ARLON® 3000 XT:
## REDUCING EXTRUSION FAILURES IN HPHT CONDITIONS

ABOUT THE
CUSTOMER

Our customer is a **PRODUCER OF LOGGING DEPLOYMENT SYSTEMS** for the Oil & Gas industry. They operate as a subsidiary of one of the world's leading oilfield service providers, with over **105,000 EMPLOYEES** operating in over **85 COUNTRIES**.

The main product for the customer is through-the-bit logging technology – an efficient, cost-effective alternative to standard wireline conveyance and **LWD** (Logging While Drilling). This technology is frequently used in **HPHT** operations and open hole logging in horizontal, high-angle and unstable wells.
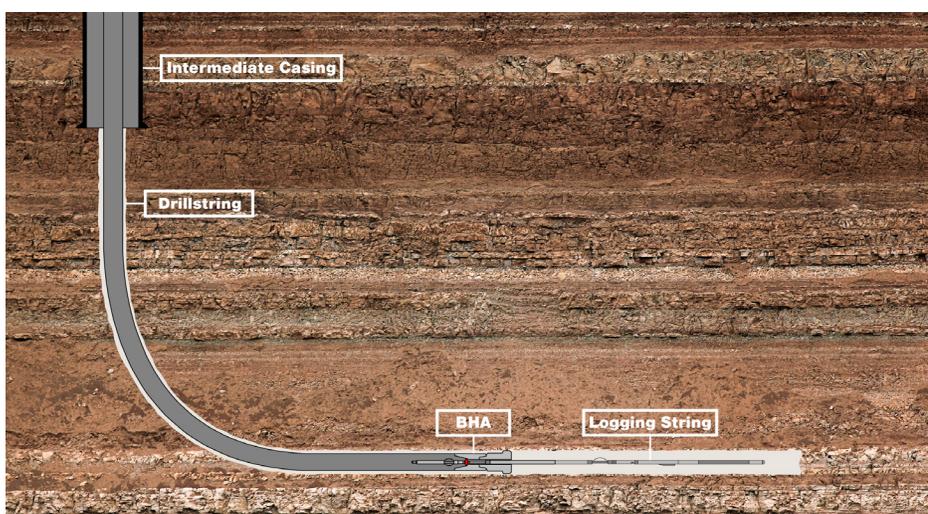
Through-the-bit technology allows the logging tools to pass through drill pipe and out of the drill bit, acquiring formation evaluation logs. These logs provide valuable, high-quality data that is used to make critical changes to drilling or completion designs and exploration targets. It's the type of data that is not possible to obtain with conventional logging technologies.

CHALLENGE

A through-the-bit logging system is composed of multiple devices and components that work together to gather the required formation data. One key component is a gamma ray device that provides insight into the mineral composition of the formations. In order to collect the formation data, gamma rays must pass through a small thermoplastic window located on the logging tool. The window is critical to the functionality of the tool.

The window on the customer's tool was manufactured using a virgin PEEK material. After extended use of the tool in HPHT conditions, **THE CUSTOMER EXPERIENCED EXTRUSION ISSUES WITH THE WINDOW**. The window extrusion jeopardized the performance of the logging tool and its ability to collect the critical data needed for effective drilling of the customer's wells.

Arlon® 3000 XT's extrusion resistance is comparable to filled versions of PEEK and PEKEKK and provides significant improvement over unfilled PEEK and PEKEKK materials.
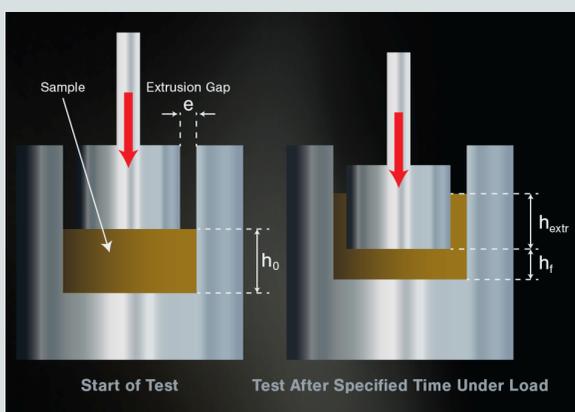
PEEK (left) shows 10 times greater extrusion than Arlon® 3000 XT (right)

SOLUTION

Greene, Tweed was tasked with examining the extrusion issue and recommending a replacement material for the virgin PEEK something that would increase tool reliability and withstand the customer's harsh HPHT operations.

The recommendation was to **REPLACE THE CURRENT VIRGIN PEEK MATERIAL WITH A NEW VIRGIN MATERIAL, ARLON® 3000 XT** – a pioneering thermoplastic from Greene, Tweed that is tested and proven to withstand harsh drilling environments.
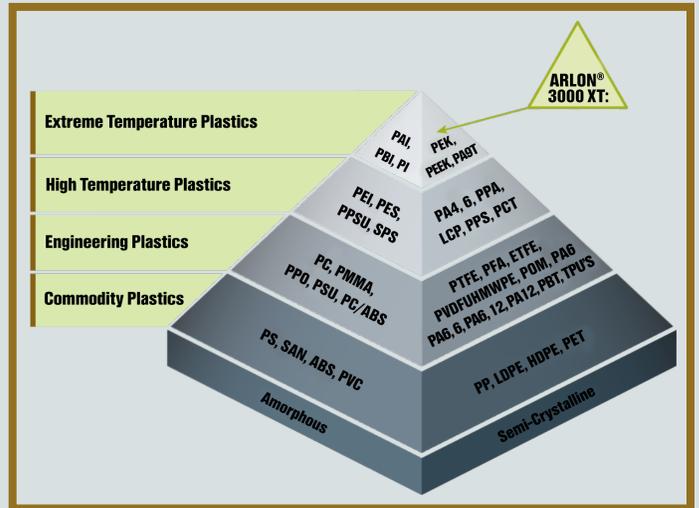
ARLON 3000 XT:

30% STRONGER

than any other material used in oil & gas exploration with a
CHEMICAL RESISTANCE TO SURVIVE IN HARSH ENVIRONMENTS

SUPERIOR EXTRUSION RESISTANCE
at temperatures ABOVE 350°F (177°C)

OUTPERFORMS VIRGIN AND FILLED GRADES OF PEEK AND PEKEKK
in extrusion testing at 35 ksi and 550°F (288°C)

ARLON® 3000 XT:

Extreme Temperature Plastics — PAI, PBI, PI — PEK, PEEK, PAGT

High Temperature Plastics — PEI, PES, PPSU, SPS — PA4, 6, PPA, LCP, PPS, PCT

Engineering Plastics — PC, PMMA, PPO, PSU, PC/ABS — PTFE, PFA, ETFE, PVDFUHMWPE, POM, PA6, PA6, 6, PA6, 12, PA12, PBT, TPU'S

Commodity Plastics — PS, SAN, ABS, PVC — PP, LDPE, HDPE, PET

Amorphous — Semi-Crystalline

RESULTS

The customer proceeded to conduct field testing with the tool window produced with **ARLON 3000 XT**.
They reported positive results:
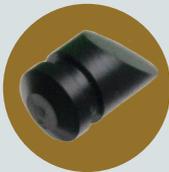
ENHANCED EXTRUSION RESISTANCE WITH USE OF **ARLON 3000 XT** OVER PREVIOUS VIRGIN **PEEK** MATERIAL

INCREASED TOOL RELIABILTY AND **ACCURATE DATA** DUE TO IMPROVED WINDOW PERFORMANCE

ARLON 3000 XT HAS PROVEN TO BE AN **EFFECTIVE DROP-IN REPLACEMENT SOLUTION** WITH NO NEED FOR THE CUSTOMER TO REDESIGN AND REQUALIFY THE TOOL

ARLON 3000 XT has been tested and proven to provide the necessary temperature and pressure resistance for the window component, and the customer has reported plans for future tool production using **ARLON 3000 XT** as the material of choice for the window component.

TESTING IS BELIEVING
VISIT WWW.ARLON3000XT.COM

CONTACT
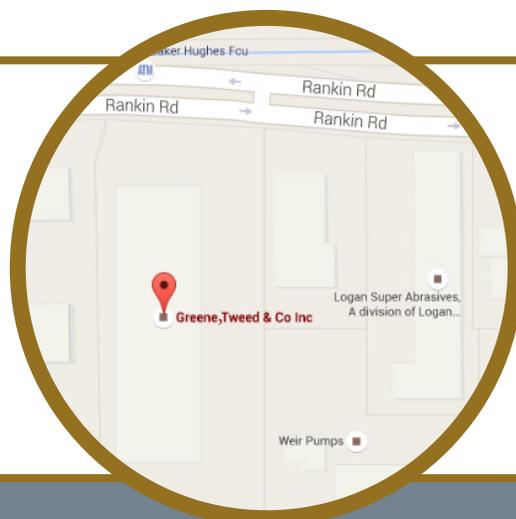# GREENE, TWEED

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