

System Engineering: Production technology for the factory of the future

thyssenkrupp System Engineering is an international partner to the automotive industry. With over 4,300 employees in 14 countries the company offers engineering solutions, prototyping, tooling, body assembly lines, and test and final assembly systems. It also provides automation solutions for the production of batteries and motors for electric and hybrid cars. With its Global Service package the company supports its customers around the world throughout the lifecycle of its products. In the 2015/16 fiscal year thyssenkrupp System Engineering generated sales of around one billion euros.

Battery industry – a wealth of expertise for the market of the future

For battery production System Engineering combines proven automotive manufacturing processes with expertise from the battery and battery cell industry. The batteries of the four best-selling electric cars are made on lines from thyssenkrupp. To date thyssenkrupp System Engineering has executed 14 battery projects around the world. For example, BMW manufactures the batteries for the i3 using equipment supplied by the engineering experts from thyssenkrupp's Industrial Solutions business area.

thyssenkrupp System Engineering designs and builds lines for the production of cells, modules and battery packs. The focus is on optimum value added and cost efficiency combined with high reliability, flexibility and quality.

Batteries have more impact on the quality and price of an electric car than almost any other component, so System Engineering works intensively to improve their production technology. Experts estimate that batteries account for more than a third of the added value of an electric car. In addition to cost, the battery also determines the range and lifetime of an electric vehicle, which are key quality criteria.

So in addition to its battery production facility in Hohenstein-Ernstthal the company has also established a dedicated development center in the eastern German town of Pleiße. One of the research projects being carried out there is a collaborative venture with the Fraunhofer Society and the engineering company IAV (IAV GmbH Ingenieurgesellschaft Auto und Verkehr). Together the partners are developing a new generation of cells with a revolutionary design. Instead of lots of separate cells with complex interconnections, cars will be powered in the future by a large sandwich structure. The sandwich design not only saves space, it also greatly reduces the need for costly connections. The consortium aims

to limit manufacturing costs to 200 euros per kilowatt hour. By way of comparison, average costs today are roughly 300 euros. The new battery will provide a range of up to 1,000 kilometers – more than double the best models currently available. In this consortium thyssenkrupp is focused on developing the production technology.

September 5, 2017

Page 2/2