



# REAL GAS TEMPERATURE

## 2D GAS TEMPERATURE MEASUREMENT IN THE COMBUSTION CHAMBER FROM THE WORLD MARKET LEADER

With AGAM we are setting standards in 2D gas temperature measurement since 1990. AGAM is an important element for efficient and environment-friendly operation in more than 300 plants worldwide. AGAM proves its efficiency again and again in monitoring, control and optimization in incineration plants, power plants, steelworks and refineries.



## PRECISE MEASUREMENT OF THE REAL GAS TEMPERATURE – WITHOUT RADIATION ERRORS

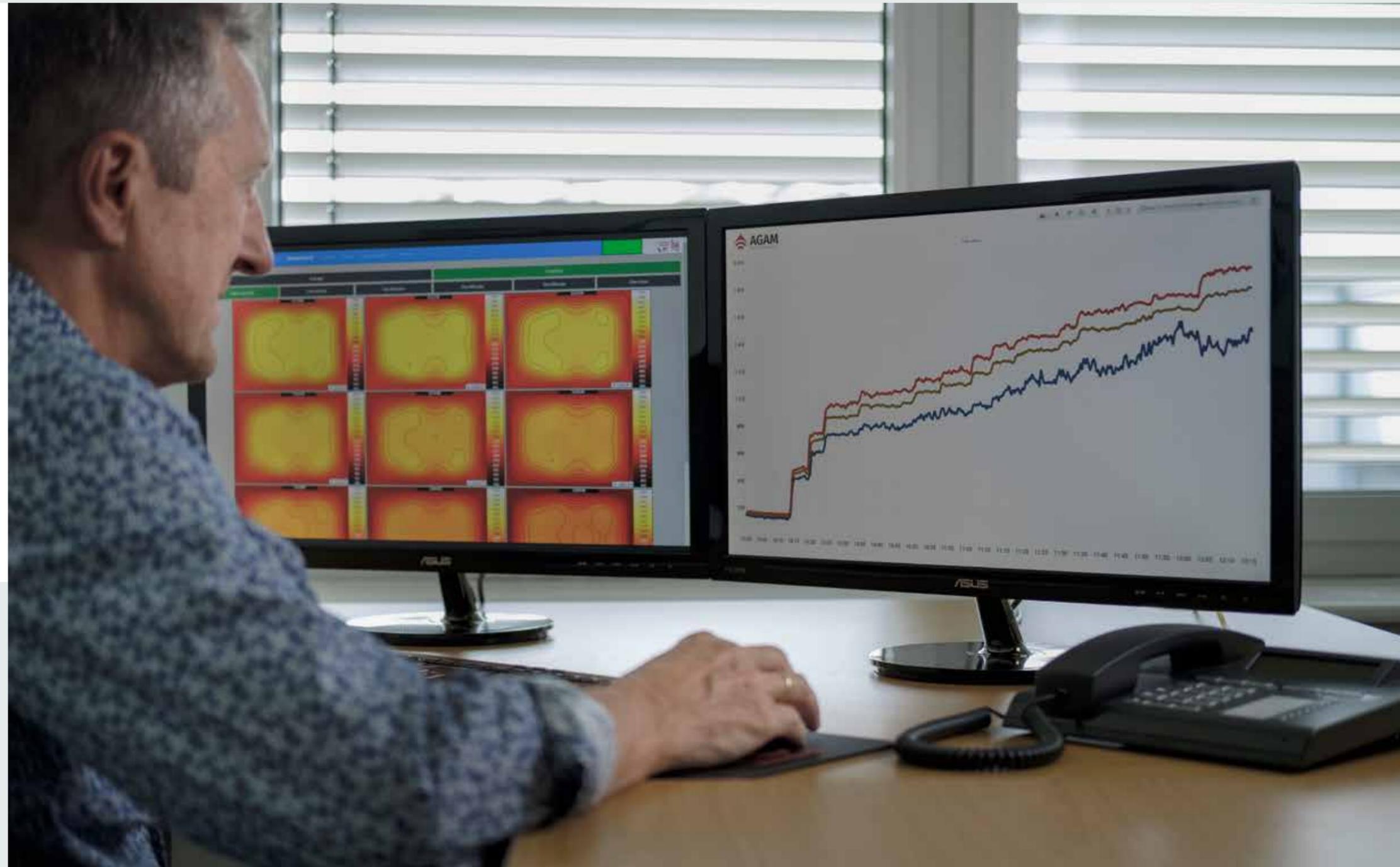
One reason for our outstanding role: AGAM measures the real gas temperature free from radiation errors. The intelligent realization of a simple physical principle has led us to the top of the market:

The speed of sound in a gas depends on the temperature.

From this direct relationship we have developed a simple measurement method that provides temperature information from the combustion chamber reliably and with the highest precision.

## CONSTANT PRECISION FROM 0 TO 2000 °C

A further advantage of the acoustic gas temperature measurement: AGAM operates with the same high accuracy across the entire temperature range of the combustion process – from start-up to operation at full load. AGAM operates free from drift and does not require calibration and thus delivers precise temperatures over the course of time – universally in any application.



## CONTACTLESS AND SELF-CLEANING

As a contactless measurement method, AGAM has no wear parts in the exhaust gas flow. All components are located outside the measurement atmosphere and are thus protected from the rough conditions in the combustion chamber. AGAM uses compressed air to generate sound, which makes the sensors self-cleaning.



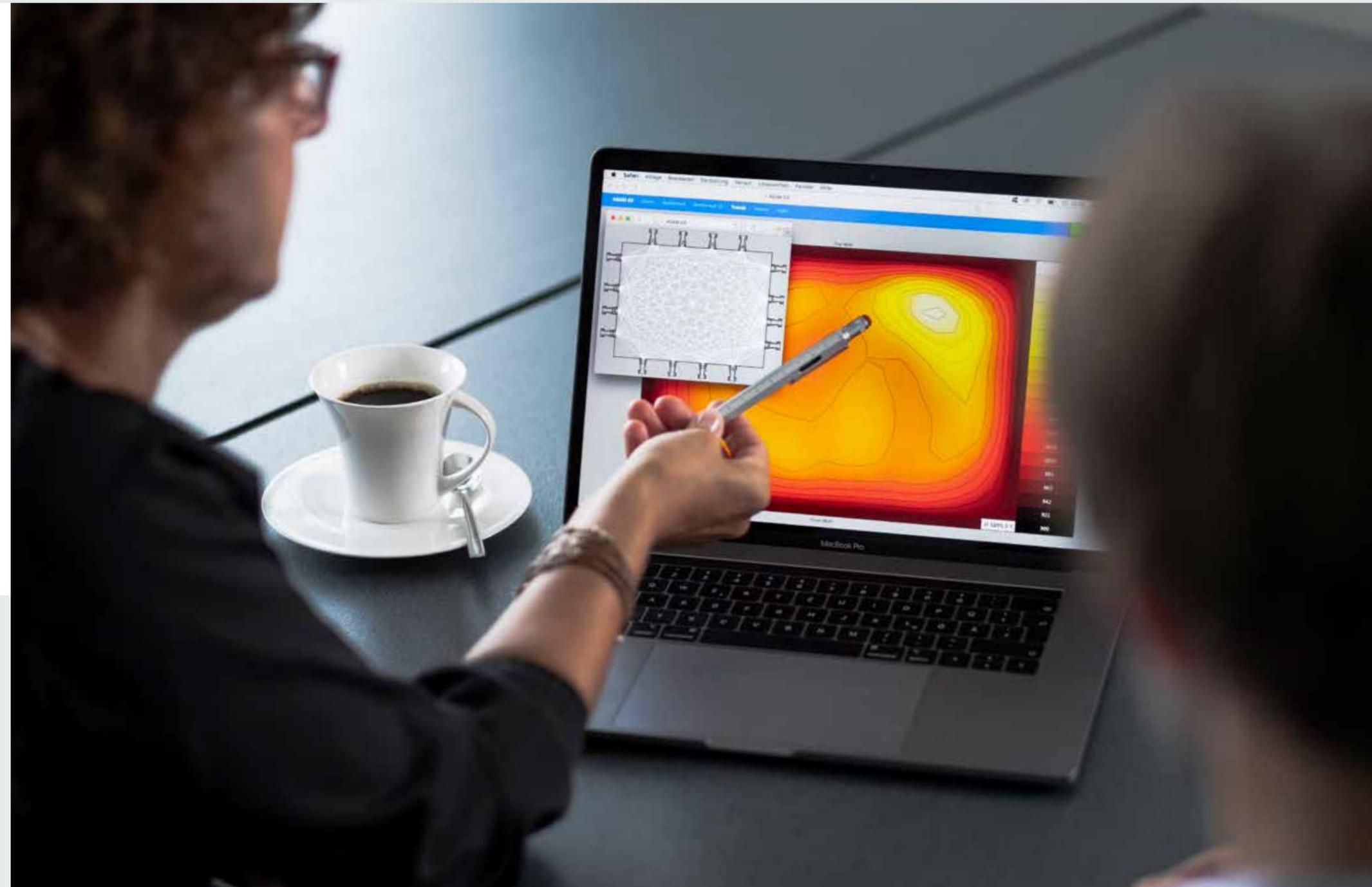
## **AGAM G3 RAISES THE BAR AGAIN IN 2D GAS TEMPERATURE MEASUREMENT**

At the top of technological development, there is only one target: to constantly redefine the limits of what is technically feasible. With AGAM G3 we are further expanding our technological lead. Speed, resolution, operating concept, maintenance, stability and solutions for difficult installation situations: In all aspects we have taken a big step into the future of 2D gas temperature measurement with AGAM G3.

AGAM is not only the 2D gas temperature measurement system with the most references. With the most modern and technically advanced system on the market, we have raised the bar even further.

## HIGHEST RESOLUTION FOR PRECISE TEMPERATURE ANALYSIS

AGAM is the system with the highest resolution in 2D gas temperature measurement. With AGAM, you are able to identify critical temperature strands that would otherwise remain undetected. With an unlimited number of paths, AGAM G3 creates a geometrically clear and extensive network which forms the basis for descriptive tomographic illustrations. We adhere to our aspiration to measure temperatures with the highest resolution in every corner of the furnace. With new high-temperature microphones and echo paths, AGAM G3 manages even the most difficult installation situations.





## **FASTER 2D MEASUREMENT NEAR REAL TIME WITH LESS COMPRESSED AIR**

Our development is always moving towards higher resolution and speed. With AGAM G3 we have made a further big step and are now able to measure 200 path temperatures in less than 15 seconds. Tomographically determined 2D illustrations can be updated every second by AGAM G3. For incineration plants, this means that temperature fluctuations can be detected even more quickly and critical temperature peaks can thus be avoided.

We also pay attention to the important topic of compressed air consumption. We have already significantly reduced the consumption by shorter signal impulses and simultaneous bi-directional signal detection. With AGAM G3 we have again halved the compressed air consumption and can continue to decrease it with alternative sound sources if required.

## DISPLAY REAL GAS TEMPERATURES FROM EVERYWHERE

With the new web interface of AGAM G3 you can monitor your furnace wherever you are. All you need is access to the internal network and a browser. We have designed the new AGAM G3 interface very user-friendly – so that you can fully concentrate on monitoring and optimizing your system. All data can be exported easily and in many common formats via the web interface and will be available in full resolution for at least 10 years.



## SOFTWARE WITH MODERN AND MODULAR ARCHITECTURE

We have developed AGAM G3 from the bottom up. For the software, we use a modern, modular architecture that meets today's standards in a modern IT world. Updates can be installed easily and safely. Clearly defined interfaces allow individual extensions without affecting the core system. We have also taken precautions for the case of an emergency situation: backup and system recovery can be carried out easily.

## ROBUST INTEGRATED HARDWARE

A modern system needs intelligent hardware. That's why for AGAM G3 we fully rely on integrated industrial hardware made in Germany. The modular systems from Beckhoff, which have proven themselves in automation for many years, meet all the requirements we place on the basis for AGAM G3: reliable, robust and modularly expandable. And if nevertheless an error does occur, the system can be easily replaced without the service of a technician or a software installation – with a guaranteed supply of spare parts for at least 10 years.



## DECENTRALIZED DIGITALIZATION FOR FLEXIBLE INSTALLATION CONCEPTS WITH REDUCED CABLING

With its modular design, AGAM G3 offers the flexibility to digitize signals close to the measurement points. This eliminates the influence of interference signals over long analog routes. All digitized data are transmitted via regular network cable or optical fibre. In modern systems with several gas temperature measurement levels or many paths, the length of required shielded signal cable can thus be reduced to a great extent in large plants.



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