

ULTRAMIC® Brings Lab Capability To The Field

When a thermal application requires a portable solution, Watlow's ULTRAMIC ceramic heaters pack a punch in a small package. A company based in the United Kingdom that is revolutionizing clinical diagnostic field research quickly saw that ULTRAMIC was the best choice for its device.

The company is developing a line of portable devices for DNA sequencing. Analyzing DNA has traditionally been done in a laboratory with benchtop devices. The company is



working to enable the analysis of any living thing, by any person, in any environment. The company's MinION device is the first portable, real-time, long-read, low-cost device designed to bring easy biological analysis to anyone.

DNA sequencing can be an important tool in field research and medical diagnostic tests based on a patient's genes, but sending samples away to a lab can take days or even weeks to produce results. As the company's device analyzes the sample, it streams information to a laptop computer to run the sequencing, producing results immediately.

The company approached Watlow looking for a very small heater for sample preparation to begin the sequencing process. The fluid needs to be heated to a specific temperature, hold it there and cool it down before the testing can begin. The customer's requirements included a heater that could fit in a handheld device with enough power to hit the required temperature in a reasonable time. The heater had to be lightweight with a small thermal mass. Also, the heater had to be flat with close contact to a piece of glass to provide efficient heating.

Traditional heating solutions simply did not fit the requirements. Andrew Hall, outside sales engineer, suggested the company look at the ULTRAMIC ceramic heater. The company purchased a small number of standard ULTRAMIC heaters for testing, which went well. That led to buying 100 purpose-built ULTRAMIC heaters with a slightly different shape and thickness for the heaters. The company is now going through final testing before achieving full production. The company projects buying 2,000 to 3,000 ULTRAMIC devices annually in coming years.

“The size of the heater is about 10-millimeter square, less than half an inch square. It is very small,” Andrew said. “We do not just supply the heater, we provide the thermal assembly including a holder and a sensor. When they get the assembly, it is ready to be inserted straight into the device during production.”

Andy Selvy, chief system designer, said the opportunity with the company demonstrated the value of starting with a standard product to address a customer’s needs.

“Starting with our standard offering minimized the investment for both companies,” Andy said. “It also reduced the time to get test data and helped avoid unnecessary iterations to lock in on the final design.”