

HVAC/R

Magazine 01/ 2024

Be sure. **testo**



testo SMART APP

Now with new
PRO measurement programs

EXCLUSIVE PRO TIPS

from practice

VISION

Automation



SPEED UP YOUR WORLD.

With the smart networked HVAC/R world from Testo.

Save valuable time - on refrigeration systems
and in many other applications.

EDITORIAL

“When the winds of change blow, some people build walls and others build windmills”



For me, this quote sums up the current developments in the market for heating, air conditioning and refrigeration technology. The major trend topics of digitalization, heat transition and electrification are affecting the entire HVAC/R industry. Whether manufacturer or contractor – there probably isn't anyone who doesn't have to deal with it.

The exciting thing is that the topics haven't really changed in the last five years, they've just become much more present in our perception and in our daily work. I'm very proud to say that we at Testo have been very focused on the trends right from the start - and haven't built any walls.

Our future products, our windmills, have emerged from this: The digital manifolds for smart and wireless measurement and documentation. Our fully automatic solutions for filling and evacuating refrigerant-based air conditioning and refrigeration systems and heat pumps. And the testo Smart App as a central interface and cross-application complete solution for App-based recording and documentation of measurement data.

We would now like to share our findings and what we consider to be the most important trends with you. So that you too can derive your own individual windmill strategy.

Enjoy reading.

Yours, Dirk Göpfert
Director Product Management
Instrumentation



SMART WORLD OF TESTO

FULL POWER. FOR YOU AND YOUR WORLD.

Technologies and legislation are changing faster and faster, and the demands on jobs and training are increasing. Energy efficiency in buildings is the hot topic – in business, industry and politics. This ensures that the shift already underway from fossil-based heat generators to heat pumps, hybrid heating systems and solar thermal systems will continue. In addition to digital skills, a deep understanding of changing markets and technologies is also required.

In the Testo Smart World, we bring together everything that helps you to deal with the changing conditions: Smart tools that master tomorrow's challenges today. The testo Smart App as a digital platform that digitally connects all applications. And our decades of experience in the fields of heating, air conditioning and refrigeration technology. So that you don't lose any valuable time, but together with Testo, you can take off at full speed.

The top 3 trends in the industry:

- 1** Energy efficiency in buildings is the hot topic – in business, industry and politics. This is changing the entire industry. All over the world.
- 2** The shift away from fossil fuels and towards sustainable or hybrid solutions is underway. Ideally in countries where the price of electricity remains competitive.
- 3** Technologies are converging and job profiles are overlapping. Heat pumps already affect both heating engineers and electricians.

testo SMART APP

JUST SMART. JUST FAST.

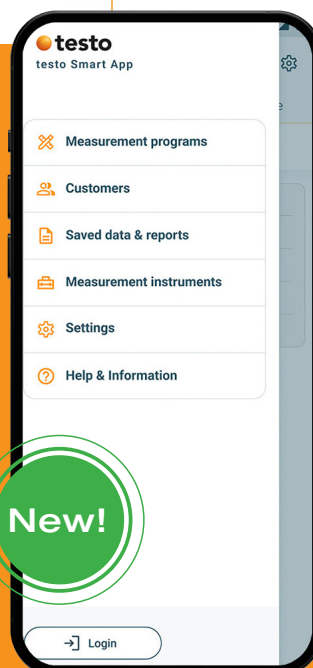
One App, all applications. The testo Smart App brings everything together to make the tasks even smarter and faster: End-to-end connectivity, wireless measurements and all data at a glance.

► **NEW: PRO measuring program for more efficiency and time savings**

Multi-site measurement program for the optimization of measuring procedures and clear documentation at numerous measuring sites.

Ventilation system adjustment for quick and easy commissioning and adjustment of balanced air conditioning/ventilation systems.

More information from p.18.



- **Just easy:** Automatic Bluetooth pairing & easy configuration.
- **Just efficient:** All measured values centrally in one place, at a glance.
- **Just flexible:** Second screen function on tablet or smartphone.
- **Just in time:** Control of the measurement (remote control) and monitoring of live measurement data.
- **Just smart:** Easy creation and sending of the measurement report.



testo Smart App
for free download



TRENDS

WHAT'S GOING. WHAT'S COMING.

► NEW LEGISLATION

- Ecodesign Regulation for space heaters and combination heaters to come into effect on September 1, 2025
- Heating systems with an efficiency of less than 115 percent may no longer be placed on the market from September 1, 2029.
- From 2029, pure oil, gas and coal heating systems may no longer be placed on the market – not even as spare parts.
- The only exception: Combination with heat pump or solar thermal systems (hybrid heating systems).



▶ NEW EXPERTISE

In order to achieve the ambitious political climate targets by 2030, the number of fitters must increase by 50% compared to today. Existing fitters need to be retrained to work with heat pump technologies. New skills are in demand, especially in the areas of digitalization, hybrid systems, electrification, system optimization, refrigerants and decarbonized gases.

▶ NEW MARKETS

The market segments are growing into one another – the trend is moving away from individual applications towards complete providers that cover all HVAC/R areas. More and more heating manufacturers are conquering the air conditioning market. And vice versa: Manufacturers of air conditioning systems are also entering the heat pump business.

▶ NEW, REVERSIBLE TECHNOLOGIES

Modern air conditioning technology can do much more than just cool. A heat pump, for example, basically works like an air conditioner, only in reverse. The range of air conditioning technology thus extends from air conditioning and cooling technology to heating and ventilation technology. From a technological point of view, these areas are growing ever closer together.

A quick look outside the box.

The situation by country.



USA

Technologies grow together

50% Hybrid heat pumps in North America

415,800 HVAC/R technicians in the United States

6% more fitters for heating, air conditioning and refrigeration technology by 2032



France

Pioneer of electrification

4,586 Heat pumps per 100,000 inhabitants

44% heat with electricity

37% with gas

8% with oil



Germany

In search of specialists and partners

“An electrician does not normally deal primarily with heating systems and, conversely, a heating engineer does not deal with electrics. But now everything is growing together with the energy turnaround, heating is done electrically.”



UK

Combination of heating and cooling

up to 90,000 boilers are to be replaced with energy-efficient heat pumps by 2025 as part of the “Boiler upgrade scheme” heating replacement program

450 million pounds

(around 511 million euros) to be invested by the government in this project



Buderus

The refrigeration/air conditioning trade is becoming increasingly important for us. At the same time, we are supplying more and more customers from the heating segment who are moving in the direction of refrigeration technology. As a system specialist, we offer everything from a single source and are the one strong partner for our customers for both heating and cooling.

Jürgen Bleichner, Product Manager VRF at Buderus Germany

DAIKIN

As a manufacturer of air conditioning systems, Daikin has already become one of the leading suppliers of heat pump systems in Europe. Daikin is banking on new European regulations to promote their use and is already increasing production in anticipation of large sales.

Yuki Furukawa, Bloomberg



REFRIGERATION TECHNOLOGY

FASTER, SMARTER, COMPLETELY NETWORKED.



Save valuable time on refrigeration systems with the HVAC/R world of Testo.

We give everything so that you can hit the gas: All tools – wireless connection thanks to automatic Bluetooth pairing. All accessories. Everything from a single source, all measurement data centralized and fully networked via the Testo Smart World. For the commissioning, maintenance and repair of heat pumps,

refrigeration and air conditioning systems. For smart measurement and documentation. For all the tasks of today – and the challenges of tomorrow. Get off to a fully automated start with Testo and save a lot of time and stress thanks to the comprehensive complete portfolio.



Discover the Smart World of Testo online



TOOL TIP

SWITCH ON, READY, GO!

Fast and smart: The digital manifolds from Testo.

We have used our decades of experience to develop manifolds that are optimally adapted to the needs of refrigeration technology. The result is smart, digital manifolds that allow all measurements to be taken wirelessly, easily and quickly. Whether pressure, temperature, superheating, subcooling or refrigerant quantity – wireless probes and the testo Smart App ensure maximum precision in minimum time, and provide all results at a glance. Ready, set, go!



- ▶ **Bluetooth Auto Connect** – up to 150 m range
- ▶ **Extra-large display**
- ▶ **Remote control** via testo Smart App
- ▶ **Smart data management**
- ▶ **Fully automatic measuring programs**
- ▶ **All important refrigerants stored in the system**

OUR TOP-CLASS: The testo 570s.

- ▶ **World's longest battery life** – up to 360 hours
- ▶ **Ideal for long-term measurements**
thanks to data logging and intelligent error analysis
- ▶ **Compatible with A3 and A2L refrigerants**
- ▶ **Maximum precision** – measuring accuracy of 0.25% fs

“



RECOMMENDED BY THE PROS

It really saves me time.

Because the testo 570s connects directly to the smartphone, I can keep an eye on the ventilation system on the computer and at the same time see what the refrigeration system is doing on my cell phone. It really saves me time. What's more, the long battery life means I don't have to worry about charging it all the time.

Andreas Becker Rox Klimatechnik GmbH

”



testo Saveris 2
Radio data logger system
Easy and reliable wireless monitoring of ambient climate such as humidity and temperature

Order no. 0572 2034
XXX.XX €

OVERVIEW OF PRODUCTS & KITS



For professionals, for all-rounders, for everyone! The smart world of Testo.



testo 570s Smart Vacuum Kit

Highly efficient professional kit with wireless temperature and vacuum probes – ideal for reliable long-term and high-precision standard measurements.

Order no. 0564 5702
XXX.XX €

Kit with filling hoses

Order no. 0564 5703 **XXX.XX €**
Set with clamp meter
Order no. 0564 5704 **XXX.XX €**



testo 557s Smart Vacuum Kit

Practical all-rounder kit for fast, precise and completely wireless measurements on all refrigeration and air conditioning systems and heat pumps.

Order no. 0564 5571
XXX.XX €

Kit with filling hoses

Order no. 0564 5572 **XXX.XX €**



testo 550s Basic Kit

Smart starter kit for quick and easy maintenance and installation.

0564 5501
XXX.XX €

testo 550s Smart Kit

Order no. 0564 5502 **XXX.XX €**

SMART PROBES FOR SMART PROS.



From vacuum to temperature to air humidity: Wireless, precise and simple app-controlled measurement with testo Smart Probes.



QUICK TIP: Discover all products easily online



Wireless vacuum probe **testo 552i** Order no. 0564 2552 **XXX.XX €**

Clamp temperature probe **testo 115i** Order No. 0560 2115 02 **XXX.XX €** • Thermohygrometer **testo 605i** Order No. 0560 2605 02 **XXX.XX €**
Clamp temperature probe **testo 915i** Order no. 0563 4915 **XXX.XX €** • Wireless vacuum probe **testo 549i** Order no. 0560 2549 02 **XXX.XX €**

JUST PRESS PLAY.

The new testo 565i smart vacuum pump.

Imagine you just give the instructions and your tool does the work all by itself. Sounds like a dream of the future? Not with Testo and the new smart vacuum pump testo 565i. In contrast to conventional vacuum pumps, you simply enter the vacuum target value and the pump automatically stops evacuation at the right moment and then carries out the holding test immediately afterwards. At the end, the customer only has to evaluate the data. And this also runs almost automatically via the testo Smart App.

- ▶ **Fully automated evacuation** with integrated holding test
- ▶ **Full safety** – also with refrigerants of classes A3 and A2L
- ▶ **Fully smart** configuration, monitoring and data management – with the testo Smart App
- ▶ **Fully easy** – easy oil change and quick assessment of the oil level
- ▶ **Full protection** even in the event of power interruptions, thanks to integrated non-return valve
- ▶ **Full connectivity** to the entire refrigeration portfolio from Testo



7 CFM
Order no. 0564 5652
XXX.XX €

10 CFM
Order no. 0564 5653
XXX.XX €

Fully automatic charging of refrigeration systems.



The digital refrigerant scale testo 560i with intelligent valve.

When it comes to charging refrigeration systems, Testo is again leading the way in automation: With the testo 560i digital refrigerant scale, you can charge refrigeration systems and heat pumps fully automatically – simply enter the target value for superheating, subcooling or weight and off you go. Fully automatic. Fully easy. Fully ingenious.

- ▶ **Fully automatic refrigerant charging** thanks to intelligent valve
- ▶ **Automatically connected via Bluetooth** with Testo manifolds and testo Smart App
- ▶ **All measurement values for the charging curve** at a glance



Order no. 0564 2560
XXX.XX €



Our objective in the refrigeration sector is the automation of processes. With the new testo 565i vacuum pump series, we increase efficiency and quality for our customers in their daily challenges. Once configured, the evacuation process runs completely automatically, so that the technician only has to charge the system with refrigerant in the next step.

Seyit Egin
Product Manager, Refrigeration





HEATING TECHNOLOGY

SIMPLY DO THE JOB FASTER.

Technologies are changing faster and faster. This requires smart tools that keep pace with the rapid pace of change. This is why Testo's fully networked HVAC/R product world provides a quick and simple answer to the complex challenges of

today – and tomorrow. Whether gas boiler, hybrid system or heat pump, installation, service or maintenance: With measurement technology from Testo and the digital Testo Smart World, tasks can be completed in record time.

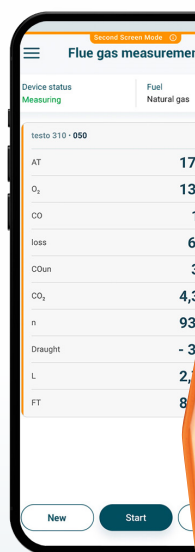
TOOL TIP

Next level FLUE GAS MEASUREMENT.

The **testo 300 NEXT LEVEL** – for up to four additional parallel measurements.

If you want to do a first-class job as a heating engineer, you need flexibility, efficiency and new smart ways of dealing with the technologies of the future. The testo 300 NEXT LEVEL delivers exactly that. It automatically connects to the testo Smart Probes via the integrated BLUETOOTH® CONNECTOR, enabling up to four additional measurements to be taken

simultaneously – saving a lot of time and stress in everyday life. With the testo Smart App, all measured values are sent directly to your smartphone or tablet and can be sent by e-mail from there directly. If only everything could be done as quickly as flue gas measurement with Testo.



Even more time-saving features:

- ▶ Practical **SECOND SCREEN FUNKTION**
- ▶ Fast-reaction **SMART-TOUCH DISPLAY**
- ▶ **BLUETOOTH® CONNECTOR**
for up to 4 additional parallel measurements
- ▶ Easy documentation via **testo SMART APP**

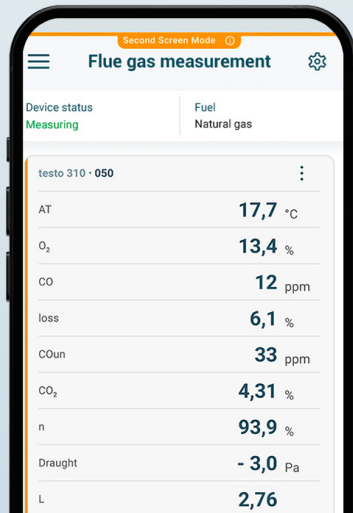
Order no. 0633 3002 88
XXX.XX €

testo SMART PROBES



UNBEATABLE IN SPEED TESTING.

Simple. Fast and wireless. Measure with a smartphone:
With the testo Smart Probes for temperature and humidity.
Individually or in a practical HVAC kit.



Ideal for gas boilers, air flow velocity and volume flow: the **testo 510i differential pressure measuring instrument** with smartphone operation.



Perfect for flow and return temperatures, with a Bluetooth® range of up to 100 m: the **testo 115i clamp thermometer** with smartphone operation.



Versatile and flexible thanks to a large selection of probes: the **testo 915i thermometer** with smartphone operation.

SINGLY: REALLY FAST. AS A TEAM: EVEN FASTER.
Simply shop for the testo Smart Probes HVAC kit online



More to make your heating world even faster.



QUICK TIP: Discover all products easily online



- Clamp meter **testo 770-3** Order no. 0590 7703 **XXX.XX €**
- Humidity measuring instrument **testo 606-2** Order no. 0560 6062 **XXX.XX €**
- IAQ measuring instrument **testo 440** Order no. 0560 4401 **XXX.XX €**
- Infrared thermometer **testo 830-T2** Order no. 0560 8312 **XXX.XX €**
- Thermal imager **testo 872** Order no. 0560 8725 **XXX.XX €**
- Thermal imager **testo 883** Order no. 0560 8830 **XXX.XX €**
- Thermal imager **testo 868** Order no. 0560 8684 **XXX.XX €**

”



RECOMMENDED BY THE PROS
Testo's tools solve real problems and make work much easier.

I've been working with Testo instruments for over 20 years. I do an average of up to 8 maintenance jobs a day, and it's efficient to have an instrument that works quickly and cleanly. I'm an inventor myself, I have 25 patents in the sanitary and heating sector – but Testo's innovations are sensational. Testo's tools solve real problems, they're uncomplicated to use, easy to handle and make work much easier.

Karl-Heinz Bilz
Master plumber and heating engineer,
Nidderau

“

Even more **insights** at first hand online



CHECK IT OUT: Download tips & tricks for flue gas analysis for free



TOOL TIP

AT RECORD SPEED.

Install and maintain heat pumps with the testo 570s digital manifold.

Takes your performance to the next level: With Testo's smart manifold, you are already perfectly prepared for all new heating systems such as heat pumps and hybrid systems. Fully networked, guaranteed up-to-date and, with the world's longest service

life of up to 360 hours, ideal for long-term measurements. And vacuum, temperature, pressure and weight are also reliably and quickly recorded with the smart heat pump kits and the testo Smart App. This means you are ready to hit the ground running in the future.



A3 & A2L
READY

- ▶ Large graphic display
- ▶ Maximum precision – even at low pressures
- ▶ Intelligent error analysis feature in the testo Smart App
- ▶ Measurement, charging & documentation – easier than ever

testo 570s

Heat pump professional kit
Order no. 0564 5002

XXX.XX €

HEAT PUMP KITS

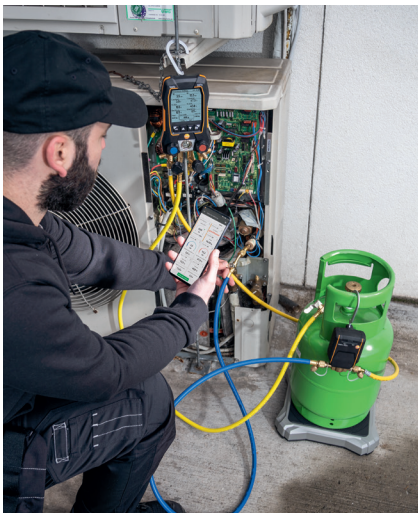
EVEN FASTER AS A TEAM.

Together unbeatable:
The smart digital manifolds with wireless clamp temperature probes and charging hose set in a practical case.



Heat pump allrounder kit **testo 557s** Order no. 0564 5001 **XXX.XX €** • Heat pump beginner's kit **testo 550s** Order no. 0564 5000 **XXX.XX €**

More to make your heating world even faster.



Fully automatic and precise:
Digital refrigerant scale testo 560i with intelligent valve.



Unbeatable in detecting gas leaks – even in hard-to-reach places:
The testo 316-4 and testo 316-3 gas leak detectors with flexible probes.

JUST EASY: Discover all products easily online



testo 560i Order no. 0564 1560 **XXX.XX €**
testo 316-4 Order no. 0563 3164 **XXX.XX €**
testo 316-3 Order no. 0563 3163 **XXX.XX €**

”



RECOMMENDED BY THE PROS

The **testo 557s** saves time, I have to take less stuff with me and have less work overall.

Before I had the **testo 557s**, I had to carry all sorts of equipment with me, plus extra cables, temperature probes, pen and paper. With Testo, I have everything I need in one case. The instrument detects refrigerants automatically, saves a lot of time thanks to the smart functions, I have to take less stuff with me - and have less work overall, because the **testo 557s** does it all for me.

Tom Siben
Service technician, Lennox

“

Even more **insights** at first hand online



CHECK IT OUT: Download all heat pump know-how for free



SPECIAL: HEAT TRANSITION

THE ENERGY REVOLUTION.

The world is hot for change – hardly any other discussion is as topical, and as urgently expected on the global stage as the achievement of climate targets. Governments and companies around the world are recognizing the urgency of moving away from fossil fuels and using renewable energy sources for heat generation. It's no wonder that new, energy-efficient heating systems are becoming increasingly popular. In Europe. In the USA. All over the world.

Because one thing is certain: The heating transition is essential for achieving the climate targets, and is a major step towards a more sustainable and climate-friendly future. With advancing technology

and growing global support, the global community is on the threshold of an energy revolution that has the potential to fundamentally change our planet for the better.

And you are right at the front, in the vanguard. In order to sustainably decarbonize the economy, industry and private residential buildings, a number of electric heat pumps still need to be installed, commissioned and maintained. The world is hot for change – and we at Testo give our all every day to support you in your work for a better, climate-neutral world with innovative, smartly networked professional tools.



11%

more heat pumps were installed
worldwide in 2022 alone ¹

4.3 MIO.

new heat pumps
in 2022 in the USA alone ²

3 MIO.

new heat pumps
in 2022 in Europe alone ³

20%

of the global heat demand in buildings
must be covered by heat pumps by 2030 in
order to meet existing energy and climate
promises ⁴

54

megatons of CO₂
were saved by heat pumps in
Europe alone in 2022⁵

Climate targets worldwide.



USA

Net-Zero Emissions Goal:
climate-neutral by **2050**



European Union

Green Deal: **55%** less emissions by **2030**,
climate neutral by **2050**



China

CO₂-neutral by **2060**



India

40% of electricity capacity from non-fossil
sources by **2030**

Sources:

¹ International Energy Agency (IEA)

² Canary Media

³ EHPA Market Report 2023

⁴ German Federal Environment Agency

⁵ EHPA Market Report 2023



I experience the change in heating and the movement on the market very closely at Testo. It's great to see how Testo's fully networked products open up new opportunities. So I can proudly say that we are an active part of the upcoming heating transition – with Testo's many years of experience, exciting ideas and constantly new, innovative solutions that help to make the world a better place in the long term.

Niklas Maier
Product Manager, Heating





 AIR CONDITIONING & VENTILATION TECHNOLOGY

FULL ENERGY EFFICIENCY AHEAD.



Adjust air conditioning and ventilation systems energy-efficiently with Testo – faster than ever.

Balance is everything. Especially for energy-intensive air conditioning and ventilation systems. Especially when it comes to saving energy and costs.

You know how crucial precise measurements are: This is the only way to achieve the perfect balance between energy-efficient ventilation systems and indoor climate. Accordingly, the right measurement

technology is indispensable for all flows in the duct, at the outlet and in balanced residential ventilation.

Climate measurement technology from Testo offers you fast, simple and efficient solutions for a wide range of requirements and systems. From a single source. From a networked world. Out of conviction.

TOOL TIP

VERSATILITY WITH MAXIMUM EASE OF USE.

The IAQ measuring instrument **testo 440** – for all climate-related parameters.



As multifaceted as your challenges themselves: With the multi-function IAQ measuring instrument testo 440, you can measure all climate-relevant parameters quickly, intuitively and extremely conveniently. Thanks to a wide range of probes and a large selection of matching accessories, you have all applications in air conditioning and ventilation systems efficiently under control -- in ducts, at outlets and on filters.



- ▶ **Intuitive measurement menus** for all IAQ applications
- ▶ **Wireless Bluetooth probes** for maximum convenience
- ▶ **Internal memory** for up to 7,500 measured values
- ▶ **Versatile and expandable** with extensive probe portfolio and accessories

Order no. 0560 4401
XXX.XX €

FOR EVERY APPLICATION

FAST. EASY. PRECISE.

The digital HVAC measuring instruments – made to make things easy.

Quick to hand, easy to handle, precise results: The digital HVAC measuring instruments are fast, flexible and, when connected to a smartphone, provide exact measurement values for all parameters. With the testo Smart App and the integrated measurement menus, even complex measurements are easier than ever. Documentation and measurement value storage are also easy.

QUICK TIP: More compact HVAC measuring instruments



testo 417
Digital 100 mm vane anemometer
At outlets

ACCESSORIES:



testovent 417
Flow straightener kit
At outlets



testo 416
Digital 16 mm vane anemometer
In ducts

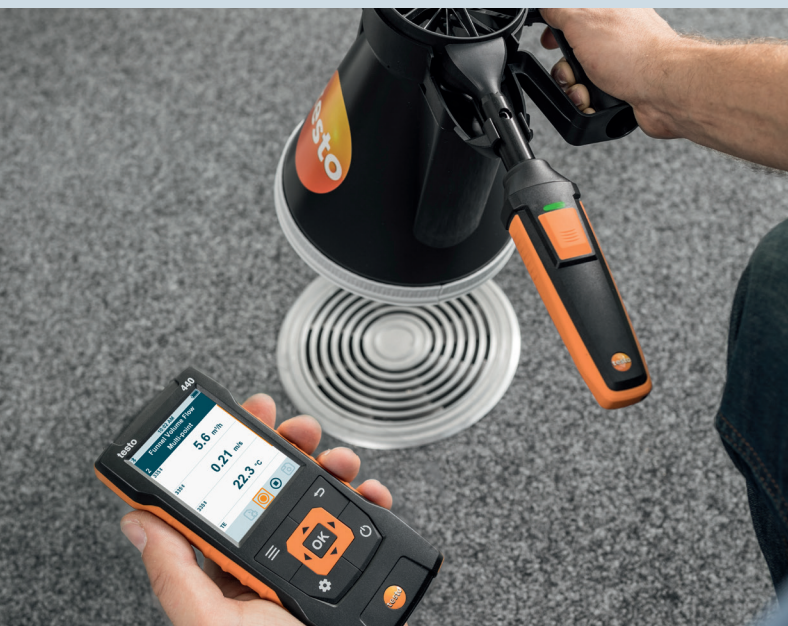


testo 512-1
Digital differential pressure measuring instrument
In ducts



testo 425
Digital hot wire anemometer
In ducts

testo 417 Order no. 0563 0417 **XXX.XX €** • **testovent 417** Order no. 0554 4173 **XXX.XX €** • **testo 416** Order no. 0563 0416 **XXX.XX €**
testo 425 Order no. 0563 0417 **XXX.XX €** • **testo 512-1** Order no. 0563 1512 **XXX.XX €**



Ideal for measurements on filters, in ventilation ducts and at air/ceiling outlets:
testo 440 delta P Flow CombiKit 2 with Bluetooth®
Order no. 0563 4410 **XXX.XX €**

When regulating
of ventilation systems up to

30%
TIME SAVED

**With the New PRO measuring
program in the testo Smart App.**

The new PRO measuring program for easy and fast
commissioning and balancing of air conditioning
and ventilation systems:

Automatically documents the measurement
values, compares them with the target value and
makes recommendations for necessary system
adjustments.

You always have all measurement results at
a glance and can save up to 30 % time in
measurement and documentation. The PRO
measuring program not only increases your
efficiency – it also supports you in ensuring an
efficiently operating ventilation system.



BALANCED VENTILATION SYSTEM

LIKE A PRO: FAST AND EASY ADJUSTMENT OF VENTILATION SYSTEMS.



With the testo 417 and the new PRO measuring programs in the testo Smart App.

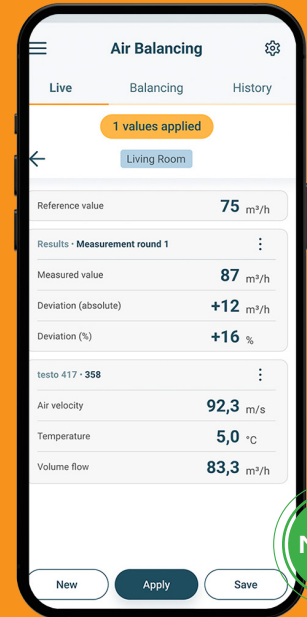
Modern residential buildings are meeting ever higher energy standards. They are energy-efficient and optimally insulated – and are often equipped with balanced ventilation systems for a pleasant indoor climate. This creates new challenges for air conditioning technicians and fitters. Correct commissioning, adjustment and inspection of these systems are extremely important: Systems that are set too high drive up energy costs.

Systems that are set too low do not ensure sufficient air exchange. To get the balance right, we have developed a unique PRO measuring program for you to regulate ventilation systems. In combination with the testo 417 anemometer, the job is done in no time at all – regardless of whether you are a professional or only measure occasionally. Today's smart refrigeration measurement.



PRO Measurement programs

Discover them now in the testo Smart App



testo Smart App
for free download



As a product manager at Testo, I am proud that we have been able to sustainably upgrade our testo Smart App in recent years – and that our customers can do their work even more efficiently as a result. With the latest App update (Q4/23), it will even be possible to purchase PRO measuring programs via in-app purchases, which offer even greater added value, for example when regulating ventilation systems. The Testo Compact Class instruments in particular benefit from the App connection. Updates enable us to keep our products current at all times.

Tobias Thieme
Product Lead Climate & Refrigeration



Even more insights at first hand online



CHECK IT OUT:
Practical guide to measuring tasks on residential ventilation systems for free download



YOU TOO CAN BECOME PART OF THE TESTO SMART WORLD.



Visit us online and experience what else the Testo HVAC/R world makes possible



Subscribe to our newsletter for even more exciting updates from Testo's Smart World