Flamonitec®
BFI AUTOMATION

Trend-setting
Ecology-minded
Innovative

Flame Monitoring & Evaluation Systems.
Be sure of a high availability.

The Flamonitec BFI -

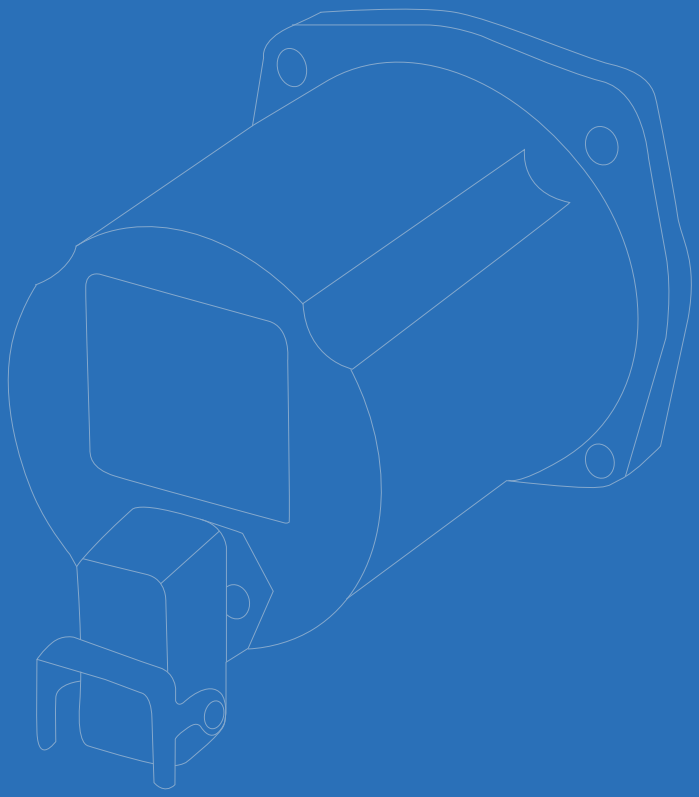
Innovations are created through teamwork!

BFI Automation Mindermann GmbH offers solutions for industrial flame monitoring. Through close cooperation and continuous exchange with our customers, we are always developing new systems and forward-looking technologies. Over the course of time, more than 20 patents have been applied for and granted. This has made BFI Automation Mindermann GmbH a market leader in the field of flame monitoring with representatives in over 20 countries worldwide.

Together with its sister company BST Solutions, BFI Automation forms the Mindermann Group and thus the only group offering flame monitoring from heating technology to industrial firing systems and large-scale power plants.

Reliable, safe and technologically at the highest level – this is what the Flamonitec brand stands for – worldwide!

FLAME **MONI**TORING **TEC**HNOLOGY



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We set the trends!

BFI Automation has set a number of innovative milestones in flame monitoring technology over the years:

- The first fully electronic Flame Scanner
- The first Compact Flame Controller for continuous operation
- Two-point sensors for sulphur recovery plants
- Definition of the current generation of Flame Monitoring Systems with the CFC 2000
- Artificial light detection
- Compact Flame Controller for heating technology with communication function
- Networking Compact Flame Controllers

Over 20 patents in the field of flame monitoring demonstrate what the Mindermann Group understands by innovation. These cover the entire spectrum of flame monitoring, from basic research, procedures right through to electronic circuits.

Environmental protection - count us in!

BFI Automation helps its customers realize resource-saving combustion processes through suitable measuring methods, new analysis techniques and a transparent presentation of individual flame characteristics. Some examples are explained below:

Fuels of the future H2 / NH3
The desired and progressive decarbonisation of combustion technology, such as the use of e.g. hydrogen H2 or NH3, requires very high standards for safe and reliable monitoring of combustion technology. In particular, the reliable detection of an almost invisible flame poses ever new challenges for sensor technology. We are ready for the future!

H2S combustion
The capacity of Claus plants can be exploited to the full even when using water steam. At Shell in Fawley (UK), for example, the Flame Scanner 7.0 led to a 40% increase in production.

Coal combustion
Even coal with high ash content can be reliably monitored with the CFC2000. At BALCO (India), valuable resources could be obtained by switching off the oil auxiliary burners, and this also saves the customer around 1 million euros every year.

Low NOX combustion
Combustion processes can be analysed much more accurately and thus controlled more precisely by providing additional data and measured values from the raw flame signal. In the Maasbracht power station, our flame monitoring made a key contribution to exploiting the burner control range of 70% with a simultaneous flue gas recirculation.

Waste incineration
Our radiation pyrometers have been providing valuable analog signals for the burn-out control in waste recycling plants for many years. Waste material is a fuel and should not be squandered.

Biomass combustion
BFI sensors set you up for the future. At essent, for example, the fuel in the Gertruidenberg (NL) power station could be converted to biomass without having to replace the Flame Monitoring System.

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Safety - is our priority

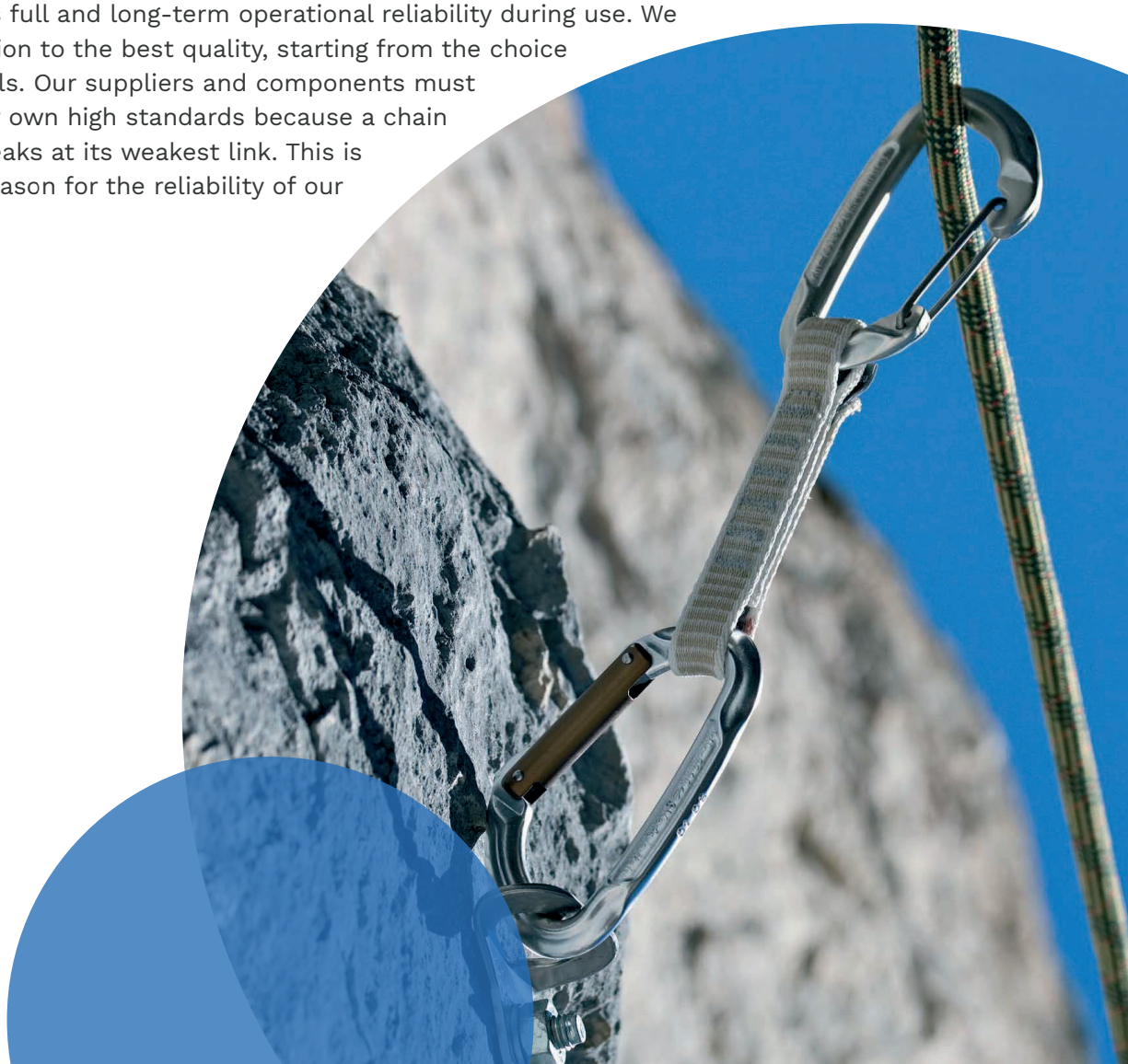
The growing demands on safety and increasing significance of environmental protection are posing new challenges for industrial plants.

The range of BFI products offers the right flame monitoring for every combustion process with all relevant safety certificates.

Thanks to their top quality and over-fulfilment of safety standards, BFI products help tackle these challenges appropriately. A good example is the fact that our System 3000 met today‘s SIL3 safety requirements more than 30 years ago.

Quality - for your satisfaction

BFI Automation pays particular attention to the complete testing of its devices before these are delivered to the customer. This guarantees our customers full and long-term operational reliability during use. We pay attention to the best quality, starting from the choice of materials. Our suppliers and components must satisfy our own high standards because a chain always breaks at its weakest link. This is another reason for the reliability of our products.



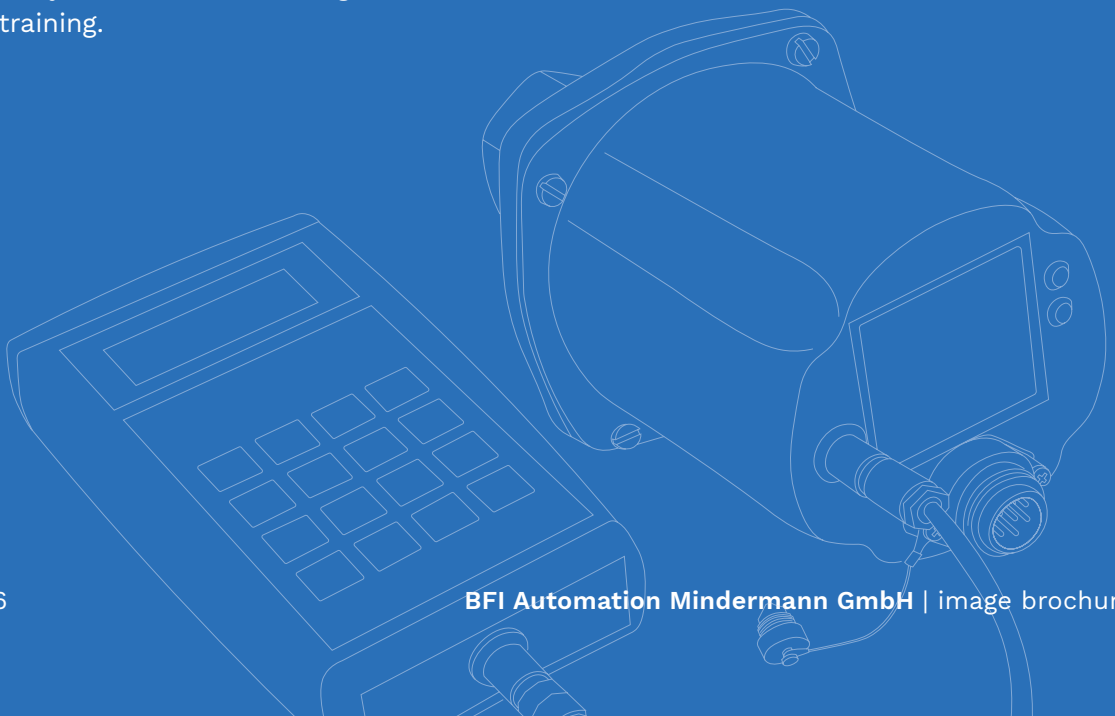
Development – head start through innovation

Development at BFI Automation is the hot bed of innovations in flame monitoring. We always aim to be a step ahead of the rest. But development goes far beyond the pure electronic realisation. Purposeful basic research still keeps coming up with new knowledge. We know that anyone who wants to strike out on new paths has to open new doors. Our many years of experience help us keep our eye on the practical benefits. Solutions to concrete problems have spurred us on as much as the fulfilment of customer wishes.

Our development engineers and technicians use professional equipment in their work, from a prototype miller through to their own EMC laboratory. The strict organisation and monitoring principle during development as well as the integration of certification offices guarantee the highest quality and safety from the very outset.

Service – you can rely on us

In order to keep a step ahead of the rest, BFI places great store in a trusting cooperation with customers - from the very first contact through to ongoing maintenance. BFI offers individual and flexible service by highly qualified engineers and technicians world-wide. They can be quickly consulted not just for commissioning and maintenance work but also for advice and training.



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Power stations

BFI Automation has been supplying power stations with flame monitoring systems since 1973.

All big name boiler and burner manufacturers inside and outside Germany are now amongst our esteemed customers. Our UV semiconductor sensors have revolutionised safeguarding against extraneous light, a very important aspect for multiple burner systems such as steam generators. Our systems have accompanied the development and use of reduced-emission, low-NOx burners in power stations from the very beginning.

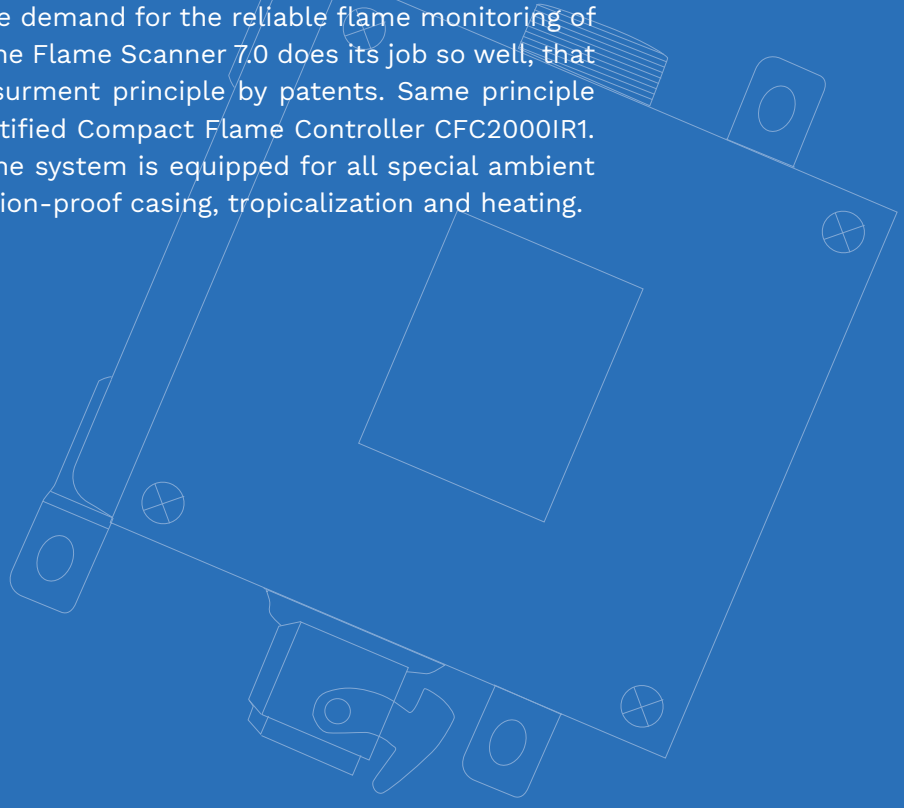
The latest generation of flame monitors gives the operating personnel a complete overview of the entire firing equipment thanks to the networking of sensors and graphic display of raw flame signals. An understanding of the interaction between the burner parameters and combustion process helps them control the firing equipment more precisely and detect faults in the flame patterns faster.

Industrial applications - for all dimensions

We are the only Flame Monitoring System manufacturer to cover the complete range from a household burner through to large-scale steam generators. Convince yourself of the advantages we have achieved by transferring our know-how between the various systems. The wide range of our flame monitoring systems always has the right solution for numerous industrial firing systems.

Petrochemical plants

BFI Automation supplies fuel-independent Flame Scanners for all combustion processes in a petrochemical plant such as sulphur recovery plants (Claus process), cracker furnaces, heat treatment, energy recovery, the combustion of sewage sludge, pesticides, contaminated waste gases and fluids, flues gases, oil tar and resins. The specially developed Flame Scanner for this task thus satisfies the demand for the reliable flame monitoring of variable fuel compositions. The Flame Scanner 7.0 does its job so well, that we have protected the measurment principle by patents. Same principle is available with our SIL3 certified Compact Flame Controller CFC2000IR1. It goes without saying that the system is equipped for all special ambient conditions through an explosion-proof casing, tropicalization and heating.



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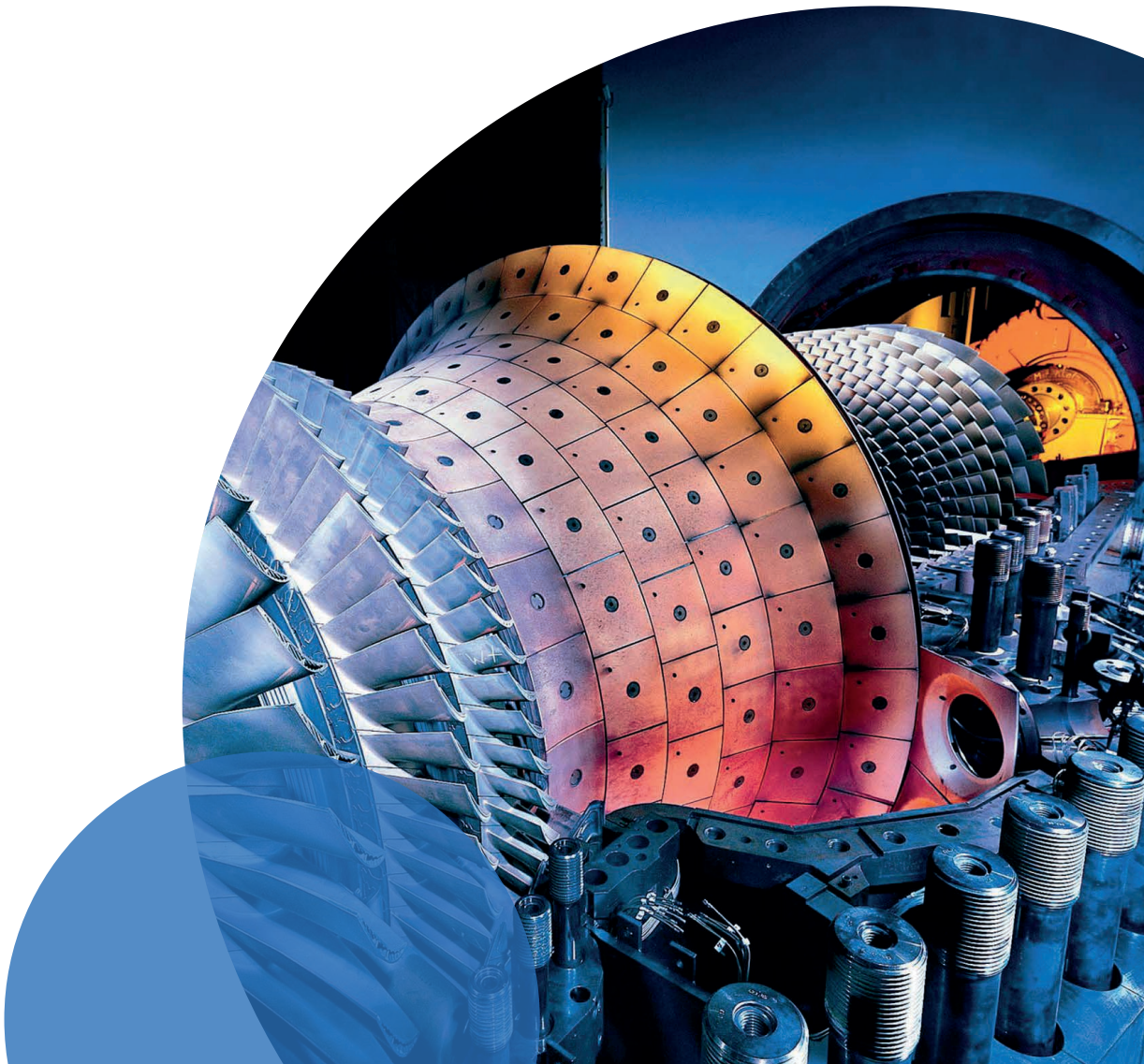
Gas turbines - safely monitored

As the world‘s leading manufacturer of Flame Monitoring Systems for gas turbines, we offer complete solutions with the highest quality and reliability.

The wide band Flame Scanner is fitted with a two-colour sensor and allows the separate adjustment of the UV and IR sensitivity. The automatic control is specially adapted to gas turbines and works reliably in all load ranges.

These technologies have been developed in close cooperation with manufacturers and operators of gas turbines and tested to keep their promise. Our fibre optic technology ensures that the maintenance-free Flame Monitoring Systems work in even the strongest of vibrations and at high ambient temperatures up to 400 degrees C/~750 degrees F.



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