform
- Die lub. Auto-dilutor
- Die temperature controller

- Marking machine
- Trim press
- Cooling station
- Fume Extraction System
- Quick Die Change System-1
- Quick Die Change System-2

- Extractor/exacting robot (Extractor up to DCC1600)
- Sprayer/spraying robot (Sprayer up to DCC1600)
- Auto-lader

- Melting & holding furnace
- Dosing furnace