

BAUER TANKSAFE®

BAUER's Patented Smart Blanketing System for Nitrogen Inerting Headspace in Hydrocarbon Storage Tanks



TYPICAL HYDROCARBON STORAGE TANKS WITH BAUER TANKSAFE®

B BAUER TANKSAFE™ NITROGEN BLANKETING CONTROL SYSTEM

Tanks holding hydrocarbon contaminated liquid

Nitrogen inerted headspace

Nitrogen supply line to tanks

Oil and other hazardous liquids

A BAUER NGM™ ON-DEMAND NITROGEN GENERATION SYSTEM



THE PROBLEM

The headspace in liquid storage tanks often contains volatile gases. The presence of these gases can cause an explosion hazard if the mixture between the combustible gas vapor and oxygen in the ambient air is between the Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL). Methane, a common volatile gas found in liquid storage tanks, has a typical LEL concentration of ~5% and a typical UEL concentration of ~15% in ambient air.

These hazardous explosions to a tank battery can lead to:

- › **Potential millions of dollars in losses** due to costs of rebuilding the tank battery, lost revenue due to business interruption and higher insurance deductibles and premiums.
- › **Environmental fines**
- › **Human and environmental safety risks**

BAUER'S PATENTED SOLUTION - TANKSAFE® NITROGEN TANK BLANKETING



Inerting liquid storage tanks with nitrogen displaces the air in the headspace of the storage tank, thereby reducing the oxygen content in the tank to below hazardous levels.

The BAUER TankSafe® tank blanketing system has been specifically designed using BAUER's rugged and time proven on-demand NGM™ Nitrogen Generation System, combined with BAUER's TankSafe® smart tank blanketing control system. Each BAUER TankSafe® system is designed specifically for the nitrogen flow requirements of the customer's specific tank battery configuration. Required nitrogen flow is based on the dynamic pump-down capacity of the tank battery, as well as thermal contraction factors and is therefore sized specifically to each site. The goal is to avoid pulling ambient air into the tank(s)

through the tank's Enardo™ safety valve when a tank is pumped down or when a thermal contraction event occurs. During a tank pump-down event, the BAUER TankSafe® system will replace the displaced liquid volume with nitrogen, thus maintaining the low oxygen environment in the tank. During a pump-down or thermal contraction event, embedded pressure transducers in the tank sense a corresponding pressure decrease and trigger nitrogen flow into the tank in order to equilibrate the pressure in the tank. An embedded oxygen sensor in the tank constantly monitors the oxygen/nitrogen content in the tank(s). The BAUER TankSafe® system automatically adjusts the supply of nitrogen into the tank(s) to maintain acceptable nitrogen purity levels in order to render the tank(s) inert.

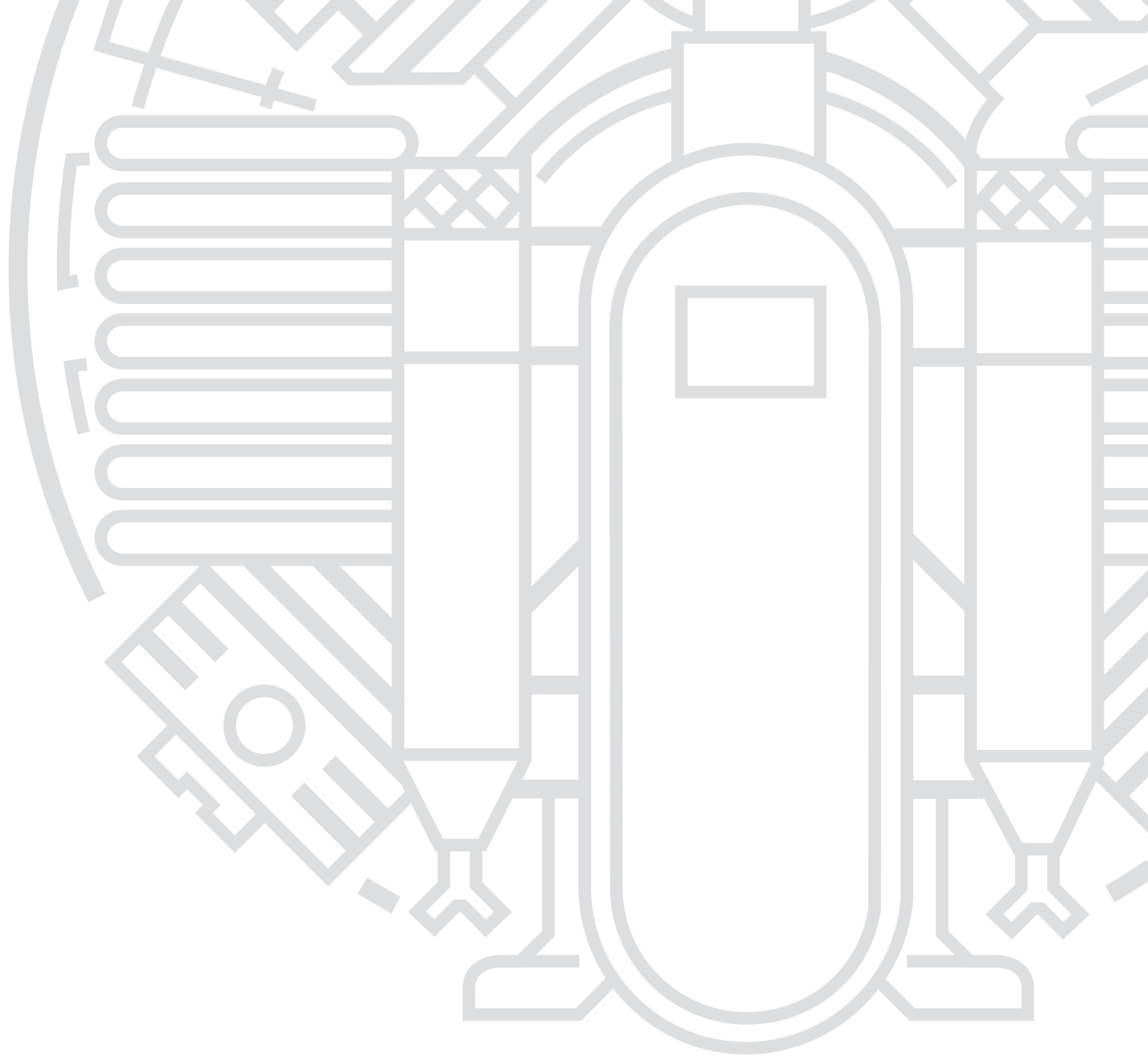
BAUER CONNECT® IOT REMOTE TELEMETRY AND CONTROL

Because of the critical nature of maintaining proper O2 levels in the tank's headspace through the nitrogen blanketing process, each BAUER Smart Nitrogen Blanketing System™ comes standard with BAUER CONNECT® remote telemetry.

BAUER CONNECT® is an App-based IOT solution which allows the customer to monitor the performance of as well as control the entire BAUER Smart Nitrogen Tank Blanketing™ system remotely through any wireless mobile device or computer anytime, anywhere.

The BAUER CONNECT® App will provide "push notifications" if certain critical parameters such as O2 levels in the tank's headspace, for example, fall outside normal operating range. This alerts essential personnel of a potential situation which could be detrimental to the tank battery and allows for pro-active intervention.





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LIFECYCLE PERFORMANCE

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