Early Stage Researcher / PhD Position (f/m)  
as part of European Innovative Training Network  
Smart Tomographic Sensors for Advanced Industrial Process Control (TOMOCON)  

**Topic:** Microwave drying of porous products with novel tomography-assisted moisture control  
**Vacancy number:** TOMOCON-ESR7

The European Marie-Sklodowska-Curie Innovative Training Network TOMOCON joins 12 international academic institutions and 15 industry partners. We work together in the emerging field of industrial process control using smart tomographic sensors. The network will lay the scientific and technological fundamentals of integrating imaging sensors into industrial processes and will demonstrate its functional feasibility on lab and pilot-scale applications. Our doctoral (Ph.D.) students will get a broad insight and will be trained in the different areas of process tomography hardware, software and algorithms, control systems theory and design, industrial process design, multi-physics modelling and simulation, human-computer interaction, and massive parallel data processing. More information about the network and all open positions can be found on our web page [www.tomocon.eu](http://www.tomocon.eu).

Within TOMOCON we seek excellent open-minded persons with high team-spirit who want to get the chance for a unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the TOMOCON network we offer the following position as doctoral (Ph.D.) student at KIT:

**Microwave drying of porous products with novel tomography-assisted moisture control**  
**Reference number:** TOMOCON-ESR7

Microwave heating technologies allow for efficient drying processes of porous products. Today, empirical methods, without knowing neither the initial nor the progressing moisture distribution, are used to optimize the process parameters.

The Ph.D. student will assess and develop novel concepts for inline tomography measurements. Target is the development of concepts showing the best possible performance in the measurement of the moisture distribution, and, at the same time, showing the lowest kind of electromagnetic interference with the high-power microwave heating system. The research work includes detailed theoretical studies on possible antenna/receiver concepts for microwave tomography measurements using 3D simulation tools. Starting from specific examples of drying processes a generalized method for dielectric characterization of porous materials as a function of the temperature and the moisture content shall be developed. Concepts shall be prepared for a suitable human-machine interface. Final target is to implement and validate the most promising concept in a continuous microwave assisted drying process in strong collaboration with the other scientific and industrial partners in the project. The Ph.D. candidate will spend several different secondments of about eight months in total for scientific and technical trainings at University of Eastern Finland, Chalmers University of Technology (Sweden), NETRIX (Poland) and Vötsch Industrietechnik (Germany).
The applicant will apply for and will finally receive his/her doctoral (Dr.-Ing.) degree in Electrical Engineering and Information Technology from the faculty of Electrical Engineering and Information Technology (ETIT) at the Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany.

Requirements

• University graduation (M.Sc.) in Electrical Engineering and Information Technology or related field.
• Proven knowledge in microwave technology and microwave measurements techniques.
• Strong interest in an interdisciplinary scientific work within an international environment.
• Good proficiency in English language.

Starting Date: 01 March 2018

Contract: Full-time contract for 36 months

Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are country-specific and depend on individual factors and will be confirmed upon appointment.

Information: Dr. Guido Link (Email: guido.link@kit.edu) or Prof. Dr.-Ing. John Jelonnek (Email: john.jelonnek@kit.edu) - Primary Supervisor

Application: Please submit your application (cover letter, CV, certificates) to the Primary Supervisor with indication of the position reference number TOMOCON-ESR7.

DEADLINE 25 October 2017

Eligibility: The candidate recruited in the TOMOCON project must be Early-Stage Researcher (ESR) and undertake transnational mobility (secondments, trainings, conferences). The candidate must be in the first four years from the date when the researcher obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). It will be counted backward from the date of recruitment (in this case 01.03.2018). No doctoral degree has been awarded during these four years. The candidate can be of any nationality. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

For further information please visit: http://www.tomocon.eu/