

## CASE STUDY

### PROJECT

Pine River Gas Plant and Sulfur Pit

The concrete roof of the Pine River Sulfur Pit has proven difficult to maintain in a serviceable condition. The high temperatures of the molten sulfur (300°C) has caused extreme thermal forces on the concrete slabs, shifting and moving them until they no longer protect the sulfur pit from the elements. Unwanted water from rain and snowmelt contacted the sulfur, creating acidic gas which further degraded the

### LOCATION

Chetwynd, BC

concrete structure. The concrete slabs exposed to the acid gas had a service life of only 10 years, by effectively keeping the water out of the pit the expected service life of the slabs is expected to increase 3 fold. Attempts were made to seal between the slabs with various substances, but nothing could adjust to the large movements and heat which were experienced.



Equinox Engineering was hired to address the leaking roof. The solution was pre-sprayed PRECIDIU<sup>TM</sup> ECS<sup>TM</sup> Polyurea Panels, supplied and installed by Western Engineered Containment Ltd. (WEC). The robotically-sprayed panels are prepared at WEC's Leduc Facility, and are a composite of polyurea applied

to a thin but strong geotextile. Pre-sprayed panels deliver the toughness, strength and flexibility of ECS<sup>TM</sup> with robotically-prepared uniformity and quality. ECS<sup>TM</sup> is a good high temperature material with a maximum continuous service temperature of 130°C, which exceeds the predicted service temperature of the concrete slabs.



To begin the project the facility owner had the concrete slabs replaced or realigned and brought back to level. A thick cushioning geotextile was laid over the rough concrete to protect the polyurea liner. The preformed ECS™ panels were placed, extending over the joints between the concrete slabs, and were attached to the surrounding structures and perimeter

curb. PRECIDIU™ Fusion is a polyurea sprayed on-site to attach the pre-sprayed panels; it was ideal for sealing to the complex geometries presented by the aluminum blast caps, and the anchors that held them in place. On-site spraying is done to properly sandblasted and primed metal and concrete.





The combination of pre-sprayed panels and onsite sealing allowed the four-member crew to complete the roughly 1750 square foot project

in four days, while working efficiently around challenging structures such as scaffolding.



In summary the leaky roof was covered with a flexible, tough polyurea liner, which can withstand high service temperatures. The use of pre-sprayed panels allowed the joints to be covered rather than trying to simply seal them,

making provision for future movement of the concrete slabs. This application is challenging for several reasons but WEC's spray applied PRECIDIU<sup>TM</sup> ECS<sup>TM</sup> system provided a durable, efficient solution which allowed the designer to meet these challenges.



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