An interview with Prof. Bernd Meyer in the leading newspaper for the chemical industry in China

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Interview with Prof. Meyer

On 27th February 2019, an interview with Prof. Dr.-Ing. Bernd Meyer was published on the first page of the leading Chinese newspaper for the chemical industry "China Chemical Industry News".

"Prof. Meyer is the Director of the Institute of Energy Process Engineering and Chemical Engineering (IEC), TU Bergakademie Freiberg and Head of Business Unit Chemical Transformation Processes at the Fraunhofer Institute for Microstructure of Materials and Systems (IMWS) in Germany. He has been awarded the accolade as Distinguished Scientist by the Chinese Academy of Sciences (CAS) as part of its CAS President's International Felloship (PIFI) Program. This award recognizes his status as a leading international expert in the field of gasification and his international engagement in promoting sustainable carbon utilization and the transformation from a linear to circular carbon economy. During the interview, Prof. Meyer discussed with Mr. Junrong Yan from the "China Chemical Industry News" about how the cooperation on coal gasification technologies should have a strategic and long-term view.

Interview translation from Chinese into English:

In the course of his career at TU Bergakademie Freiberg in Germany, Professor Bernd Meyer has published more than 250 academic papers and given plenary presentations at more than 60 international conferences. Not only does he have over 100 patents in fixed-bed, fluidized-bed and entrained-flow technologies, he is also the scientific leader of over 20 projects focusing on coal gasification over the last 5 years. Prof. Meyer has visited China plenty times for technical exchanges and collaboration discussions with industry and science in the fields of carbon conversion technologies. In 2018, he was honored with the International Distinguished Scholar Award by the Chinese Academy of Sciences (CAS) under its International Talents Program.

"Frankly speaking, based on my personal experience, the cooperation between foreign institutes and Chinese companies is relatively difficult. In our conversations, most Chinese companies are not looking for strategic cooperation or focusing on developing technologies. Instead, they are committed to chasing projects, building factories, and looking for immediate results. They usually ask the following questions: What can you do with your technology? Can it bring profit in the near future? How much does it cost? They hope the technology is well developed already and it must be effective within 3 to 4 years. This is too ambitious!" Prof. Meyer pointed out that the development of a technology usually takes between 5 to 10 years. His institute – the Institute for Energy Process Engineering and Chemical Engineering at the TU Bergakademie Freiberg in Germany – focuses on various issues relating to the transition from a linear to circular carbon economy. The emphasis is on achieving sustainable conversion of carbon resources via syngas production, pyrolysis and synthesis technology. The research goal is to develop solutions for long-term problems.

For example, urban waste management is one future development which can be carried out with gasification technologies. Professor Meyer suggests a step-by-step approach. First, a city is selected to be a model city for this development. Second, an international task force consisting of Chinese and German experts, government officials, waste management and gasification companies etc. is set up. Third, the task force will develop a concept for the model city and propose goals and milestones for next 10 to 20 years. Such goals can be resolved into a number of small goals. Problems encountered along the way should be addressed step-by-step with the help of the research institute. For example, with the model city, it would be possible to carry out long-term investigation of waste characteristics, support the development of required economic frameworks and incentives for gasification companies, and support decision-making regarding whether to produce synthesis gas or synthetic natural gas.

Professor Meyer also shared his opinions and insights regarding the current status of the worldwide coal gasification technologies.

For entrained flow gasification, it is very challenging to have new innovations. However, optimization is ongoing and there are three trends in the development. The first trend is scaling-up gasifier capacity and increasing gasifier pressures. The scaling-up is going in the direction of increased feeding capacity of 4000 - 5000 tpd. The greater pressure focuses on an increase from 4.0 MPa to 6.5 MPa to reduce operating costs. The second trend is to improve the efficiency of carbon conversion. Focus is on increasing carbon conversion rate from 93% - 95% to 98% - 99% so that ash quality can achieve a glassy state. The third trend is feedstock diversification. For example, Reliance Industries Limited in India is constructing the largest petroleum coke gasification project in the world.

In terms of fluidized gasification, there are many innovations and breakthroughs due to the different gasification routes, especially for the utilization of feedstock with higher reactivity (e.g. waste). For example, ENERKEM in Canada has built the Edmonton waste disposal and gasification plant. AkzoNobel is considering to use ENERKEM's fluidized gasification technology to dispose plastic waste in the Netherlands. Ebara in Japan also uses the fluidized-bed technology for waste gasification. However, the use of this type of gasification technology for waste gasification also has disadvantages due to the low pressure operation (1.0 MPa) mode, which requires high investment for waste treatment for feeding into the gasifier.

For fixed-bed gasification, there is also a development towards larger-scale to reduce costs. Among the two existing fixed-bed gasification processes, fixed-bed dry ash (such as Lurgi gasifier) are becoming larger-scale, and have made progress in reducing their demand for clean waste and discharge of waste water. The other fixed-bed gasification technology is the slagging-bath gasifier. Our institute has completed our pilot test operation and achieved diversification of feedstock and products. Not only is it possible to utilize different feedstock, a wide spectrum of products can also be achieved. Furthermore, this technology has minimal impact on the environment due to its complete carbon conversion.

Article in China Chemical Industry News

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