# Fact Sheet

## Five gas line problems, one inline solution - Innopipe

Water, condensate and chemicals in gas lines cause slugs, corrosion, pressure loss and impede cold-weather reliability. Innopipe is designed to be a section of pipe installed inline that remove these liquids where they form, while the gas keeps flowing and pigs still pass through.

## How it works

In moving gas, liquid travels as a thin film around the inside wall of the pipe (annular flow). Ordinary drips only catch liquid along the bottom. Innopipe's engineered slots let the film exit through the pipe wall and drain to a collection vessel. Only the liquid film is diverted; the gas passes through what is essentially straight pipe.

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| **>99%+** of free liquids removed | **<1 psi** typical pressure drop, piggable | **1" to 60"** pipe sizes, sweet or sour gas | **100+** installations worldwide |

| PROBLEM | WHAT GOES WRONG | HOW INNOPIPE HELPS | RESULTS |
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| Slug management | Liquid collects at low spots and river crossings, then surges downstream as a slug, upsetting separators, compressors and plants. | Innopipe removes liquid a little at a time along the line, acting as a distributed slug catcher. Collection vessels can be two- or three-phase. | Eliminate the need for large end-of-line slug catchers and stabilize flow. |
| Corrosion reduction | Free water, especially with $CO_2$ or H2S, corrodes steel from the inside and forms black powder that erodes valves and meters. | Innopipe takes water off the pipe wall and carries entrained black powder out with the liquid. Less inhibitor is used and fewer pigging runs are required. | Pigging intervals, downtime and related costs reduced by up to 50%. Reduced inhibitor use reported. |
| Condensation management | Gas that starts dry cools and loses pressure along the route, so water and heavier hydrocarbons condense out (retrograde condensation). | Innopipe installed at low points and strategic locations removes condensate where it forms before forming slugs. | Fewer flow assurance issues up to 2,000 bbl/d of liquid removal capacity. |
| Pressure drop management | Conventional separators slow down gas flow to let liquids settle, with pressure and compressor horsepower penalties. Liquid also backs up wells. | Innopipe separates on the fly: only the liquid film is diverted. Removing water in the field lowers back pressure on wells and optimizes line capacity. | Under 1 psi (piggable) and 3 to 5 psi (non-piggable). No extra compression boost needed after replacing after-scrubbers. |

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| Temperature issues | Cooling drops liquid out of gas. Fall cooling and cold snaps push slugs through low spots, and free water can freeze or form hydrates. | Innopipe removes free water before it reaches cold points. Installs buried, above ground or in vaults, and in harsh, cold climates. | Freeze-ups and hydrates are mitigated by removing free liquids. Liquids are handled predictably through seasonal cooling. |

## The bottom-line

Every one of these problems starts with liquid in the line. Innopipe removes the liquid where it forms, without slowing the gas, and slugs, corrosion, pressure loss and cold-weather challenges are minimized.