

# Foreword

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## **Dear friends and partners of IKTS,**

We look back once again on a very successful year with continued healthy growth. Due to the still difficult introduction of SAP at Fraunhofer level, we do not have any final business figures at the time of the report, but we are expecting record levels: With a balanced operating result, our overall budget exceeded the €90 million mark. It is particularly gratifying that we were able to significantly increase our industry income to around 39 %, confirming our industrial relevance as prescribed by the Fraunhofer model. We were also once again able to invest more than €11 million in the continuous modernization of our equipment. This equipment and, above all, our excellent

IKTS team of experts will be happy to assist you in joint projects. Our expertise covers the entire value chain of technical ceramics up to the upscaling range and non-destructive testing technologies for process monitoring.

Despite the challenging political environment, which has led to some lack of planning certainty (e.g. by unexpectedly reducing federal funding in the battery sector), we see a stable earnings situation for the current year as well, with continued growth in industry income. We will remain true to our forward strategy this year, investing in our future technologies like never before. Energy and environmental technology will once again be an important focus. In particular, we will further develop the

production of green hydrogen and green synthesis gas. A pilot plant for the production of high-temperature electrolysis stacks is being set up at our site in Arnstadt as part of a major industrial project, which allows us to carry out further strategic projects for the development of electrolysis and fuel cell systems. We will also continue to develop our battery research consistently and, in addition to lithium-ion batteries, we will continue to focus on the topic of sodium batteries in particular.

We would also like to demonstrate our strong focus on sustainable energy technologies at our various sites. In Hermsdorf, we are committed to the development of the region, which is industrially shaped by numerous ceramic companies. With our support from the Thuringian Renewable Energies Network (ThEEN), a transformation concept for energy conversion has been developed in order to supply the companies with safe, affordable, emission-free energy in the long term. The planned implementation of the concept opens up opportunities for Fraunhofer IKTS to establish our new technologies for energy conversion and storage on a real-world laboratory scale. In Dresden, we are also working together with our Fraunhofer partner institutes at the Fraunhofer Institute Center Dresden (IZD) to develop an "energy campus concept".

Among the many diverse topics we deal with in the field of circular technologies and recycling, the topic of "water" plays a prominent role. A particularly good success in this area was achieved by Prof. Michael Stelter, who managed to secure a BMBF future cluster "ThWIC" (Thuringian Water Innovation Cluster) with a total amount of €45 million for 9 years.

I would also like to highlight the extension of our ceramic material characterization and component testing. We were able to expand our excellent equipment with the chemical analysis we have established at the Hermsdorf site. We are thus able to quantify the composition, doting, trace constituents and impurities of powders, suspensions and components through chemical digestion and optical emission spectroscopy. This plays a major role in the development of functional ceramics and in quality assurance in the production of ceramic components, among other things.

Furthermore, I would like to mention our two new spin-offs, of which we are proud and which underpin our orientation toward knowledge transfer: AMAREA Technology GmbH commercializes the multi-material jetting process (MMJ) developed by us in the field of 3D printing. Nicoustic AS is based on our ultrasonic technology and offers innovative solutions in the field of level determination of solids and liquids in pressure vessels, e.g. in the chemical industry.

Finally, I have some very sad news. On February 17, 2024, our founding director Prof. Waldemar Hermel passed away at the age of 86. Waldemar Hermel was extremely committed to the founding of IKTS in January 1992 and managed the institute very successfully until 2004. He set up IKTS excellently and put together an outstanding team from which we still benefit today. He and this team are responsible for initiating the IKTS success story. We as IKTS and I personally have a lot to thank him for. In addition to his scientific expertise, his human warmth and collegiality must be emphasized. He was an outstanding personality with excellent social skills. We will miss him very much.



*Reception on the occasion of the 80<sup>th</sup> birthday of IKTS founding director Prof. Waldemar Hermel. In the picture f.l.t.r.: his wife Gisela Hermel, Dr. Michael Zins, Dr. Christian Schubert, Prof. Alexander Michaelis, Dr. Gert Leitner, Claus Richter and Dr. Udo Gerlach.*

You can find more highlights and developing trends from our business divisions in this report.

On behalf of the entire IKTS team, I wish you a lot of fun perusing this report and some good ideas for projects. We are looking forward to our mutual cooperation.

Yours,

Alexander Michaelis  
April 2024