

**Sumitomo**  
SHI **DEMAG**

**Retrofit**  
Move with the times

# AS GOOD AS NEW

## The Sumitomo (SHI) Demag Retrofit range at a glance

- Automation and Robot upgrades
- Multi-plug – the independent injection unit
- Control system upgrade
- Upgrading of stroke measurement systems to ultrasound measuring
- Complete plasticising equipment
- Retrofitting of additional units
- Toggle-clamp regeneration
- Bypass filter
- ErgoSMS/ErgoTTY

## Special software for ...

- Flexible mould, ejector and core puller sequences (e. g. ejector short-stroke/long stroke function)
- Mould safety enhanced (e. g. side slide lock)
- Special processes (e. g. injection compression moulding)
- Enhanced process quality (e. g. injection retardation)
- Extended process data acquisition (e. g. PDA statistics stored on diskette)
- Zero-defect production (e. g. no start-up scrap)
- Integration and extension of interfaces (e. g. integrated hot runner, robot interface for side-entry PHE)
- Cycle time reduced by machine tuning and parallel sequences (e. g. robot enters and mould is opened in parallel)
- Additional screen pages for extended service and diagnosis (e. g. robot diagnosis page EUROMAP 12)
- Convenient production and operation data acquisition (e. g. production residual time calculation, lot size counter)



## NC4 Retrofit for NCII and NCIII

The Sumitomo (SHI) Demag injection moulding machine range stands for quality. Due to their sturdy construction, robust mechanics and durability, many D series machines are still in operation and have been providing a reliable service for decades. After more than ten years of service, however, the machines' sensitive control and electronic components are increasingly prone to breakdowns. At the same time, electronic and control technology has undergone massive changes, hardware repairs have become increasingly expensive and the supply of hardware components from the 1980s and early 1990s can no longer be relied upon. Since the launch of the D series, market demands on mould technology, quality assurance and process documentation have become steadily more exacting. Hot runner moulds, for example, are now more common

than anybody could have predicted only a few years ago and the number of control circuits on these moulds has risen significantly. In addition to more circuits for hot runner and mould temperature control, modern moulds are equipped with a higher number of core pullers and slide bars, requiring greater sophistication of the control system. In order to ensure that you can continue to use your D machine to its full potential and adapt it to suit all modern requirements, Sumitomo (SHI) Demag has developed a retrofitting kit for upgrading old NCII and NCIII systems quickly and reliably to the standard of the NC4 generation. Upgrading older control systems to NC4 standard gives you access to all the standard features of both the NC4 control system and the Ergocontrol operator terminal. In addition, the NC4 control unit supports all additional equipment on your

machine and ensures that all former functions remain intact.

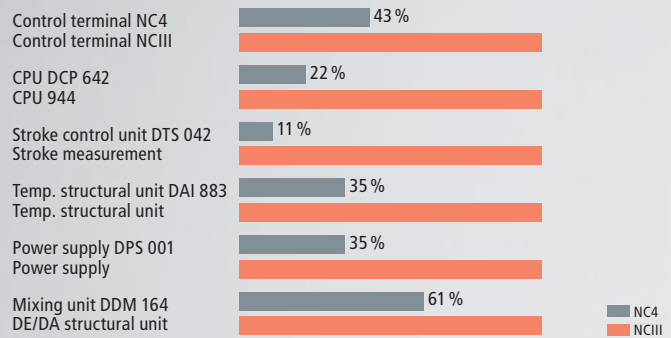
## The complete NC4 Retrofit package

Sumitomo (SHI) Demag after-sales service team will change the existing control components and install the modern NC4 control system on your machine. Contact our team for your individual quote. The basic retrofitting package includes the following:

- Exchange of the complete control system
- Installation of the Ergocontrol operator terminal
- Implementation of the standard NC4 program



## Reducing the costs for spare parts NCII vs. NC4



## Highlights: 12 reasons for upgrading your machine to NC4

- State-of-the-art control technology
- One-year warranty on control hardware
- Reliable supply of spare parts for the control unit for at least ten years
- Support of existing functions and additional equipment
- LCD colour flat-screen
- Storage of process and mould data on floppy disk
- Enhanced process statistics
- Improved diagnostics
- Switch-over to holding pressure is dependent on hydraulic pressure and cavity pressure
- Optional enhancement with other NC4 functions

## NC4 Retrofit pays off

### Less cost for spare parts – long-term safety

After upgrading your D machine to the NC4 control system, you will benefit from a fully guaranteed spare parts supply. Two advantages for you: spare parts are delivered at short notice and you can rely on long-term availability of all NC4 components, because Sumitomo (SHI) Demag guarantees the availability of all NC4 components for at least ten years. Moreover, you reduce the risk of machine downtimes, and in case of damage, you save money because of the low price of spare parts and their short delivery times.

### Upgrading your NCII and NCIII control system pays off very quickly

- LCD colour monitor allows fast acquisition of information
- Ergonomic interface allows safe navigation through all menus
- Storage of process and mould data on disk speeds up change-over and set-up procedures
- Enhanced process statistics for more transparent processes and better documentation
- Improved diagnostics options for safer machine operation
- Switch-over to holding pressure is dependent on the hydraulic and cavity pressure for more process safety and higher part quality

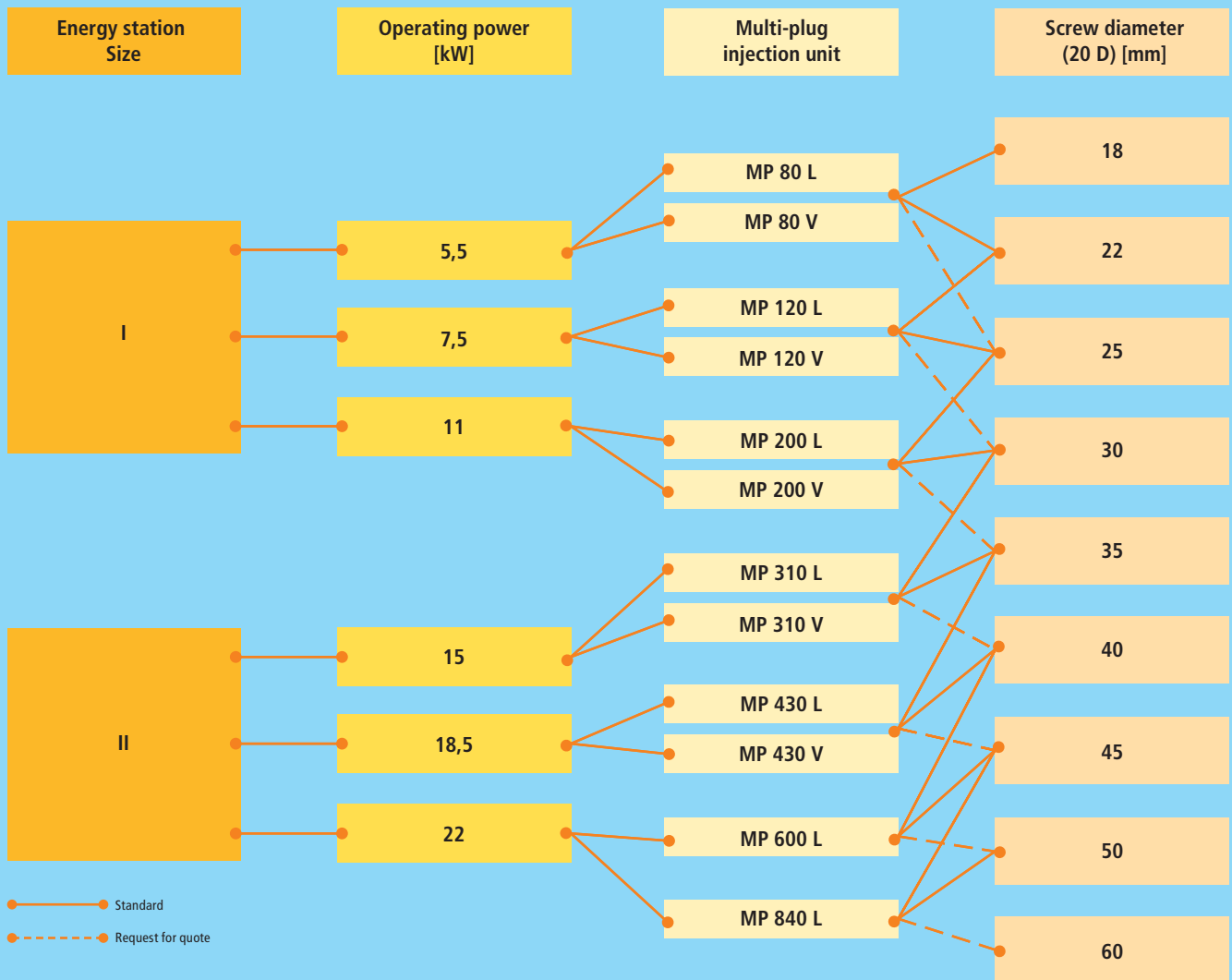
The NC4 control system and the Ergocontrol operator terminal have the tried-and-tested Sumitomo (SHI) Demag modular design and can therefore be enhanced with numerous additional options and features. Some are listed below

- Programmable I/O
- Signal for reject gate
- Integrated printer
- Control capacity for up to 32 hot runner circuits

Further features are compiled in an extensive catalogue. Special programs or solutions can also be accommodated. Our service team is looking forward to finding your tailor-made solution.

# PLUG AND PLAY – MULTI-PLUG

## The Multi-plug modular system



## The easy way to multi-component technology

In addition to the integration of several processing steps, multi-component injection moulding offers a multitude of benefits. Two or more injection units allow processing several polymer materials in one step, thus utilising their various properties and turning them into functional assets.

Multi-component technology is a general name for a whole range of different processing methods with one common denominator: several injection units are used to process various materials or different pigmentations of the same polymer material. The actual forming process, i.e. how the plasticised material is processed in the mould to deliver a finished component, be it by means of encapsulation or interlinking, depends on the required application. The introduction of fresh material combinations and

innovative mould technology steadily opens up new areas of application for the numerous processing methods.

Contemporary multi-component technology can be run on injection moulding machines of all sizes – from microtechnology to large injection moulding machines for automotive components or industrial bulk containers (IBCs).

### Moving into new markets with multi-component technology

Would you like to retrofit your injection moulding machine for multi-component processing with a fast and straightforward procedure? Would you like to introduce more flexibility to your production processes and benefit from the fastgrowing market for multi-component parts? In addition to its Multi range of customised

multi-component injection moulding machines, Sumitomo (SHI) Demag offers a retrofitting service for standard machines with self-sufficient injection units. Multi-plug turns every injection moulding machine into a multi-component system. With Multi-plug, even two-component machines can be retrofitted to accommodate three-component or three-colour production processes and save costs, floor space and time.

A machine-side unit offers clear advantages and quick retrofitting whenever you require a multi-component system for the occasional production of multi-component parts with large machines without running any of them to full capacity. For these applications, the Multi-plug in V-position is the best option.

## ***Multi-plug – the versatile unit for every application***

The Multi-plug unit can be mounted to every type of injection moulding machine and the modular system of Sumitomo (SHI) Demag injection units offers a whole range of sizes between size 80 and size 840.

### **Rapid preparation – Fast installation**

The Multi-plug can be integrated into an existing well-prepared mono-machine system quickly and easily. Prior to retrofitting, some mechanical and electrical machine interfaces must be configured. This includes the installation of a mounting plate with specified fixing details for optionally vertical or horizontal unit configuration. Moreover, installation requires the configuration of an interface for the coordination of digital and analogue machine signals on the base machine. The installation of the emergency-cut-out chain requires extensive experience. The assistance of a qualified electrician e. g. from the Sumitomo (SHI) Demag service team is recommended.

### **Ergonomic operation and transparent processes with Ergocontrol**

The second injection unit's control system ensures extensive functionality of the NC4 machine control and ergonomic handling of the Ergocontrol operating panel. The Multi-plug's user interface is identical to that of all other machines offered by Sumitomo (SHI) Demag. With its logical and comfortable approach, the Ergocontrol guides and supports the operator in all production stages, from implementation, process optimisation to production and documentation.

The terminal itself has a function-based design. It offers a high-resolution colour display with numerous menu buttons and function keys. The Ergocontrol used for the Multi-plug is mounted on a mobile stand and connected to the control cabinet at the energy station with a 15 m cable.

### **Multi-plug is available with the following standard features**

- Longitudinally adjustable injection unit (V-model) or laterally adjustable injection unit (L-model)
- Hydraulic system complete with pump unit and electronic control cabinet (L-model: generally fitted below the injection unit, V-model: compact energy station)
- Protective cover (V-model only) adapted for mounting to existing protective machine cover and compliance with all relevant safety regulations
- Individual control unit with Ergocontrol operating screen
- Defined electric signal interface to the injection moulding machine

- Mechanical interface, can be adapted to suit the requirements of the clamping unit
- Easy-access, low-maintenance control cabinet
- Energy supply line connectors (hydraulic hoses and electric cables) between the energy station and the selected injection unit

### **Additional options of the Sumitomo (SHI) Demag modular system**

By adding standard structural units from Sumitomo (SHI) Demag's modular system, the standard equipment of the Multi-plug can be fitted with a range of optional and enhancing features. For some applications, this concept can make the Multi-plug solution even more attractive. Multi-plug can be fitted with the following optional features

- Rotary table actuation
  - additional core pullers
  - pneumatic valves
  - hot-runner control for up to 16 zones
  - process statistics
  - programmable I/O
  - highly wear-resistant plastification cylinders
- Assembly, operation start-up and services are carried out by the Sumitomo (SHI) Demag's international after-sales service team.

### ***Four good reasons for Multi-plug***

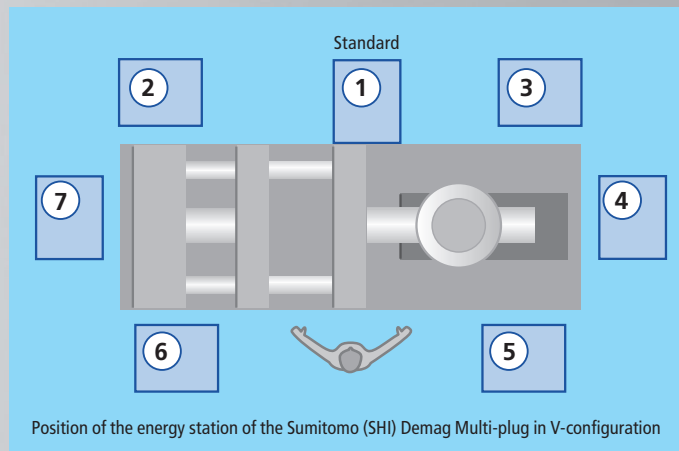
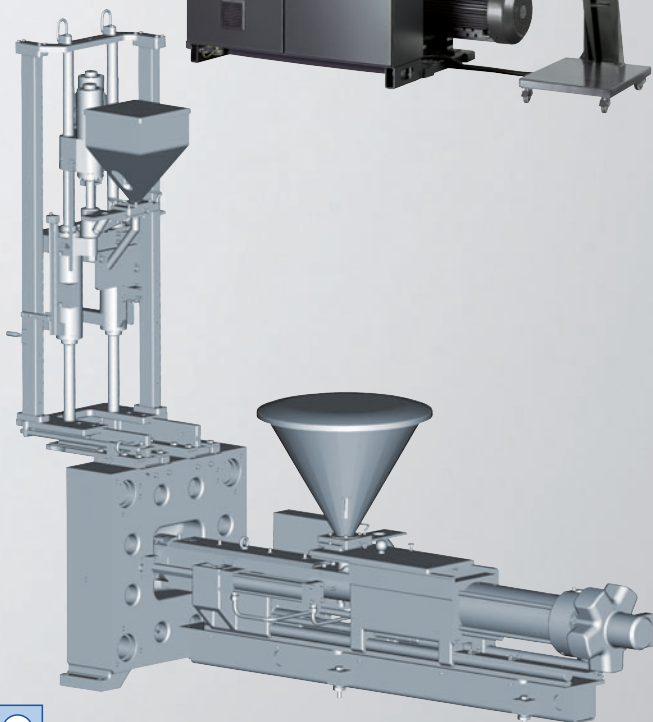
- More flexibility
- State-of-the-art technology and its benefits
- Optimal machine utilisation
- Old machines can be retrofitted

# PLUG AND PLAY – MULTI-PLUG

L



V



Position of the energy station of the Sumitomo (SHI) Demag Multi-plug in V-configuration

## Sumitomo (SHI) Demag's Multi machine range

Sumitomo (SHI) Demag has more than 35 years of experience in engineering multi-component injection moulding machines. The company's universal modular system caters for all standard machine configurations with vertical (V), lateral (L), parallel (P) or angled (R) arrangement of the injection units and all well-established processing methods. The system allows the combination of up to four independent injection units with clamping forces of between 500 kN and 15,000 kN.

As part of its product range, Sumitomo (SHI) Demag offers a standardised system of machines with clamping forces of between 500 kN and 4,200 kN at a keen price/performance ratio and short delivery times. The machine-integrated turntables, which have been available for decades in Multi machines above 1,250 kN, have proven themselves in continuous employment and are characterised by very short rotation periods, a flat design and high mould load-bearing capacity. Multi applications for high-speed machines (EL-EXIS S) can be realised for individual customers. An expert consultation team is available for the great variety of mould-specific customised designs.

V

In the V-configuration with a vertical injection unit, the energy station is installed next to the machine. The exact location depends on the length of the inlet and outlet lines, which must be determined prior to installation. The injection units are the same as those used for Sumitomo (SHI) Demag's Multi machines. The V-configuration of the second injection unit is particularly suitable for retrofitting machines with a limited floor space and narrow confines. Moreover, the V-configuration can be integrated into the existing protective cover and does not require an adaptation of the emergency cut-out chain. The V-configuration is available for five injection units ranging from size 80 to size 430.

L

An L-configuration comprises the installation of an additional horizontal injection unit opposite the operator's side including the mechanical integration into the stationary platen with horizontal adjustment option and complete protective cover. Depending on the nozzle height on the base machine, the energy station is fitted below the horizontal injection unit to save space or integrated as a machine-side unit. The L-configuration is fitted with the required protective cover as standard. The L-configuration is available for seven injection units ranging from size 80 to size 840.

R

An R-version Multi-plug is available as a special design for specialised requirements. An injection unit is available above the main unit (R-position). This model offers all the benefits of a second injection unit in vertical arrangement.

### Selection criteria for L- or V-configuration

- Location of the feed points in the existing moulds
- Floorspace requirements of both options
- Access requirements, e.g. during injection
- Potential accommodation of handling or stripper devices

# SUMITOMO (SHI) DEMAG ROBOT DR



## General technical specification

With its DR Sumitomo (SHI) Demag Robot series of linear robots, Sumitomo (SHI) Demag provides customers with an attractive, technically advanced, high-performance solution for a whole array of different automation tasks surrounding the direct production environment of injection moulding machines, such as parts removal, insertion, handling and downstream production sequences. Innovative technology in combination with powerful performance and reliability allows cost-efficient solutions for a wide variety of automation tasks. The ongoing evolution of Sumitomo (SHI) Demag's robot range reflects the company's extensive experience gained from a large number of installations used for high-volume production. Featuring powerful performance, flexible programming, versatility and attractive pricing, the Sumitomo (SHI) Demag robot DR series is designed to exploit multiple potentials.

The use of 3 servo-controllers throughout permits parallel operation of the main axes and provides excellent performance characteristics.

## Operation and programming

A teach box is provided for the user to conveniently program the robot control system. Equipped with an LCD colour monitor and graphical, menu-driven user interface, the teach box allows straightforward and hands-on programming and operation.

Both beginners as well as experienced operators programming the robots are supported by

- a graphical teach-in programming sequence
- a choice of pre-programmed standard sequences
- selection of menu-driven plain-text programming
- storage of system and application programs on separate smart media cards

Optionally, a teach box with a touch screen is available which enhances operating and programming convenience and permits menu-prompted graphical programming.

## Parts handling equipment (PHE)

Retrofitting a Sumitomo (SHI) Demag Robot DR System to an existing IM machine will provide the following benefits:

- Consultation by our experts and, as a result optimum matching to your injection moulding machine
- Integration into the machine control system is possible, in some instances, depending on the machine
- the exchange of old equipment is a possibility
- service for the machine and robot is from a single source
- straightforward programming and operation of the robot by a so-called teach box with LCD colour screen and graphic menu-assisted operator interface. Optionally, there is a solution with a touch screen.

Irrespective of the type of your injection moulding machine, there is a suitable solution from Sumitomo (SHI) Demag's comprehensive product portfolio of robots. Different variants with different length travel strokes and payload classes permit the selection and configuration of the optimum automation concept.

With the Sumitomo (SHI) Demag Robot System you are equipped with cutting-edge automation and are able to adapt your IM machine to whatever new requirements arising.

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## Power for your competitive edge

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In short: An intelligent service concept providing individual support focused on your financial benefit. For maximum machine efficiency. For maximum production economy and a competitive edge.

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**We are at your service.**

