



# 55 years of know how on flame monitoring systems from Leipzig

From VEB Intron to provider of cutting edge  
compact flame know how F300K



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**Only few companies possess the extensive know how on flame monitoring systems LAMTEC Leipzig can pride itself of. LAMTEC Leipzig has actively participated in the development of flame monitoring systems for more than 55 years, in some areas it has decisively shaped the development of this technology. With the new compact flame monitoring system F300K, LAMTEC Leipzig provides an innovative high end product for industrial combustion and power plants. With a high focus on safety and reliability, F300K effectively manages the increasing demands complex combustion tasks pose today.**

The success story began in 1956, the year the company VEB Intron (VEB short German form of state-owned enterprise, Intron = Industrial electronics) was founded, and which many years later would turn into LAMTEC Leipzig. Already during these early years, the development department of this company in the former GDR took an interest in simple flame monitoring systems on the basis of constant light and further developed these devices over the successive years. Seven years later, in 1963, VEB Intron merged into Geräte- und Regelwerk Teltow (GRW Teltow, factory for devices and controls) and continued to operate under the name GRW Leipzig.

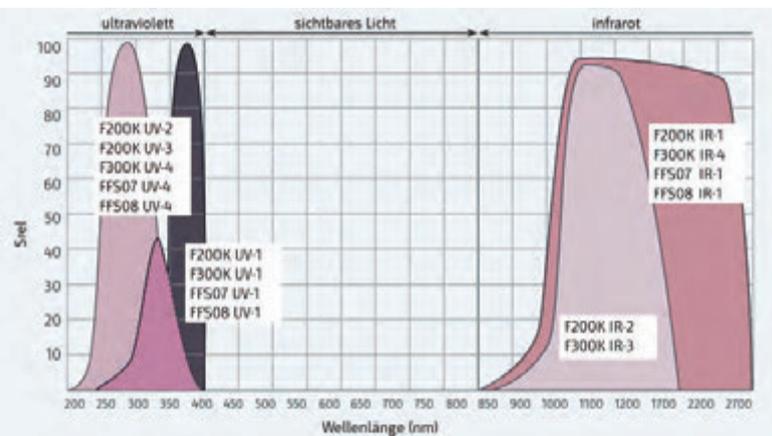
**LAMTEC flame monitoring systems for complex combustion processes in industry.**



Increasing requirements also in former Eastern Germany pushed the development of more modern equipment for burner control. During mid of the 1970s, GRW Leipzig began to record pulsation frequency of the flame with the help of infrared technology. After the fall of the Berlin wall and German re-unification the significant advantages of IR technology, particularly in the case of combustion processes with flue gas recirculation, paved the way for the company successfully entering the world market. At the beginning of the 1990s, first contacts were established with LAMTEC; a Western German specialist for sensors and systems for combustion technology, which during this time had no flame monitoring systems in its product range.

### **Long established company becomes part of LAMTEC company group**

Subsequently, the manufacturer from Leipzig saw quite a few different owners. In 1993, the company was acquired by Mannesmann group, more precisely by measurement and control specialist Hartmann & Braun which two years later merged into Eltag Bailey. In September 1998, in a management buy out, the flame monitoring systems specialists then turned into LAMTEC Meß- und Regeltechnik für Feuerungen GmbH & Co. KG.



**Flame detection in IR and UV spectrum.**

The company itself, located in Walldorf (Baden-Württemberg) had been established as a management buy out from ABB Germany. Today the company provides the most extensive product range in sensors and systems for combustion technology available on the market. Core business of LAMTEC is control, monitoring and optimization of industrial combustion processes, which also includes power plants. As regards CO control for industrial processes, LAMTEC is exclusive provider. To date, LAMTEC group has sold more than 20,000 electronic burner control systems, accompanied by an almost equally high number of flame monitoring systems.

In 2010, the new LAMTEC Leipzig merged with Quategra, an R&D company situated in Leipzig and specialized in development of high-end electronic controls. Today, Leipzig is competence center for hardware and software development of the LAMTEC group, and responsible for the development and production of flame monitoring systems.

In spring 2012, LAMTEC Leipzig moved into a new building, to Taucha, north of Leipzig. With more than 2,500 m<sup>2</sup> base area, the new location provides enough room for further expansion and thus unites the formerly divided areas, hardware and software development together with the production of flame monitoring systems under one roof.

LAMTEC was well prepared for this takeover, just as well as for the new technological challenges which will follow this acquisition. Increased environmental requirements calling for more efficient production systems as well as needs for more flexibility resulting from increased shares of renewable energy in many countries, demand more complex combustion processes. Thus flame monitoring systems, too, are faced with increased requirements. Manufacturers of flame monitoring systems are called to further develop flame monitoring systems in such a way as to safely detect complex combustion situations and thus provide reliable information on the status of the flame.

**LAMTEC hardware and software development, flame monitoring systems production in Taucha near Leipzig.**



### New generation of flame monitoring

With F300K, LAMTEC Leipzig provides the answer to increased requirements. 55 years of know how on flame monitoring systems have successfully been included in the development of this new generation of leading edge compact flame monitoring systems. The high end F300K is LAMTEC's first device with microprocessor technology providing crucial advantages, particularly in flame analysis.



**Also in multi-burner environments reliable selective monitoring .**

In summer 2012, the new SIL 3 compact flame monitoring system was successfully introduced into the market. F300K combines the flame sensor and switching amplifier in one housing with an axial light emission opening. Detection of the flame (ON/OFF) takes place via its spectrum, intensity and frequency. Thus also in multi-burner applications the burner which is to be monitored can be reliably selected. Another useful feature for this task is the integrated self-learning

function of the F300K. It enables an exact adjustment between the flame which is monitored and the background fire and thus provides a maximum of selectivity and availability.

F300K provides an integrated flame sensor; three operating modes can be externally pre-selected, they are switchable during operation, digital detection and analysis of flame frequency is possible; self-learning function is also available. This new development by LAMTEC Leipzig is suited for almost all monitoring tasks in single and multi-burner applications. It is particularly well suited for applications in complex combustion plants, heating plants, and process combustion in chemical industries. It is suited for fuels such as oil, gas, dust, biomass, coal, and process gases. For different and varying application fields resp. fuel types, different types with IR or UV semiconductors with selected spectral ranges are available.

The compact flame monitoring system complies with IEC 61508 parts 1-7, is approved according to SIL3 and fulfills the requirements of directives DIN EN 230 for oil operation and DIN EN 298 for gas operation. F300K also complies with the Pressure Equipment Directive (97/23/EG), Gas Appliances Directive (90/396/EWG) and Atex Product Directive 94/9/EG for equipment group Ex-II. F300K is also UL approved.

F300K can be commissioned and operated without having to open the device. The high protection class IP67 for application in dusty and wet environments is thus fully retained at all times, even during commissioning.



LAMTEC Flame monitoring system F300K.

### User-friendly operation

In its standard version F300K is supplied with a LED display. An integrated User Interface with a symbol-oriented graphical display is optionally available. Via the display and with four buttons all settings can be adjusted via the menu in an intuitive way. Given the very heterogeneous expertise level of users worldwide, the logical and graphical display offers an enormous advantage. Commissioning and operation of this device is thus facilitated and fastened as users do not have to spend too much time familiarizing themselves with

The three externally pre-selectable operation modes can be parameterized individually and independently from each other. Switching between the individual operation modes can be done during operation. F300K has 14 graduated frequency ranges with two pre-selectable frequency bands with 7 frequency ranges each. Switching threshold can be continually adjusted in the entire signal range, in total 13 amplification levels can be preselected.



LAMTEC flame monitoring system F300K in action.

parameterization. Furthermore, LAMTEC Leipzig offers an external User Interface for the F300K, which can be utilized for mobile purposes or mounted as a stationary unit into an external control cabinet. In the User Interface, the parameter data can be saved and loaded into a spare device.



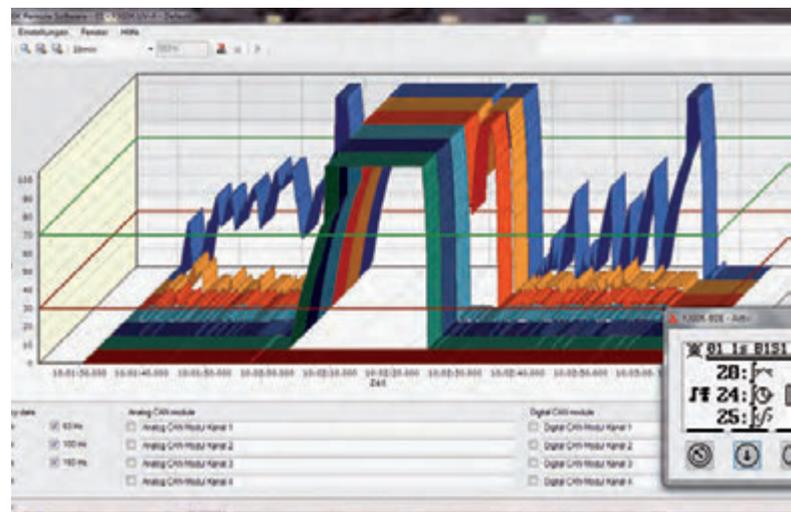
User Interface (operating unit) of F300K.

Via the internal FSB bus, up to 32 units of the F300K can be connected to each other. Every one of them is individually selectable and configurable via the User Interface. Communication to field and control level can be established via different field bus interfaces respective gateways.

### In-depth analysis via PC-Remote-Software

Selection and configuration of the individual flame monitoring system can be carried out via menu of the external User Interface. Alternatively, F300K Remote Software from LAMTEC can be utilized for management of parameter data, recording and graphical analysis of flame frequencies and for optimization of flame monitoring systems. With these optional tools LAMTEC Leipzig enters new paths in terms of in-depth analysis of flame frequencies. F300K remote software not only allows for a complete parameterization of devices, but also provides extensive analysis, data storing and recording functions. With the help of various simulations, users can also optimize online settings of the flame monitoring system.

#### Remote Parameterization, -Analysis, - Storage and Recording.



**3D Display Presentation of frequency bands for comprehensive visual analysis.**

3D Presentation of frequency bands allows a comprehensive visual analysis of measured flame data – important also for the possible clarification of plant-related faults. Analysis of the flame can be performed via two frequency bands with 14 frequency ranges in total. Whereas one frequency band covers the standard routines, the other frequency band covers low frequencies. Activating up to seven frequency ranges per frequency band ensures a reliable selection. Thus the flame monitoring system can be adjusted optimally to any individual combustion process.

Via optional FSB bus modules, up to four external analogue and/or digital data, for example burner-firing rate or fuel change can be recorded and represented graphically. The resulting data are synchronized and can be utilized as reference point for the analysis.

## Well positioned.

With F300K and all of its products, systems and services, LAMTEC Leipzig is well equipped for the future. The management-buy-out from the former Eastern European company has evolved into a know how intensive and service-oriented specialist provider with own production and development facilities, taking a leading role when it comes to cutting edge flame monitoring systems technology.



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