

Extract from the annual report 2013  
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## ISO COMPLIANT TURNKEY-SOLUTIONS FOR MEASURING NOX-DEGRADATION

Setting up a measuring station for testing equipment compliant with the relevant standards often involves an enormous effort on logistics and equipment. A large number of individual components must be brought together and tested before they can perform correctly and reliably as an ensemble. The Fraunhofer IST has recently become able to offer its customers ready-to-run total solutions, especially in the field of photocatalytic metrology.

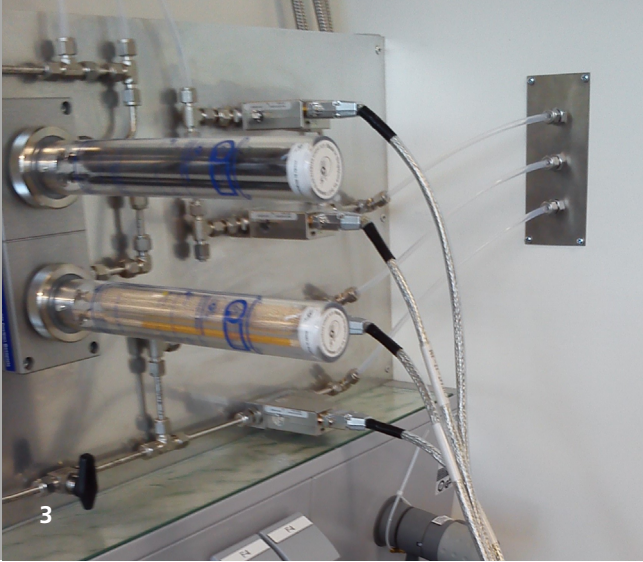
### Growing demand for photocatalysis products

Photocatalysis is one of the “enabling technologies” of the 21<sup>st</sup> century whose variety of products can preferably be further improved in a fast growing market by using new catalysts and tailored application methods. A current study conducted by BCC Research (the BCC Market Report on Photocatalysis, March 2010) estimates the global turnover of photocatalytically based products for 2014 at almost 1.3 thousand million euros with an annual growth rate of 14 %. At the same time the Association of German Engineers (VDI) assesses the market potential over the next two decades at several ten thousand millions of US dollars. Here more than 80 % of the global turnover is taken up by building products with antifouling, self-cleaning and air-cleaning properties. Examples include road surfacings, paths, sound-absorbing walls, tunnels and the internal and external façades of buildings.

### Photocatalytic air-cleaning at the Fraunhofer IST

In the field of air cleaning, ISO 22197-1 has come to be the leading testing and inspection standard for assessing the performance of photocatalytically active products. This test method is based on measuring the degradation of nitrogen monoxide (NO) in which a test body is placed inside a photoreactor through which NO flows, is activated by ultraviolet radiation and its air-cleaning performance determined from the net quantity of nitrogen oxide removed. Here the supply of test gas and zero gas, the pollutant analyzer as well as the light source, wavelength and radiation intensity are defined as also the arrangement of the test body in the photoreactor or the photoreactor itself.

The Fraunhofer IST has developed a flat-bed reactor of modular design with which samples measuring up to



200x100x20 mm (wxdxh) can be measured in compliance with the relevant standards. The principle influencing factors such as irradiance, gas flow rate, temperature and air humidity can be set in a defined manner, not only in the periphery but also in the reactor itself, and these quantities continuously measured. In addition, the Fraunhofer IST foresightful sees the very latest LED technology being used in the future—all requirements of the upcoming CEN specifications for the irradiation conditions for testing photocatalytic properties (CEN/TS 16599) have therefore already been satisfied today.

### **What we can offer**

The Fraunhofer IST offers a ready-to-run total solution for measuring NO degradation in compliance with the relevant standards. Taking into consideration the special requirements of the customer a comprehensive installation plan is first drawn up. All of the components required are selected, procured and subjected to function testing in the IST's own laboratories. The complete measuring station is then transported to the customer and the technical acceptance procedure carried out.

**1** *Individually configured gas panel with filter towers and mass-flow controllers.*

**2** *Measuring station with PC and analytical equipment (benchtop version).*

**3** *Control panel with flat-bed reactor and ultraviolet radiation source.*

## **CONTACT**

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