SECTOR: **BIOENERGY**
(Biogas plant power generation)

TANDELTA
Oil Condition Monitoring

Tan Delta creates game-changing biogas plant efficiencies

Key Business Benefits

FINANCIAL

OIL USAGE: 70 litres per oil change

OIL PRICE: ~3.60 EUR/litre

COST PER OIL CHANGE (OIL ONLY): 252 EUR

SAVINGS PER YEAR/ENGINE: 2,772 EUR

ROI of just 5 months

OPERATIONAL

Reduced downtime

Oil life safely extended from 16 to 32 days *(Achievable future target 41 days)*

Advance warning of feed mix problems

ENVIRONMENTAL

1540 litres of oil saved p/a

ESG

ADBA MEMBERS

WBA MEMBER

BACKGROUND

Schempp, a leading European agricultural operator, oversees a medium scale mixed farm of 140 acres in Pfullendorf on Lake Constance in the Linzgau, southern Germany. Alongside livestock farming, there is crop cultivation of corn, sugar beet and grain (whole crop silage), which are used as feedstock for a twin-engined biogas plant. The two MAN gas engines are of different ages and both operate at 1500rpm, producing green electricity from the biogas output. The engines are the mainstay of the plant's ability to produce 9000 KWh per day of renewable power, and must be kept running as much as possible for maximum plant efficiency.

THE CHALLENGE

Schempp encountered a significant challenge with frequent oil changes, adhering strictly to the original equipment manufacturer's (OEM's) oil change recommendation of every 400 hours. While both engines' capacity is only 70 litres each - which is relatively small in the world of industrial engines - oil changes account for a significant proportion of the plant's running costs and were disproportionately affecting the owner's ability to run the plant effectively and efficiently. The practice of sticking to the arbitrary OEM oil change intervals led to soaring maintenance costs and operational disruptions, prompting the need for a more efficient and cost-effective solution. Lab analysis can show the condition of the engine oil - but there is always a delay between sampling and availability of the results. However, extending the change intervals and to save on costs requires real-time oil analysis.

THE SOLUTION

Tan Delta sensor technology was embraced by Schempp for real-time monitoring of engine oil condition, in partnership with Tan Delta distributor - technology monitoring integrator, DAPONA in Switzerland. The Tan Delta sensor seamlessly integrated into the gas engines, marking the beginning of a systematic approach to gradually extend oil change intervals. This strategy ensured the reliability of the engines through continuous real-time condition monitoring.

The success of this implementation hinged on the adaptability and user-friendly nature of Tan Delta's sensor technology. This deployment empowered the customer to extend oil change intervals from the arbitrary OEM-recommended 400 hours to an initial 800 hours, with a targeted extension to an impressive 1,000 hours in the future. Rigorous parallel lab sampling after each oil change validated the accuracy and reliability of the Tan Delta sensor working in conjunction with DAPONA IoT.

Customer View

Andrea Schempp, *OPERATOR,* **PFULLENDORF BIOGAS PLANT,** GERMANY

"We have halved our oil costs, without jeopardising our biogas engine!

And we are now always able to adjust the composition of the biogas mash in good time. A significant cost reduction has been achieved, as has an important reduction in oil usage - which is extremely pertinent to us as a green energy producer. I can now see on my cell phone what the current oil condition is, and I am automatically alerted if something is wrong with the engine oil. DAPONA and Tan Delta's technology shows me when the next oil change is due. I no longer have to change around 70 litres of engine oil every 300-400 operating hours, but can use the oil until the end of its useful life without damaging the engine. This immediately saves me several thousand Euros per year, which is amazing."

Tan Delta View

Chris Greenwood, *CEO,* **TAN DELTA SYSTEMS PLC**

"Our sensors detect real-time minute oil composition changes at a molecular level, offering predictive maintenance data, making our overall solution unique.

It can be fitted easily and efficiently to any existing equipment in any application and is configurable to any oil type. In essence, our unique FSH™ sensor technology can tell you if your machine or engine is about to fail; whether and when your oil actually needs changing; and can instantly alert you to other potential oil problems — such as water ingress or any other relevant change in the performance of the oil.

By utilising Tan Delta technology, you can reduce oil consumption, reduce maintenance costs and costly downtime, and get other invaluable data insights that will help you run your machinery more efficiently and effectively. Our technology works anywhere where there is a business need to save oil, eliminate machinery failure and downtime, or plan maintenance based on need rather than arbitrary oil change intervals.

Our technology has been proven to deliver a return on investment in just a few months. This biogas plant integration with DAPONA demonstrates what can be achieved when Tan Delta collaborates with like-minded integrators with existing customer footprints in markets where we can add substantial value."

Email info@tandeltasystems.com to see how Tan Delta technology can rapidly start to improve your Biogas or Biomass plant efficiencies, now.

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