

## WIRELESS INFRASTRUCTURE MONITORING

### HMA Geotechnical solution for Greenfield ammonia plant in Indonesia

HMA Geotechnical has supplied its Wisenmeshnet® wireless infrastructure monitoring system for one of the largest industrial projects in Eastern Indonesia. This is the first time that this system, intended mainly for mining and civil engineering, has been adapted successfully for such an application.



PT Panca Amara Utama (PAU) is a 700 000 million ton per annum (MTPA), US\$830 million greenfield ammonia plant in the Batui District, Banggai Regency, Central Sulawesi in Indonesia. The project represents a commitment to prioritise local manufacturing to convert the country's natural resources into industrial products.

As such, it supports the development of the manufacturing sector in Eastern Indonesia. PAU is the first ammonia plant in Sulawesi, and the second privately-owned plant in Indonesia. Ammonia is a chemical compound used in the manufacture of fertiliser, explosives, acids and other petrochemical products. PAU is a subsidiary of Surya Esa Perkasa (SEP), Indonesia's only listed LPG refiner.

The ammonia plant itself is based on a reforming exchanger system and purifier technology developed specifically for ammonia production. This places Indonesia at the forefront of this industry.

The project commenced construction in 2015 and was commissioned in December 2018. HMA Geotechnical supplied the wireless infrastructure monitoring system in 2019, with commissioning and installation completed last year.

Wireless mesh networks such as Wisenmeshnet® connect entire datalogging systems easily, effectively,



and wirelessly, using inexpensive technology currently available. Traditional networks rely on a small number of wired access points or wireless hotspots to connect users.

On the other hand, in a wireless mesh network, the network connect is spread out among dozens or even hundreds of wireless mesh nodes that communicate with each other, thereby sharing the network connection across a large area.

The design of the system lends itself to the rapid development of new interfaces, as the designed wireless module is common across the product range. Over 100 nodes can talk communicate with a single gateway, meaning that a large number of sensors can be placed in a relatively small area.

In addition, HMA Geotechnical supplied the 4500 Series vibrating wire piezometers and pressure transducers from Geokon to measure soil pore pressure. Features include a hi-tech sensor component for reliability and rapid response, high accuracy and resolution, a construction that is hermetically sealed and easy automation for long-term monitoring.

# Case Study



For this specific project and application the Geokon products had to be manufactured from Inconel®, a family of austenitic nickel-chromium-based superalloys. Inconel® alloys are oxidation-corrosion-resistant materials ideal for extreme environments in terms of pressure and heat, explains HMA Geotechnical Operations Manager Craig Bruce, who is based in Australia.

The HMA Jakarta office is overseen by Muhammad Iqbal and Jhon Halim, who were instrumental in coordinating this challenging project. The Geokon products were sourced from the US, while the Wisenmeshnet® system was supplied from Australia. The use of Inconel®, combined with the application of low-pressure seawater-level monitoring, was unique.



HMA Geotechnical is a division of the HMA Group. Its extensive portfolio and expertise is based on providing products and solutions for geotechnical, mining and structural engineering applications. These range from pressure monitoring to stress monitoring, displacement monitoring, inclination monitoring, datalogging and telemetry communication systems, and project management and turnkey services.

HMA Geotechnical not only supplied and oversaw the installation, it also assisted with instrument selection and data acquisition. The Jakarta team worked closely with the PAU engineering team to optimise the best solution possible given the timeframe.



For more information Wisenmeshnet sensor network refer to HMA datasheet GEO-DS-0058