

WITT gas mixers – precise and reliable. Ranging from small, specialized mixers to large-scale systems.



**YOUR GAS MIXTURE –  
JUST THE WAY YOU NEED IT TO BE.**

FLORIAN LOURO, SALES MANAGER – WITT-GASETECHNIK

## ALWAYS THE RIGHT GAS MIXTURE

WITT offers high-quality gas mixing and gas metering systems for 2 or more gases, ideal for high and fluctuating flows.

The choice is yours: depending on requirements WITT gas mixers are available in various versions for almost all technical gases and different performance ranges. Sophisticated mechanical or state-of-the-art electronic gas mixing systems ensure precision and process reliability. On request, the gas mixers can be operated conveniently via the Internet, your Intranet, or mobile devices. Of course, the gas mixers can also be combined with other WITT quality products, for example gas analyzers, and supplied as integrated complete solutions. We are at your service to quote for customized versions tailored to your needs.

WITT provides the right solution for any application – from mobile gas mixer units through to central gas supplies.



MED-MG for generating synthetic air used in medical applications



## KEY BENEFITS OF CHOOSING GAS MIXERS:

### › QUALITY / HOMOGENEITY

The highest mixture quality. As a user you always receive absolutely homogeneous mixtures. This uniformity provides optimum process reliability.

### › FLEXIBILITY

Mix the gas you need, when and where you need it. Gas mixers offer the highest possible flexibility for required mixing ratios, gas volumes and application location. Are you operating a system with variable gas compositions? That is not a problem with gas mixers. You can change the gas mixture setting at any time to gain just the right gas mixture in a matter of seconds. Even mobile use is possible with the right gas mixers from WITT.

### › PROFITABILITY

Generate your gas mixtures yourself and benefit from lower purchasing prices for standard products. At the same time, above all, there is no need for expensive storage of the numerous required gases in cases of frequent gas mixture changing. Gas bottle handling is also a thing of the past thanks to the use of gas mixers.

# THE RIGHT MIXER FOR EVERY APPLICATION

WITT gas mixers are not only impressive owing to their precision and reliability – also for their scope, ranging from small, specialized mixers to large-scale systems. No matter what your application – with gas mixers from WITT you are choosing state-of-the-art quality and safety of your gas supply.

## › METALWORKING

In industrial metal processing, whether it be in automotive, rail rolling-stock, ship-building or in the steel industry, the quality of the gas supply is of crucial importance for precise welding, cutting and smelting processes. WITT gas mixers stand out thanks to their easy operation, continuous mixture settings and high flow rates. Precisely tailored control technology and a uniform pressure control that compensates for pressure fluctuations ensure exact and constant mixing ratios.

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## › FOOD INDUSTRY

MAP gas mixers from WITT ensure constant control of gas quality and safety in your inert gas packaging process (Modified Atmosphere Packaging). WITT provides gas mixing and gas metering systems for any type of packaging machine in the food industry, no matter whether it's a vacuum, deep drawing, sealed bag or a hand-chamber packaging machine. As a manufacturer, WITT is audited and certified for food safety according to ISO 22000.

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## › MEDICAL APPLICATIONS

WITT gas mixers for "synthetic air", a mixture of pure oxygen and nitrogen, have been in use in numerous medical applications throughout the world for years. As such, they are distinguished by the highest supply reliability, intuitive operation via a touch-screen, low investment and maintenance costs, simple integration and low energy consumption. WITT devices are certified and approved as Class IIb Medical Devices, complete with CE mark in accordance with Directive 93/42/EEC (supplemented by Directive 2007/47/EG) and have been designed to the DIN ISO 7396-1 standard.

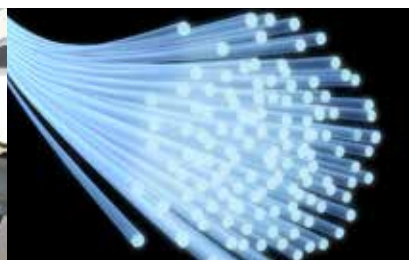
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## › HELIUM LEAK TEST

Leak tests using helium have become established for testing sensitive products that have to be absolutely leak tight. Systems with which this valuable inert gas can be mixed (for example with nitrogen) make the use of helium viable. After testing, the gas mixture used is collected, analyzed and, if need be, corrected – all fully automatically. WITT devices form the technological heart of such systems: gas mixers, gas metering and gas analysis systems.

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### › BEVERAGE INDUSTRY

To keep beer fresh, the drink is frequently processed in an inert gas - CO<sub>2</sub>, nitrogen or a mixture of both. WITT gas mixers provide the required mixing gas in a flexible mixing ratio between 0 and 100%. When it comes to dispensing beer, WITT gas mixers supply the necessary gas pressure and prevent excessive carbonisation of the drink in larger installations.

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### › GLASS WORKING

State-of-the-art control systems from WITT for the exact composition of fuel gas/oxygen mixtures enable the necessary precision and a constant supply to burner systems in glass processing. Exact gas mixing and dosing is ensured by MFC technology (MFC = Mass Flow Controller). The fully electronic control optimizes the mass flow rate of the fuel gases, compensates for disturbances such as pressure fluctuations or temperature effects, and maintains the parameters stable over the entire production period, thereby reducing rejection rates.

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### › DIVING TECHNOLOGY

Gas mixtures comprising oxygen and helium (Heliox) or oxygen, nitrogen and helium (Trimix) are called for in professional diving applications. WITT has developed special gas mixers with integrated O<sub>2</sub> analysis for submersible boats, filling diving tanks or supplying diving bells. These can be used to produce various mixtures safely and flexibly depending on requirements.

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### › LASER TECHNOLOGY

The performance and quality of laser systems for welding and cutting metals is critically influenced by the composition of the gases used. Gas mixers from WITT not only guarantee the reliable provision of gases in the required volume and exact mixing ratio, but are also specially optimized for as high a purity as possible.

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### › INDIVIDUAL APPLICATIONS

Besides conventional applications, WITT gas mixing systems are nowadays typically used in forming technology, for odorising gases, in double-glazing manufacture, for the production of airbags or in ripening chambers for bananas. Special applications are designed by WITT together with the customer, thereby ensuring optimum Value Engineering to individual requirements.

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# WITT MIXING TECHNOLOGIES

Mechanic , electronic, pneumatic or via mass flow – different gas mixing technologies are available for your application.

## › GAS MIXERS WITH MECHANICAL MIXING VALVE



KM100-2M



BM-2M



KM100-2ME

Mechanical gas mixers with mixing valves form the cornerstone of WITT gas mixing technology, having proven their merit in countless installations over many decades. Mixtures can be produced reliably from almost all gases using this process – precisely and with long-term stability.

A proportional mixing valve is generally used for 2-gas mixtures. The valve has 2 gas inlets and an outlet for the mixing gas. The flow rates of the individual gases are regulated proportionally in an interaction of orifices and pistons by turning the valve to create the required gas mixture. Based on extensive experience, WITT has developed a perfect corresponding unit of orifices and pistons for practically any gas combination.

If mixtures comprising 3 or more gases are required, individual mixing valves are used instead of proportional valves. The flow rate of the individual gases is determined separately with a mechanical mixing valve. The mixture therefore comprises separately dosed individual gases.

A uniform inlet pressure of the individual gases is crucial for the perfect functioning of the gas mixers. To prevent pressure fluctuations, WITT gas mixers have a uniform pressure regulation with powerful dome pressure regulators.

WITT gas mixers with mechanical mixing valve are suitable for continuous extraction or also discontinuous extraction (with a gas tank), depending on the application. They are extremely sturdy and require only a low level of maintenance. The systems can optionally be extended, e.g. with gas analysis modules or an inlet pressure monitor with alarm functions.

### › FEATURES

- For mixtures comprising 2, 3 or more gases
- Almost all gases can be mixed
- Available in numerous sizes for diverse applications
- Optionally combined with pressure vessels
- Optional inlet pressure monitoring
- Optional gas analyzer
- Optional explosion-protection design

### › ADVANTAGES

- Stable, long-term gas mixing
- Reliable and failure-proof
- Constant quality irrespective of pressure fluctuations
- Continuous gas mixture setting
- Even the smallest extraction volumes are possible when using a tank
- Easy operation via rotary knobs and %-scale
- Robust and durable
- Low maintenance
- Many models with closable inspection window for protecting the device settings

## ➤ GAS MIXERS WITH ELECTRICAL MIXING VALVE



KM100-MEM+



MG 500

Gas mixers with electrical mixing valves are suitable for practically all popular gases and a large number of applications. Proportional or individual mixing valves – depending on whether 2 or more gases are mixed – form the core of this mixing process, similar to the mechanical mixing process. The functioning of the mixing valves is ingeniously simple: a moving piston in conjunction with different orifices controls the flow rate of the gases, thereby producing the desired mixture. The technical genius of the WITT gas mixer lies in the high-quality materials and precise production of the individual components, coupled with correct calculation of the relevant piston-orifice combination. WITT draws upon decades of experience in this field.

In contrast to mixers with mechanical mixing valve, the electrical mixing valves are not operated manually via a rotary knob but instead via small electric motors. The electric motors are operated via WITT's electronic controller. Benefits: First and foremost, the mixers can be regulated more finely electrically than by hand, thus resulting in a more exact gas mixture. The electronic control also allows easy reproducibility of gas mixtures. With remote operation, the mixing systems can be integrated in a network, where they can be controlled and monitored conveniently from a central point.

And not to be overlooked is the constant pressure regulation by dome-loaded pressure regulators integrated into gas mixers with electrical mixing valves. The gas mixers are suitable for continuous extraction or also discontinuous extraction (using a gas tank), depending on the application. The systems can optionally be extended, e.g. with gas analysis modules and/or inlet pressure monitoring with alarm functions.

### ➤ FEATURES

- For mixtures comprising 2, 3 or more gases
- Almost all gases can be mixed
- Available in numerous sizes for diverse applications
- Optionally combined with pressure vessels
- Optional inlet pressure monitoring
- Optional gas analysis
- Optional explosion-protection design
- Remote operation possible

### ➤ ADVANTAGES

- Precise and reliable gas mixing
- Constant quality irrespective of pressure fluctuations
- Fine-tuned, continuous gas mixture setting
- Easy reproducibility of gas mixtures that can be saved permanently for each product type
- Remote operation – control and querying of all parameters and valve positions at any time is possible
- Documentation of the parameter settings for quality control is possible
- External set value specification is possible
- Only one operating unit for an unlimited number of mixing systems
- Even the smallest extraction volumes are possible when using a tank
- Robust and low maintenance
- No operating elements on the device in some models – enabling protection of the device settings

# WITT MIXING TECHNOLOGIES

## › GAS MIXER WITH PNEUMATIC FLOW RATE CONTROLLER



MG-FIX



MG-FLEX

Besides conventional mixing valves, WITT utilizes a further, innovative gas mixing process in its gas mixers. With this patented design, the continuous mixing occurs purely pneumatically via a porous body. Depending on the required mixing ratio, a differently sized surface of the sintered body is made available to each individual gas. The process is essentially unaffected by fluctuations in gas pressure and extraction volume. Nor do you need a power supply or pressure vessel for the mixing gas. As a result, users gain a high-quality stable mixing process, while benefiting from a very cost-efficient gas supply.

This innovative design provides sturdy, compact and low-maintenance mixing systems for 2 or 3 defined gases. WITT gas mixers are also scalable in their size with this design, and can be used for a broad range of mixing gas volumes and applications.

Further options such as inlet pressure monitoring and/or gas analysis can be integrated.

### › FEATURES

- For mixtures comprising 2 or 3 gases
- Mixture setting via mixing valve and %-scale or preset
- Recommended for non-flammable gases
- Ideally suited to applications with few mixture changes

### › ADVANTAGES

- High mixing accuracy
- Cost effective
- Purely pneumatic functionality – power supply not needed
- Independent of pressure fluctuations in the gas supply through integrated constant pressure control
- Independent of extraction volume fluctuations
- Auto-stop for mixture production at supply failure of a gas
- Easy operation
- No vessels required for Start/Stop operation
- Sturdy, compact design
- Low maintenance
- Lock for locking the mixture setting



## > **GAS MIXER WITH FLOW RATE CONTROLLERS (MASS FLOW CONTROLLER = MFC)**



MFC1

WITT also provides gas mixers with MFC technology for maximum precision in the gas mixing. These MFC mixers produce gas mixtures by regulating the mass flow of each individual gas involved. A mass flow controller is used for each gas. The volumetric flow rate of the gases is logged in the relevant mass flow controller by means of thermal conductivity and then regulated. The volumetric flow rates of the individual gases are then combined into a mixture.

The fully electronic control optimizes the mass flow rate of the gases, compensates disturbances such as pressure fluctuations or temperature effects and keeps the parameters stable over the entire production period. Numerous additional pressure control devices or temperature measurements are not necessary.

The storage and easy reproducibility of product-specific flow rate parameters result in minimum turnaround times when converting products. Precise logging of the flow rates of the individual gases enables an effective quality and cost control. MFC gas mixers can be used in remote operation via digital WITT control units and integrated into broader site control systems seamlessly, via bus interfaces. Exact gas mixing and dosing is ensured by MFC technology. Gas mixers with MFC technology are suitable for mixtures comprising 2 or more gases. Depending on the application, multiple MFCs can be connected quickly and easily to form compact units and combined with all necessary components for operation-ready mixing directions.



MFC2

### > **FEATURES**

- For mixtures comprising 2, 3 or more gases
- Suitable for continuous extraction
- Recommended for the use of ultra-pure gases
- Optional auto-calibration function for even faster and more precise mass flow control
- Optional gas analysis
- Optional explosion-protection design

### > **ADVANTAGES**

- Highly precise gas mixture specially for low concentrations
- Exact setting of the relevant mixture
- Rapidly compensating for interfering variables and set-value changes
- Modern control unit for rapid and comfortable use
- Safe reproducibility of the process parameters at the press of a button
- High long-term stability through compensating for interfering variables such as pressure and temperature changes
- Remote operation via PLC, PC or WITT analysis systems
- Minimal turnaround times during product conversion, through storage of product-specific flow rate parameters
- Quality and cost control through exact consumption logging of all individual gases
- Simple integration into modern control systems via optional Profibus interface

## SAFETY COMPONENTS AND OPTIONS

On request, WITT gas mixers can be optimized to meet your requirements, numerous options and components available.



### › CONSTANT PRESSURE CONTROL

WITT gas mixers with mixing valves usually have a constant pressure regulation for the various input pressures. The input pressures are reduced to the required values and compensated for by WITT dome-loaded pressure regulators. Even a differential pressure of the individual gases of up to 3 barg is possible. If the inlet pressure of a gas drops, for example, the pressure of the second gas is automatically reduced as well. This ensures a constant mixing ratio of the two gases. Upon failure of the control gas supply, the second gas supply also stops automatically – providing added safety in particular when fuel gases are used.

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### › INLET PRESSURE MONITORING WITH ALARM MODULE

On request, WITT gas mixers can also be equipped with an inlet pressure monitor. The mixing system is provided with pressure transmitters at the gas inlets for this. Inlet pressures below or above the individually set limit values are displayed at the alarm module. External alarms can also be triggered via the alarm module, and can be set to stop the entire gas flow system.

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### › GAS ANALYSIS

If required, WITT gas mixing systems can also be combined with modules for gas analysis, also from WITT. Depending on the mixing method and model, the gas analysis can be performed either of the flowing gas mixture or in the mixing gas tank. An integrated gas analyser continuously monitors the gas mixing process and can be an important additional means of quality assurance, depending on the application.

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### › EXPLOSION PROTECTION OPERATION

Where necessary, many of the WITT gas mixing systems can also be certified for operation in explosion-protection areas.

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### › HOUSING

Depending on the model series and requirement, various housing types and materials are available for WITT gas mixers. When it comes to size, the product portfolio ranges from mobile mixing units or small housings for wall-mounting, through to desk-top devices as well as gas mixing cabinets for large installations. All housings are carefully designed to be stable for industrial applications. Housings made from stainless steel with especially good hygiene properties are generally used for food applications.

For applications at low temperatures (for example outdoor setup in winter), WITT gas mixers can also be provided with a heater on request.

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### › TANK

Corresponding to the gas mixing systems, WITT offers pressure vessels for various pressure ranges and volumes from 20 to 3000 litres (5–792 gallons) on request. The pressure vessels are either made from steel or stainless steel and are painted or powder-coated and equipped with accessories on request. For tanks up to 250 litres (66 gallons), a pre-assembly of mixer and tank is possible.



### › GAS FITTINGS

Depending on the model and application, high-quality gas fittings made by WITT are integrated into gas mixing systems to increase safety. Thus, for example, gas non-return valves prevent unwanted gas backflow and undesired gas mixtures in the gas inlet. Safety valves typically protect the buffer tank against hazardous overpressures. When using fuel gases, WITT safety devices ensure reliable protection against flashbacks and burn-back. Gas filters can help protect your system in case of impurities in the gas, thereby extending the service life of your gas installation.

### › MAINTENANCE & SERVICE

WITT gas mixers are extremely robust and durable in design. The renowned WITT quality begins with the use of high-quality materials and components and continues in careful and precise assembly. A comprehensive Quality Management System accompanies the complete value-added process and ensures the highest quality of each individual gas mixer made by WITT. Depending on the mixing technology used, the devices are subject to different requirements for maintenance and service. The service life of the devices can usually be extended further with additional components such as gas filters. On request, WITT provides maintenance and service packages for your gas mixing systems – worldwide via our network of partners.

### › STANDARDS & REGULATIONS

WITT and WITT products comply with international relevant standards and norms, e.g. DIN EN ISO 9001, DIN EN ISO 22000, ATEX, 94/9/EC and PED 97/23/EC. An extensive Quality Management System guarantees the highest quality – the WITT quality that you can rely on. All organisational, commercial and technical activities affecting the quality are appropriately planned, controlled and monitored in our QM manual. The relevant certificates and test reports can be provided on request.

## OVERVIEW OF OUR MODELS

The WITT product portfolio provides a comprehensive range of gas mixers for numerous applications.

### › SMALL MIXER

Compact, high performance, versatile. WITT offers a wide range of smaller gas mixers for a variety of applications requiring smaller amounts of the gas mixture, for example in the food industry, welding technology or in laboratories. Models are available for 2 or 3 gases and for fuel gases. WITT's small mixers typically employ mechanical mixing valves.

### EXAMPLES OF WITT PRODUCTS



#### › KM20-ECO

Compact gas mixer for producing 1 or 2 preset mixtures of CO<sub>2</sub> and N<sub>2</sub>. Especially designed for beverage dispensing applications. Uses a mechanical mixing valve.

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#### › MM LINE

Very compact and economic gas mixer for 2 gases and a variety of technical applications, also for discontinuous withdrawal. Uses a mechanical mixing valve.

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#### › BM-2M

Economic gas mixer for 2 gases designed for direct cylinder connection and high pressure. Uses a mechanical mixing valve.

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## > KM LINE

High-performance gas mixers for 2 or more non-flammable or flammable gases. A very wide range of mixtures and flows can be set. Even for highly fluctuating mixed gas withdrawal quantities, also for discontinuous withdrawal. Designed for medium flow rates and for a variety of industrial applications. Several options available. Special versions e.g. for the food industry. Uses mechanical or electrical mixing valves.

### EXAMPLES OF WITT PRODUCTS



#### > KM100-2M

Gas mixing systems for 2 defined gases especially for flow packing machines or other continuous packaging processes in the food industry.



#### > KM100-2ME

Gas mixing systems for 2 defined gases, designed for a variety of industrial applications, particularly where there are severe fluctuations in mixture extraction rates.



#### > KM-FLOW

Gas mixing systems for 3 defined gases, designed for optimized gas flow for a variety of industrial applications. The KM-FLOW uses electronic mass flow controllers (MFC) instead of conventional proportional valves for mixing gases.



#### > KM100-3MEM+

Gas mixer for 3 defined gases using electrical mixing valves. Designed for a variety of industrial applications.



# OVERVIEW OF OUR MODELS

## › MG LINE

High-performance gas mixers for 2 or more non-flammable or flammable gases. Infinitely variable mixture and flow settings. Particularly for where there are severe fluctuations in mixture extraction rates, and also for discontinuous withdrawal. Designed for high peak flow rates and a variety of industrial applications. Several options available. Special version e.g. for the food industry. Works with mechanical or electrical mixing valves.



### EXAMPLES OF WITT PRODUCTS

#### › MG-FIX/FLEX

Gas mixer for 2–3 gases, adjustable or pre-set. Designed for a variety of industrial applications. Uses a pneumatic continuous flow controller.

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#### › MED-MG

Stationary gas mixer especially for the generation of synthetic air for medical applications. A Class IIb Medical Device. CE marked according to Directive 93/42/EEC.

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#### › MG100-3ME

Gas mixing system for 3 defined gases, designed for a variety of industrial applications with high flows and fluctuating gas mixture production requirements.

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#### › MG500-2ME

Powerful electronic gas mixer for 2 gases, especially for highly fluctuating gas mixture output quantities.

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## › MDV / MFC RANGE

WITT's most modern control system for the most precise composition of fuel gas / oxygen mixtures, providing the necessary precision and consistency of supply to burner systems. Whether it's a premix or a surface-mix burner – the controlled mixture permutations are unlimited. Propane, natural gas, hydrogen and acetylene mixed with oxygen or air, to the highest precision.

### EXAMPLES OF WITT PRODUCTS



#### › MDV

Gas metering system for 2 or 3 gases, especially designed for surface-mix burners. Modular design allows subsequent changes of machine parameters, e.g. capacities or number of burners. Uses mechanical mixing valves.

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#### › MFC

Mixing system for the supply of a burner or other processes with gas mixtures of 2 or more gases. Uses mass flow controllers.

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## WE MEET CUSTOMER NEEDS – YOUR CUSTOMIZED GAS MIXER

You haven't found something suitable in our product range?  
No problem: We produce your individual gas mixer on demand. Step by step  
we will develop your special solution – custom-tailored to your needs.  
Talk to us about your requirements!

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## OUR PRODUCT RANGE

### GAS CONTROL EQUIPMENT

- Gas mixing systems
- Gas metering systems
- Gas analyzers
- Leak detection systems
- Gas pressure vessels
- Engineering of customized systems

### GAS SAFETY EQUIPMENT

- Flashback arrestors
- Non-return valves / check valves
- Quick couplers
- Safety relief valves
- Stainless steel devices
- Gas filters
- Pressure regulators
- Outlet points
- Lance holders
- Ball valves
- Automatic hose reels
- Test equipment
- Accessories
- Customized safety equipment

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