Infrared Reflexions

The Infrared Measurement / Thermography Newsletter by InfraTec GmbH

Dear readers of the Infrared Reflexions,

You may have already noticed from the sticker that adorns our website and current publications:
This year marks the 25th anniversary of the InfraTec GmbH. On June 24th 2016 it was a quarter of a century ago that the InfraTec was registered in the commercial register. We have celebrated this anniversary with our workforce of about 200 and their families. In keeping with the motto „entirely in the family", we all treated ourselves to a day off that was concluded with a wonderful summer party. This provided ample opportunity to look back: on great challenges, efforts and successes, as well as on the defeats of the past. At the same time, it became apparent what unites that very first handful of employees with the enormous team of today. It is the passion to develop innovations and bring them onto the market for the benefit of our customers.

For this reason, we are particularly proud to be able to set a new highlight again in the worldwide market of thermographic cameras. Our flagship ImageIR® 10300 is opening up the door to Full HD thermography: with (1,920 × 1,536) IR pixels and 100 Hz frame rate, it is the first 3 Megapixel thermographic camera offered commercially. The newsletter presents it in more details and we hope you enjoy reading.

Sincerest greetings from Dresden,

Dr. Matthias Krauß
Managing Director

25 A PASSION FOR INNOVATION 1991 – 2016

In this issue:

NEWS

New top model of the ImageIR® series

In April 2016, InfraTec launched the ImageIR® 10300. It is the world's first radiometric camera for industry and science with a cooled FPA detector in the (1,920 × 1,536) IR pixels format. The world premiere at the SPIE Defence and Commercial Sensing in the US city of Baltimore as well as the first European-wide presentation at the Hanover trade fair attracted a great deal of interest among experts. Many expert visitors were impressed by the possibilities that thermographic images in Full HD format offer.

Thermography in compact form

Thermography workshops have been enhancing the events offered by InfraTec since 2016. Our experts present the product range within just a few hours and you can ask specific questions concerning your applications. Apart from the

workshops, there are also thermography user conferences and thermography roadshows. Here, the new developments of each year are always shown, among other things. You can find everything of significance concerning where and when at **appointments.infratec.eu.**

Reduced, clear and without flourish

InfraTec renews its appearance and with immediate effect operates under a newly designed logo. In comparison to its predecessor, the new signet has a considerably more modern, yet timeless look. It ties with the origins of the company and focuses on the characteristic combination of red and black. Thus, you can continue to recognise InfraTec at first glance.

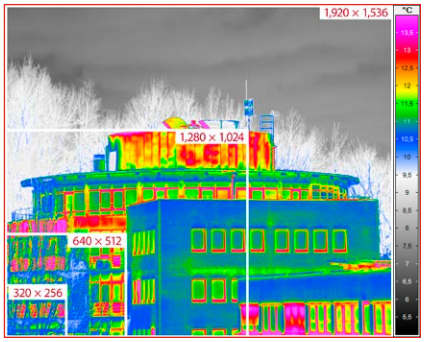
The pixel millionaire – Radiometric thermal imaging camera with the largest cooled detector for industry and science

The ImageIR® 10300, the top model of the high-end ImageIR® camera series, is setting new global standards. As the first radiometric thermal imaging camera for industry and science, it has a cooled FPA photon detector with (1,920 × 1,536) IR pixels. Thus, images in Full HD format will be possible. The results are thermograms with previously unknown image quality. Wherever very small structures need to be analysed on large-surface measurement objects, users save time, effort and thus costs by its use.

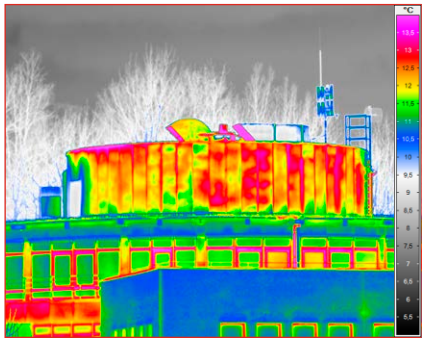
The latest innovation from InfraTec combines a large detector format with high image transmission speed. For despite its resolution of around 3 megapixels, the ImageIR® 10300 achieves a full frame transmission up to 100 Hz. In sub frame format the value even can be significantly exceeded. The 10 GigE interface, among other things, makes this possible. The speed of 10 Gbit/s allows the data to reach a computer ten times faster than with a conventional GigE interface. Thanks to modern fibre optic cables, the connection used for this is fully resistant towards electro-magnetic disturbances and can reach distances ranging from several metres up to ten kilometres.

An extensive range of light-intensive precision optics enables a broad range of applications and gives the camera outstanding thermal sensitivity.

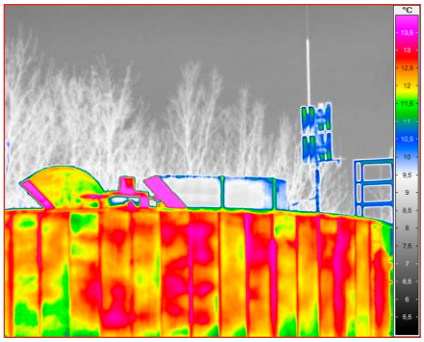
Thus, it is suitable for the most demanding measuring, testing and monitoring tasks.



ImageIR® 10300 with (1,920 × 1,536) IR pixels



1,8× digital magnification



3,4× digital magnification

With new camera models users gain even more choice for entry to the top series

The variety of models is expanding for the camera series VarioCAM® High Definition and ImageIR®. VarioCAM® HDx, an additional performance variant of uncooled microbolometer cameras, is aimed primarily at price-conscious users with universal measurement and inspection tasks. It includes the equipment lines „head" for stationary solutions as well as „inspect" and „research" for mobile applications. Apart from powerful detectors in the (640 × 480) format of IR pixels, the models with robust light metal housings, the 5.6"-TFT colour displays with (1,280 × 800) pixels and the integrated, very light-sensitive 8 MP digital camera are very convincing. This allows users to obtain a high-quality measuring instrument for mobile applications for less than 15,000 euros (plus VAT). The package includes, in tried-and-tested fashion, the first-class service of InfraTec as an experienced thermography specialist.

VarioCAM® HDx

ImageIR® 4300 / 7300

The camera series ImageIR® is progressing in an equally consistent manner. Two new models increase the range here. Whereas the ImageIR® 4300 has cooled FPA photon detectors in (320 × 256) IR pixels format, with the ImageIR® 7300 it is (640 × 512) IR pixels. In both cases, frame rates up to 530 Hz are reached. The temperature resolution of 0.02 K or 0.025 K represent the entry to thermography at high-end level. Users from industry and science will obtain an instrument for successfully solving even the most challenging tasks already from 45,100 euros (plus VAT).

Nyxus Bird opens up new dimensions for mobile investigation and remote sensing

Public authority operations such as observation, reconnaissance and rescue missions place high demands on mobile infrared imagers. Nyxus Bird, a multifunctional monitoring tool, is ideally suited for such versatile tasks. It is distinguished by an uncooled infrared detector in (640 × 480) IR pixels format, the thermal sensitivity of less than 0.08 K and the visual (7 × 40) monocular.

The military standard MIL-STD810F is complied with its robust, water and dustproof housing. Apart from the basic version, InfraTec offers a long-range version. This allows users to detect persons at a distance of more than four kilometres and cars at a distance of about seven kilometres. This is also why Nyxus Bird has proved to be successful with border guard programs in Eastern Europe and North Africa.

Remote sensing with the mobile infrared imager Nyxus Bird

Industry leader VarioCAM® High Definition reaches the next level

How worthwhile the continuous work on a development can be is demonstrated by the current detector generation of the camera series VarioCAM® High Definition. The success model among the professional and universal cameras with uncooled microbolometer detectors is gaining in performance as well. The thermal resolution at 30 °C has improved from previously 0.03 K to now 0.02 K.

With progress in terms of these central camera parameters, the range of applications of the cameras has expanded once again. In all situations where users want to record extremely low temperature differences they can benefit from the increased sensitivity of the detectors. A realistic scenario for this is offered by the professional analysis of building insulation facades. Even the functional test of electrical and electronic components, such as the analysis of power lines of a substation, is included here. The same applies to non-destructive testing. In all these applications, better thermal sensitivity means that anomalies as an indication of potential problems stand out much more clearly. The resulting thermograms are characterised by clear, noiseless images of even the smallest details and offer an essential gain in information.

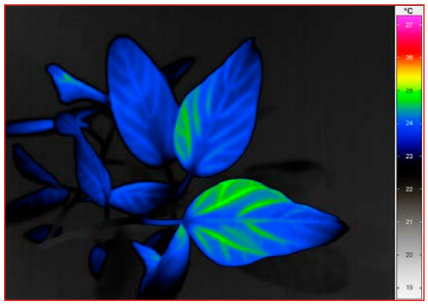


Illustration of a leaf with 0.03 K

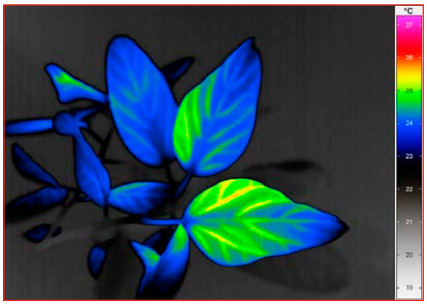


Illustration of the smallest details with 0.02 K

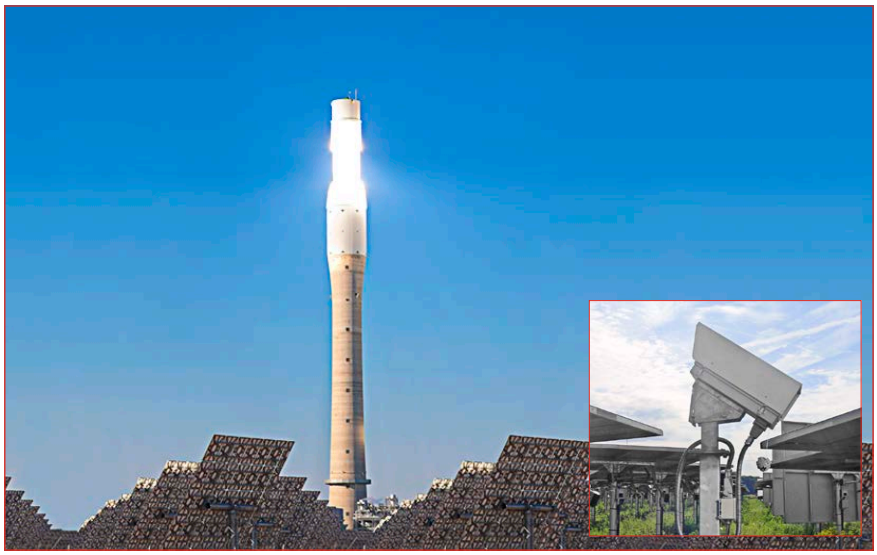
Comprehensive service as a recipe for success

A quarter of a century of InfraTec – this means more than just 25 years of selling thermography systems. Ever since the founding of InfraTec, the comprehensive customer service is one of the cornerstones of its policy.

We rigorously pursue this concept, constantly searching for improvements and new services for you. In the meantime, the warranty of up to 48 months on all new devices, the free 24 h service hotline at local rate and the technical support by our engineers are an established part of our service program. Strictly speaking, the service concept is already in our thermography systems. After all, their module character not only proves to be a benefit during the initial adjustment to your requirements. The flexible approach also pays off when you want to technically upgrade your cameras for additional tasks. We advise you on new accessory components or upgrade options, and you can test these on loan or integrate them into your existing solution easily and conveniently with our support. If the financing for this has not yet been decided, you will receive tailored concepts for further planning. Because that simply belongs to a good service.

Monitoring solar tower power plants automatically under extreme climatic conditions

In the Atacama Desert, one of the world's largest solar tower power plants is being built. In the future, Solar Power Tower Check (SPTC), the new thermography-based system for the solar tower power plant monitoring from InfraTec, will monitor the optimum heat distribution of the power plants absorber using a total of eight infrared cameras.



Solar tower power plant – Monitoring the optimum heat distribution using infrared cameras from InfraTec

The temperature is measured fully automatically without any interaction of an operator. SPTC warns independently if a defined threshold is exceeded and transfers the signals to the control system. This prevents failures due to overheating and saves potential maintenance costs. The extreme local environmental conditions require equipment with highly reliable components. A 19" main cabinet protects the robust industrial technology from wind, dust and almost continuous solar radiation during the day. Weatherproof protective housings safely shield the cameras.

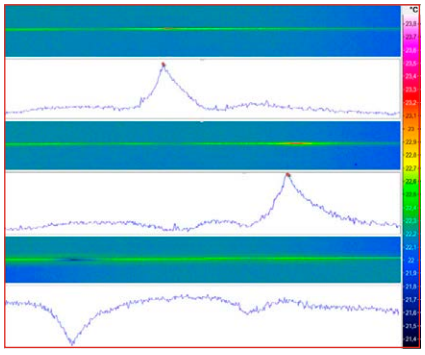
A specially designed telephoto lens enables the full format image reproduction of the absorber surfaces from very long measurement distances and protects the camera detector against damage caused by direct solar radiation. Typical for InfraTec, SPTC offers users a high degree of flexibility.

The thermal imaging cameras with the (2,048 × 1,536) IR pixels HD format, the industrial PCs as well as the alarm units can be installed decentralised. Fibre optic cables ensure transmission of the data with full resistance to electro-magnetic disturbances. Customers can adapt the system to their individual needs using the SPTC software and integrate it easily into the system environment of the respective solar tower power plants.

High-resolution high-speed thermography on nickel-titanium wires in tension test

Refrigerants often contain climate-damaging fluorocarbons nowadays. Scientists at the Centre for Mechatronics and Automation Technology at Saarland University are searching foralternatives and are researching, for example, ferroelastic cooling.

This form of cooling focuses on wires of a pseudo-elastic shape memory alloy based on nickel / titanium (NiTi). A mechanical load on the NiTi wires causes large, reversible deformations due to a stress-induced martensitic transformation. Stretching and relaxing of the wire are related to the discharge and supply of thermal energy. The researchers want to control parameters independently, such as frequency or phase shift between the mechanical stress and heat transfer. In addition, they want to measure the resulting cooling performance for a specific material and a specific device geometry.



Heating and cooling of a NiTi wire due to stretching and relaxing

An imaging measuring platform is used, which works with an ImageIR® 9300. The high-end thermal imaging camera is equipped with a 1× microscope lens and detects the wire to be measured, whose diameter is only approx. 150 µm. Exact thermographic temperature measurement even on longer wire sections is ensured through the geometric resolution of 15 µm. Thanks to the camera's (1,280 × 1,024) IR pixel detector, it is possible to monitor long parts of the tiny wire and to record structural changes. The high temporal resolution of the ImageIR® 9300 up to 106 Hz in full-image format also lets them follow even brief temperature changes.

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Imprint
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