

RUGGED CAN DEVICES

## Oil and gas down-hole systems

Erdosâ€™Miller uses Kvaser’s CAN-based products in their engineering solutions for the oil and gas industry. The firm develops down-hole devices used in the drilling of advanced horizontal wells.



(Photo: Kvaser)

During the earliest oil booms, wells were dug haphazardly where oil seeped to the surface. But as with all booms, once the scent of oil was in the air, and the competition for productive well locations started to heat up. Today, the word “haphazard” could never be used within a mile of an oil drilling operation. Safety, precision, and hard science rule the day in the modern oil and gas industry. Competition has led to more advanced techniques, such as directional drilling and hydraulic fracturing (more commonly known as “fracking”), to get to oil and natural gas reservoirs that are deeper, more remote, and more difficult to access.

Erdosâ€™Miller, a Houston, Texas-based engineering solutions provider specializing in the oil and gas industry, thrives in these challenging conditions. The firm develops downâ€™hole devices used in the drilling of advanced horizontal wells that not only help their clients get to wellâ€™concealed natural resources, but also provide critical drilling and operational data, directly from the drill tools.

Advanced horizontal wells fall under the directional drilling method, which is the practice of drilling non-vertical wells. Directional drilling is utilized for a number of reasons, including improved production, reduced surface impact, and drilling an offshore well from an onshore location. This technique calls for an advanced set of tools and communication capabilities to ensure the precision of the operation and to troubleshoot unexpected issues.



(Photo: Kvaser)

When Ken Miller began his work in the oil and gas sector, the majority of the hardware being used in these applications utilized a serial protocol. “Based on my experience with CAN at Texas Instruments, we began designing systems that used the CAN bus protocol instead,” said Miller.

Down-hole devices are subjected to an extreme environment as they drill through layers of rock and mud – high temperatures, high pressure, and high vibration. All aspects of a system must be able to withstand those intense conditions. The balance of rugged hardware, and a flexible, customizable protocol is ideal for the measurement-while-drilling systems Erdosâ€™Miller engineers. When determining which CAN devices to use, Miller needed something that was affordable and rugged enough to be used out in the field, and it needed to have a PC interface to go along with it. “We have had a great experience using Kvaser devices, specifically the Kvaser Leaf Light HS v2,” he said.

The Leaf Light HS v2 allows connecting a computer to a CAN network. It supports high speed USB for CAN. Loss free transmission and reception of standard and extended CAN messages on the CAN network is transmitted with a time stamp precision of 100 microseconds.

Advances in drill sensors and global positioning technology have created accuracy in directional drilling, but realâ€™time communication is key. Erdos-Miller uses Kvaser’s rugged CAN devices to facilitate the real-time transfer of mission-critical data that assists in remotely determining and shifting the location of a drill head to within centimeters of its intended target. They use a proprietary higherâ€™layer software built over Kvaser’s API for their downâ€™hole devices, and use Kvaser’s [Canking](#) diagnostic tool when developing these systems.

“In the oil and gas industry, you’re running critical operations 24/7, so reliability in the field is the most important thing. But we’ve literally never had a Kvaser CAN adapter fail. I don’t worry about putting backup Kvaser devices into our systems, because I’ve never had a reason to. And we throw a lot at these!”, Miller said.

