

MONO BECOMES MULTI

Multi-plug



Demag *Plastics Group*

R E T R O F I T

PLUG AND PLAY

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 make it possible to process several polymer materials in one step, thus combining their various properties 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 by 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.

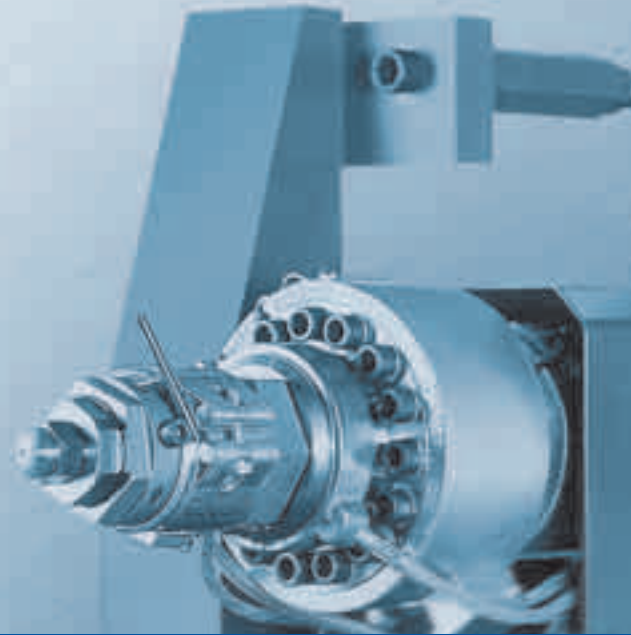
Modern multi-component technology can be run on injection moulding machines of all sizes – from micro-technology to large injection moulding machines for automotive components or industrial bulk containers (IBCs).

Moving into new markets with multi-component technology

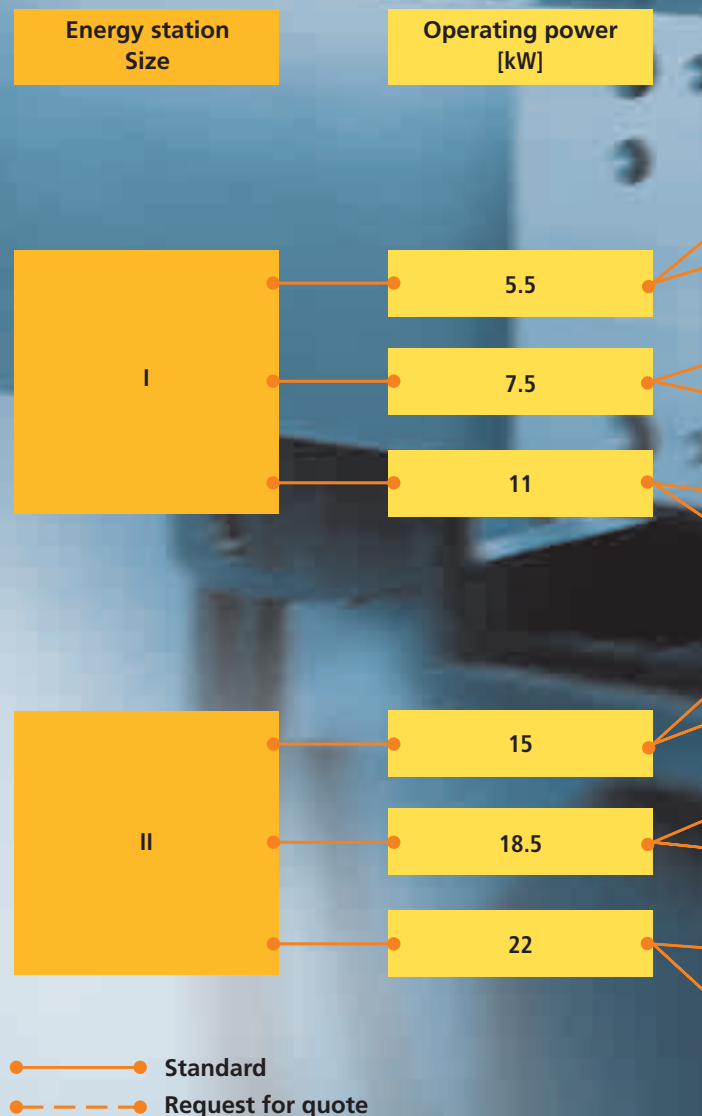
Would you like to retrofit your injection moulding machine for multi-component processing with a fast and straightforward procedure? Would you like to introduce more flexibility to your production processes and benefit from the fast-growing market for multi-component parts?

In addition to its Multi range of customised multi-component injection moulding machines, Demag Plastics Group offers a retrofitting service for standard machines with self-sufficient injection units. Multi-plug turns any 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 occasional production of multi-component parts on large machines without running any of them to full capacity. For these applications, the Multi-plug in V-position is the best option.



The Multi-plug modular system



MULTI-PLUG

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 Demag modular system

By adding standard structural units from 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, and
- highly wear-resistant plastification cylinders.

Assembly, operation start-up and services are carried out by the Demag Plastics Group'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

QUICK-CHANGE EXPERT

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 Demag injection units offers a whole range of sizes between size 80 and size 840.

Short preparation – quick retrofitting

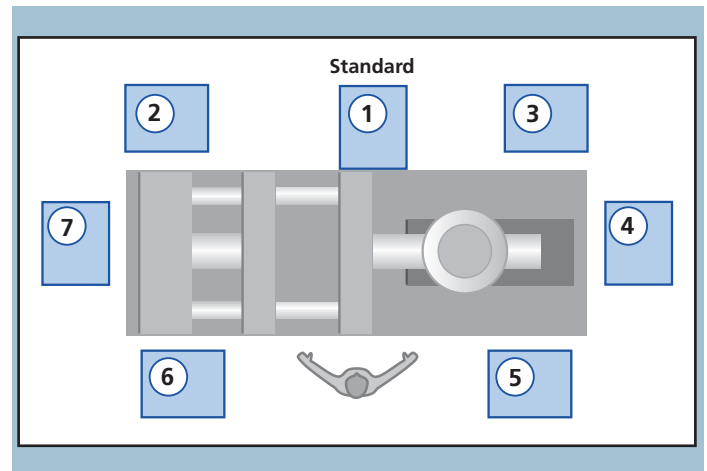
The Multi-plug can be integrated into an existing well-prepared mono-machine system quickly and easily. The retrofitting time for a V-configuration is scheduled for one day, retrofitting an L-configuration will take two days.

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 co-ordination 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 Demag service team is recommended.

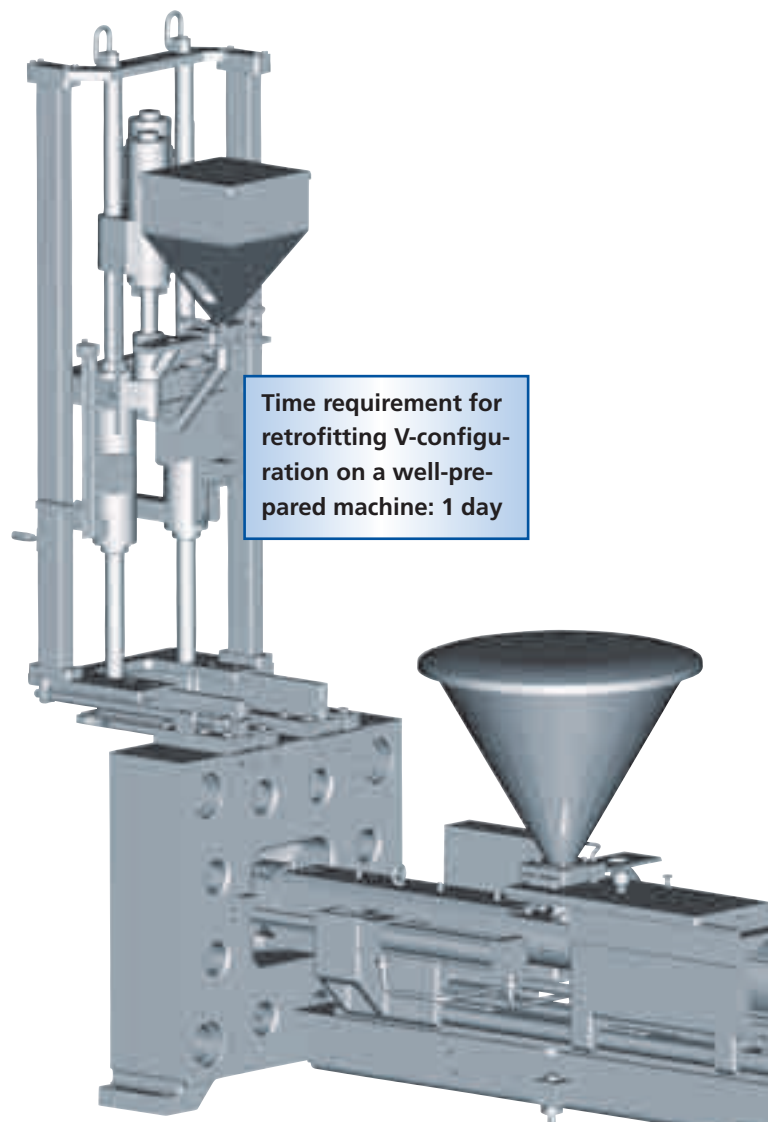
V In the V-configuration with a vertical injection unit, the energy station is installed next to the machine. The exact location depends on the length of the inlet and outlet lines, which must be determined prior to installation. The injection units are the same as those used for Demag's Multi machines.

The V-configuration of the second injection unit is particularly suitable for retrofitting machines within narrow confines. Moreover, the V-configuration can be integrated into the existing guarding 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 mechanical integration into the stationary platen with horizontal adjustment option and complete guarding. Depending on the nozzle height on the base machine, the energy station is fitted below the horizontal injection 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.



Position of the energy station of the Demag Multi-plug in V-configuration

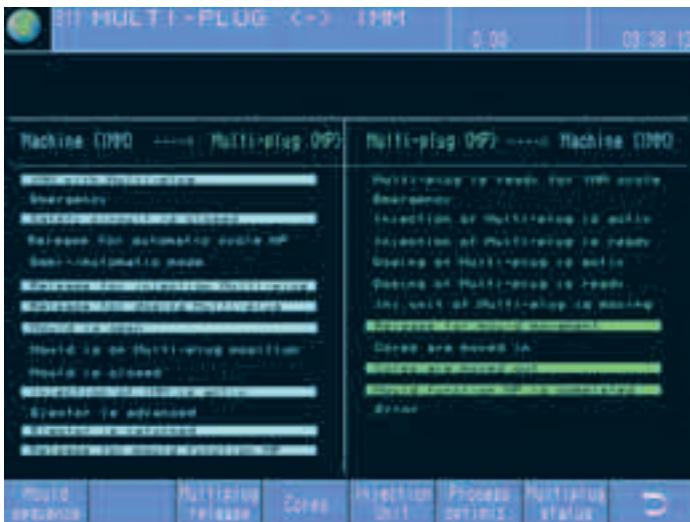




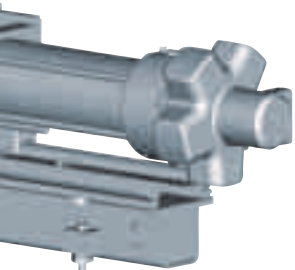
Time requirement for retrofitting L-configuration on a well-prepared machine: 2 days

Selection criteria for L-configuration or V-configuration

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



Ergocontrol screen for co-ordination of control systems



R The Multi-plug is also available in a special R-configuration with a second injection unit above the central unit (R-position). With its minimum floorspace for the energy station, this model offers all the benefits of a second injection unit in vertical arrangement. Moreover, the Multi-plug in R-configuration allows an optional retrofitting of an existing two-component machine in V-configuration for three-component processing with minimum floorspace requirements. Depending on the installation conditions, the R-configuration may require changes to the stationary platen.

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 Demag Plastics Group. 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 15m cable.

Demag's Multi machine range

Demag Plastics Group has more than thirty 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 13,000 kN.

As part of its product range, 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 integrated rotary table available with all Multi machines is characterised by its very short rotation period, a flat design and a high mould load bearing capacity.

The range also includes customised solutions involving Multi applications for high-speed machines (EL-EXIS S) and several injection units for machines with vertical clamping units (Vertical).

THE FLEXIBLE APPROACH: FROM MONO TO MULTI

Multi-plug in practical application

Werner Klepitko had been working in injection moulding machine automation for a long time, when he discovered a niche segment in the market and started his own business ten years ago. In Sonneberg/Germany, several kilometers from the former border between the east and the west of Germany, the entrepreneur founded his own small company – specialising in running mould trials.

Mould makers such as Krahl + Reiche with headquarters in Kronach/Germany and Hofman Group of Lichtenfels/Germany are among the most important customers of the family-run enterprise. But Klepitko also caters for plastics processors from Germany's Upper Franconia and Thuringia regions such as Dr. Schneider Kunststoffwerke and Valeo with headquarters in Kronach as well as Mann + Hummel of Sonneberg, renowned suppliers to the automotive company and other tier-1 and tier-2 suppliers.

The special focus on the automotive industry and its suppliers ensures that Klepitko always relies on state-of-the-art injection moulding technology. The more cars manufactured for niche applications and the shorter the lifecycle of cars from large-scale production, the more moulds need to be tested and the faster and the more frequently small-scale projects are added to the orders. The Sonneberg facility is frequent host to state-of-the-art moulds and the most productive technologies on the market, if only for a few days at a time and the company's expertise is growing with every job.



Test series for car components produced with two-component technology



Werner Klepitko is happy to work with the enhanced flexibility of the Multi-plug

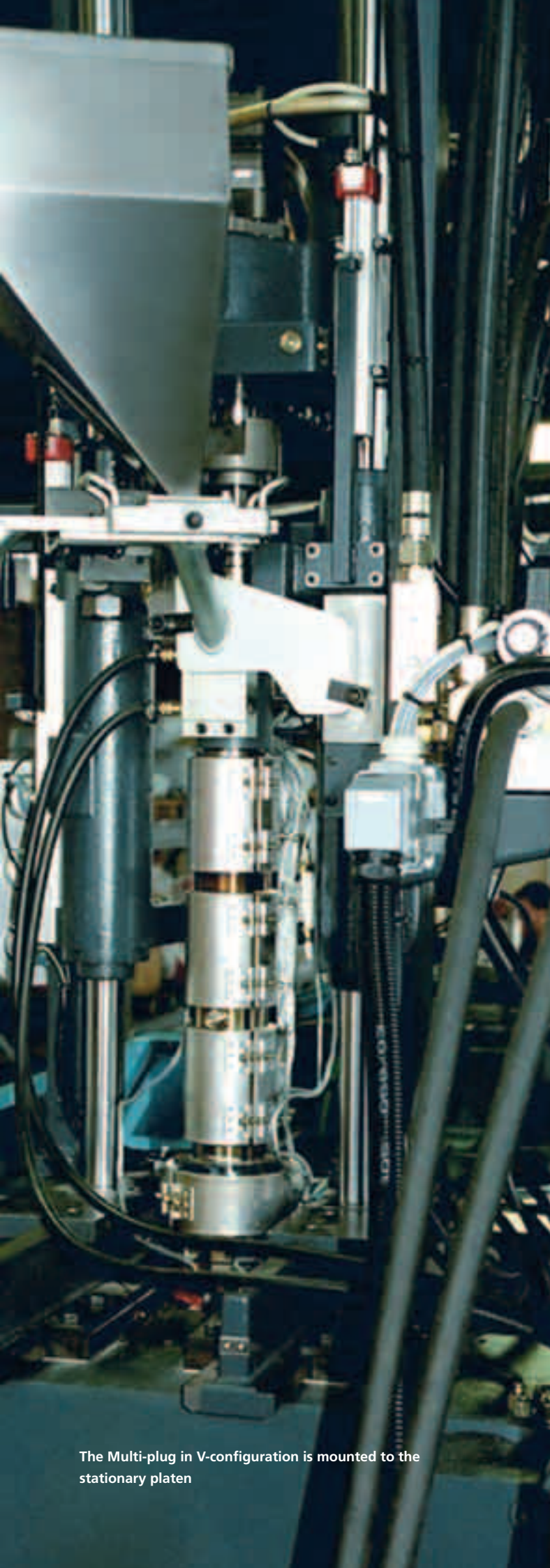


The compact hydraulic unit mounted opposite the operator's side



The Demag Multi-plug working in combination with a Concept 350/710-2300

Succeed  with smart solutions.



The Multi-plug in V-configuration is mounted to the stationary platen

More flexibility for all machines

Werner Klepitko and his team of eight are not just mould trial specialists. They also manufacture test specimens for presentations, samples or assembly tests on a small-scale. Manufacturers of high-end vehicles also frequently consult the specialist from Thuringia for the small-scale production of high-quality, sophisticated car parts with a premium finish.

At present, Klepitko is operating six injection moulding machines, five of which are Demag machines with clamping forces of between 250 kN and 3,500 kN. Werner Klepitko has to keep up with the increasingly exacting requirements of his customers. He is approached for trials on multi-component moulds on a regular basis. Therefore, he decided to start accommodating his customers by retrofitting his Concept 350/710-2300 with a Multi-plug solution. The Demag service team also configured all mechanical, hydraulic and electric interfaces on the Concept machine prior to integrating the Multi-plug system.

Mono to two-component – Two-component to three-component

Today, Werner Klepitko is more flexible than ever to meet his customer's requirements. He is now using the Multi-plug system for both his 3,500 kN and his 1,500 kN Demag machine. Unexpected mould trials and small series ordered at short notice are a common experience for Werner Klepitko and his team, and they have never failed the challenge to their scope for full flexibility.

Werner Klepitko has a very clear concept of the next business expansion stage. It entails the acquisition of a 2,000 kN multi-component machine from Demag Plastics Group's range of Multi machines. The machine will be equipped with a second injection unit in R-configuration, all mechanical interfaces for the Multi-plug in V-configuration will also be included. From the very start of its operation at Werner Klepitko's facility, the Multi-plug retrofitting unit can enhance the scope of two standard machines with two-component technology and also turn a two-component machine into a three-component machine if required.

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