

## Mag. DI Dr. Brigitte Bach

In this interviews we talked to Dr. Mag. Brigitte Bach MSc, Head of the Energy Department of the AIT Austrian Institute of Technology.

The research focus of the department is in the fields of "electrical energy infrastructure" and "energy for the built environment". In a holistic, interdisciplinary approach, solutions for the environmentally friendly power supply, heating and air conditioning of tomorrow's buildings and cities will be developed here. The Energy Department consists of 127 employees (as well as 25 freelancers) in the fields of architecture, construction engineering, mechanical engineering, electrical engineering, physics and mathematics. The employees of the multicultural interdisciplinary team are from Austria, Germany, France, Serbia, Italy, Sweden, Brazil, Croatia, Slovakia, Syria, China.

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### **How do you assess the domestic research landscape in the areas of renewable energy technologies and energy distribution as a whole?**

Austria has a very long and stable tradition in the field of energy research. There is profound knowledge, which is evident in many sectors. But the organizational units that carry out research are usually relatively small, so small that it is difficult to see Europe and the world. The AIT Austrian Institute of Technology is set up in such a way that a critical mass is created in the field of energy research, which is relevant for Europe in specific areas - for example the "electrical energy infrastructure" and the topic "energy for the built environment" can be. Especially in the areas of electrical networks and smart cities, AIT is very visible in Europe.

With some universities or institutes, there are already good partnerships, which are planned for several years, which joint projects, publications and diploma theses are created and what impact can be achieved with them. We want to create a win-win situation so that the universities are connected on the one hand to interesting, internationally-oriented projects and the AIT on the other hand to the university's know-how. The AIT, the largest non-university research institution, is also trying to build a bridge between university research and industry, thereby strengthening Austria as a location.

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### **What is the focus of the Energy Departments? Will this focus change in the next five to ten years due to the pronounced dynamics of environmental technology?**

The orientation in our two main research areas - electrical energy infrastructure and energy for the built environment - is very stable. This focus will be maintained for a long time. However, one has to develop constantly, if one is researching at the top and co-shaping topics. When a topic finds its way into the industrial implementation, the AIT lets go of this topic and tackles other topics.

Important future issues that AIT faces, including in the context of smart cities, are how to integrate technologies that are tried and tested on a small scale, optimally integrated into the overall urban system.

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### **How is the research results of the AIT tested in practice?**

There is a close cooperation between the AIT and the industry. The AIT plays a central role in the Austrian innovation system. As a result of the public funding that the AIT receives, great challenges such as the mitigation of climate change by reduction of e.g. CO2 emissions research. Large trends are recognized and the opportunities for Austrian companies are identified. Internal method concepts are developed and then implemented and managed by principals in industry, public institutions or other research partners in co-financed or contract projects.

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### **How important do you consider the research activities in companies themselves?**

In principle, there is in-house research in this sector. This is not only crucial for innovations in the company but also necessary to be connected to university or non-university research at all. In some areas, internal research should be promoted. Together with universities and the AIT, industrial research is important to gain access to new markets.

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### **Do you see a difference in the research environment between the areas of renewable energy technologies, energy distribution, etc. and the other Austrian research landscape?**

The energy research area is not better or worse than other research areas. But the energy question is a central question of this century. The urgency of the policy is high, but this is not always one-on-one in innovation. There are potentials for new concepts, methods and products, the question is whether we can use them.

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### **Are there any technological leaps in the environmentally friendly generation of electricity or in the efficient distribution of electricity over the next five years?**

The next major leaps in technology are - particularly in the network and smart-cities - in system integration, especially in the application of new methods for better integration. Consciousness towards system integration is growing slowly; in the past, only individual technologies were developed. Large technological leaps in individual components, e.g. PV modules or heat exchangers are certainly also possible, but will probably only occur later. However, there is a significant interaction between the system integration and component development issues. If, for example, significantly better PV modules were developed, the system would have to adapt itself to these changes.

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### **How do you rate the national and international technology development in the areas examined by the Energy Department in the next 10 years? What role will research play in a wide range of areas?**

If we want to assert Austria as a technology center - and energy technologies are certainly an issue where this is possible - then a continuous and accelerated expansion of research and innovation is needed. The opportunity in these areas is great. Now it's about networking and really driving research.

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**Do you see more potential for reducing greenhouse gas emissions in Austria in the increase in energy efficiency or in the generation of energy from regenerative energy sources?**

Technology development must be advanced in all areas. Neither the global competition nor the climate change allow one to dispense with one of the two areas. A very bulky area in Europe, which is behind the expectations in terms of energy efficiency, is the renovation of buildings. There is still a lot in terms of CO2 emissions reduction.

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**In which areas of technology do you see niches in which domestic companies can or should become market leaders in the future?**

Austrian companies are already very good in some areas. However, the full impact of the energy transformation process in Europe is not so transparent to SMEs as they can not deal with these developments on a daily basis. It is very difficult to stay on the ball and to work out trends and recent developments. There is a gap between what is clearly discussed at the European level and what stakeholders, ie potential companies, who are interested in it, know and perceive. It would be helpful to bring the discussion to the public in such a way that entrepreneurship is encouraged and companies are given information in a timely manner. This is challenging due to the breadth of the sector. In order to position a company strategically, the Europe-wide long-term policy is crucial, not the current policy, which is more short-term oriented. Trends of 10-15 years must be recorded so that a company can set up accordingly. This can lead to a series of niches for domestic companies.

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**Which environmental technology fields do you think have the highest potential future potential for domestic enterprises in the national and international market?**

It is clear that there are potentials for Austrian companies in many areas, which should also be used. But it needs a very honest, ambitious discourse with many stakeholders in order to create transparency and to react in the sense of innovation and entrepreneurship.

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**Who is the driver behind the positive development of the environmental industry?**

For a positive development is not only a driver relevant, it needs a favorable constellation. The AIT and other research facilities at the beginning of the chain certainly play an important role because excellent research can generate impact and then take companies along the path of innovation. However, companies need to have capacities and an understanding of research and to be interested in positioning them. In addition, the public sector needs to create a framework. Then it needs a positive perception in the society, which recognizes that we want to be a technology location, to ultimately agree that tax money is spent on these areas. This path was started with the restructuring of the AIT, with the creation of large research units, which are European and internationally visible. There are numerous domestic companies that

go with us this way. But there is a need for a continuous strategic discourse on a very high level to decide where Austria is to develop. This discourse is also a political one, but it should be conducted primarily on a strategic level. Several stakeholders need to consider this process as useful to start it.

## **Frau Mag.<sup>a</sup> DI Dr.in Brigitte Bach**

MSc ist Leiterin des Energy Departements des AIT Austria Institute of Technology



**1992:** Abschluss des Doktratsstudiums der technischen Physik an der Technischen Universität Wien; anschließend postgraduales Studium in "Management Development and Communication" an der Donauuniversität Krems

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Brigitte Bach ist Mitglied

- des Unirates der Technischen Universität Graz
- der FP7 Advisory Group on Energy der Europäischen Kommission
- des EERA (European Energy Research Alliance) Executive Committee
- sowie Koordinatorin des Joint Programme Smart Cities

Im Herbst 2009 wurde Brigitte Bach der Preis „Österreicherin des Jahres 2009“ in der Kategorie „Forschung“ verliehen

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