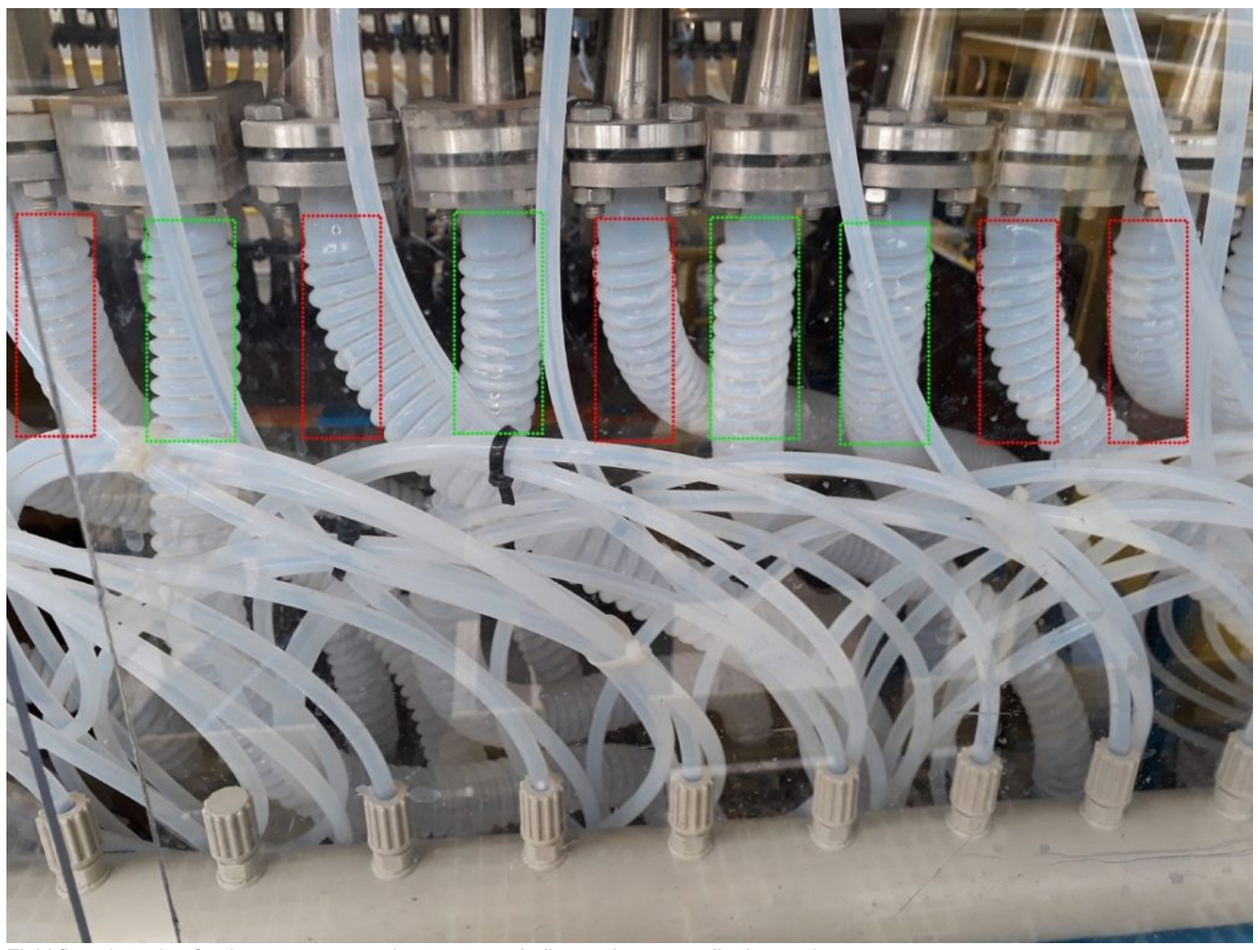
thyssenkrupp drives digitalisation

July 22nd, 2019

Digitalisation, propelled by the 4th Industrial Revolution, holds the key to unlocking enormous opportunities and growth for various engineering companies.

Recognising the role of digital technology for sustainability, thyssenkrupp is constantly looking at new and innovative ways to embrace the digital age. #hack4tk, hosted annually by thyssenkrupp AG in Essen, Germany, is a game-changing initiative that maximises digital potential by fostering creative thinking and innovation and inspiring participants to solve complex challenges utilising digital technology.

When Andrew Gotora, an engineering programmer at thyssenkrupp Industrial Solutions South Africa (tkISSA) who has a passion for all things digital, heard about the hackathon, he saw an opportunity to not only demonstrate how digital technology can be used to solve a challenge but also utilise digital technology to partake in the hackathon remotely. Gotora assembled a five-member South African debutant team that walked away with an innovations award.



Fluid flow detection for the autonomous plant start-up challenge. Image credit: thyssenkrupp

The gruelling 24-hour competition which took place on 3 and 4 July 2019, welcomed individuals from all corners of the world, both from within and outside of thyssenkrupp, who believe that they have what it takes to find a solution to these challenges. The participants bring their bright minds and fresh ideas, untainted by pre-conceived notions of how things should be done. These outside-the-box thinkers have the capabilities to develop innovative and ground-breaking solutions that have the potential to provide thyssenkrupp with a breakthrough for that competitive edge.

Gotora's team consisted of one German and five locally-based coding enthusiasts with expertise in the fields of engineering, artificial intelligence (AI), computer vision and data science. Out of the ten hackathon challenges, the team selected both the 'Chatbot virtual service assistant' and 'Autonomous plant start-up' challenges and they split their team into two groups, with three team members working on each challenge.

The 'autonomous plant start-up' challenge which was derived from a water electrolysis plant in Germany, captivated Gotora and his team. He explains that they immediately recognised that automation was the link between the challenge and a similar tkISSA digital project, Liquid Fuel Storage (LFS). "The autonomous plant start-up challenge closely resembles LFS, an automated engineering solution that is part of tkISSA's digital migration."

The water electrolysis technology delivers 'green' hydrogen, a clean, CO_2-free energy carrier, by splitting water into hydrogen and oxygen. The only inputs needed are water and renewable electricity from wind, hydro power or photovoltaics. Prior to plant start-up, technicians are currently sent out to manually check if there is water flowing out of electrolysis cells. Gotora points out that if there is no water in the cells during plant start-up, the electrolysis cells will get damaged. The challenge was to automate the checking process as well as the plant start-up.

With members working from the thyssenkrupp Johannesburg office and the thyssenkrupp AG office in Germany, the forward-thinking trio successfully used the internet and a variety of digital platforms including social media to solve the challenge. Using a computer, a camera and software, Gotora and his team automated the detection of fluid flow. Once the system has detected and confirmed fluid flow out of all the cells, the plant automatically starts up. However, in the event of no fluid or flow, the system alerts the technician.

Expressing his gratitude to his team for their hard work and determination over those intense 24-hours, Gotora says that it was leveraging on digital technology that made the winning solution possible. "Providing a solution remotely and in real time to an engineering challenge that is 8 440km away, using digital technology is a perfect demonstration of digitised engineering," notes Gotora. He emphasises that companies that provide innovative, effective and efficient customer-centric solutions will see a continued growth and sustainability in this digitised age. tkISSA is moving on to a digital engineering model that combines its classical engineering expertise with digital technology to develop new services and solutions that meet changing business and market requirements.

"Sihalalisela (congratulations) South African hackathon team!" says thyssenkrupp Industrial Solutions South Africa CEO, Sub-Saharan Africa, Philipp Nellessen, who affirms the company's ongoing dedication to embracing digital technology to the benefit of not only South Africa but also the rest of Africa.