

CASE STUDY

RUGGED TABLET IMPROVES CORROSION DETECTION, REDUCES COSTS FOR PROCESS INDUSTRIES WORLDWIDE

CUSTOMER

Maxwell NDT

CHALLENGE

To detect corrosion, Maxwell PECT tool has to operate reliably outdoors in any weather or climate conditions from rain and snow to bright sunshine, in locations from Alaska to the Sahara.

SOLUTION

To ensure the Maxwell PECT can be used reliably and safely in varied and challenging environments, Maxwell incorporated a sensor, data acquisition electronics, and a Durabook U111 tablet.



INTRODUCTION

Each year, process industries - such as oil refineries, chemical plants, topsides of oil rigs, and power plants - spend millions of dollars on corrosion detection. Steel equipment such as pipes, pressure vessels and storage tanks are often operated at extreme temperatures and so are insulated to protect them and save energy. A drawback of insulating equipment in this way is that water can get trapped underneath, causing the steel to corrode. Corrosion spots remain hidden underneath the insulation, and, if left unchecked, can become dangerous.

Maxwell NDT provides electromagnetic inspection technology and manufactures a tool called Pulsed Eddy Current Tool (PECT). PECT detects corrosion of steel equipment, even if it is hidden under insulation. (<https://www.maxwellndt.com>)

U111 Tablet





CHALLENGE

To detect corrosion, Maxwell PECT tool has to operate reliably outdoors in any weather or climate conditions from rain and snow to bright sunshine, in locations from Alaska to the Sahara. The tool would have to withstand challenging industrial environments and their often extreme temperatures such as on offshore oil rigs and in refineries, and be resilient against rough handling and vibrations for example in helicopter transport. Equipment failure would be very costly, since the worksites are often remote, which makes shipment of repairs expensive and time consuming.

Safety is also a key concern in the industry. Operators must wear personal protective equipment such as eyewear. However, this can often blur the operator's vision, meaning the tool needs a clear and user friendly interface.



SOLUTION

To ensure the Maxwell PECT can be used reliably and safely in varied and challenging environments, Maxwell incorporated a sensor, data acquisition electronics, and a Durabook U111 tablet. Maxwell uses exclusively Durabook U111 because of the robustness, connectivity and excellent screen.

The Durabook U111 offers unsurpassed durability and reliability in harsh environments and is MIL-STD-810G, ANSI 12.12.01 C1D2, and IP65 certificated. This means it is protected against shock, six-foot drops, vibrations, and has the ability to withstand operation in a wide range of temperatures.

In the design of the PECT tool, it was essential that the data acquisition electronics unit could be connected to the tablet computer in a reliable and water-tight way. The U111 was the only fully rugged tablet available on the market that allowed for such connectivity because of its endless expansion options. This allows corrosion responses to be recorded by the PECT tool and processed with an data analysis algorithm programmed into the U111 Durabook.

The PECT instrument is portable and fully battery-operated. The low weight of the U111 and its high-capacity battery delivers enough runtime for a full shift without requiring a battery recharge or replacement. To ensure safe operation for workers wearing protective eyewear, the

U111's large, bright DynaVue® sunlight-readable screen offers enhanced viewing clarity, even in rain or extreme conditions. Its multi-touch mode also enables seamless operation by workers required to wear protective gloves at all times.

BENEFITS

The PECT instrument is now applied by specialised inspection companies worldwide providing corrosion protection services to the petrochemical industry, power plants, paper mills, fertiliser manufacturers and other process industries. Using the tool, these companies are helping industrial plant organisations to reduce their spend on corrosion repairs and improving the safety of their workers.



Maxwell Director, Dr. Paul Couzen commented; "Durabook is a real step forward over previous systems."