The removal of \( \text{H}_2\text{S} \) from natural gas has never been easy. The THIOPAQ O&G® biodesulfurization process can remove hydrogen sulfide (\( \text{H}_2\text{S} \)) from low-, medium-, and high-pressure natural gas streams. In this process, a gas stream containing \( \text{H}_2\text{S} \) contacts an aqueous soda solution containing thiobacillus bacteria in an absorber. The soda absorbs the \( \text{H}_2\text{S} \) and is transferred to an aerated atmospheric tank where the bacteria biologically converts the \( \text{H}_2\text{S} \) to elemental sulfur.

This process is ideally suited to environmentally sensitive areas where venting, incineration, or reinjection of the \( \text{H}_2\text{S} \) are not desirable options. Treated outlet gas can readily meet a less-than 4-ppm \( \text{H}_2\text{S} \) specification. The application ranges from approximately 500 lbm/d to 40 tonUS/d of sulfur per day. The biological sulfur slurry produced can be used for agricultural purposes or purified to a high-quality (>99%) sulfur cake.
Advantages of the THIOPAQ O&G process

Reliability
- Less equipment compared with conventional desulfurization processes
- No plugging or fouling problems because of the biological sulfur’s hydrophilic nature
- Use of thiobacillus bacteria, which are naturally occurring, robust, self-sustaining, and self-regulating

Simplicity of operation
- Easy-to-control operating parameters
- Minimal supervision requirements
- Massive buffering capacity that minimizes the impact of upsets
- Wide turndown in gas flow and H₂S inlet concentration

Low operating costs
- Much lower chemical makeup compared with alternative aqueous technologies
- Less equipment to maintain and operate compared with conventional amine or Claus technology

Simplicity of design
- Operation at low inlet pressures
- Integration of gas purification and sulfur recovery in one process
- Elimination of the need to filter carbon or particulates
- Process regeneration does not require heat

Intrinsic safety
- H₂S not concentrated at any time during the process
- H₂S physically bound to the gas scrubbing solution

Environmental consciousness
- Air vent gas with less than 1-ppm H₂S by volume
- Sulfur slurry and cake that can be used as fertilizer

Cost estimates
Capital and operating cost estimates can be provided quickly. Process parameters such as pressure, temperature, flow rate, and composition are needed to generate budget estimates.