

# How Slug Flow Mitigation Can Simultaneously Increase Production and Improve Well Production Economics in the Williston Basin

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## **Abstract**

*This presentation shares relevant long-term, multiple basin case studies that statistically demonstrate how downhole flow conditioning is used to smooth slug flows from a horizontal wellbore to dramatically improve well production economics. The presentation shows sustained production increases from 25% to well over 200%, and mean-time between unplanned workovers improvements (including pump failures) from under three months to over two years.*

*Production Plus Energy Services Inc. has learned that the root cause of gas interference and solids damage to pumps, common in horizontal wells, is not poor equipment performance, but sluggish, intermittent production from the horizontal. Large variations in gas and oil rates and periods of only gas production from the horizontal overwhelm downhole artificial lift pumps. By conditioning the downhole flow, artificial lift pumps can operate efficiently and reliably.*

*This presentation reviews the theoretical basis of slug flow and overviews a downhole flow-conditioning artificial lift enhancing technology that can dramatically improve downhole pump performance. As a foundational piece of any pumping system, this artificial lift system addresses the root cause of gas interference and solids damage. It smooths slug flow from the horizontal and provides consistent gas and liquid rates to the downhole separator, allowing it to efficiently deliver degassed and solids-free liquid to the pump. As a result smaller pumping equipment can capably achieve higher production rates while simultaneously maximizing drawdown and reducing unit lifting costs over the life of the well.*

*Case studies presented show that with smooth flow substantial improvements in pump efficiencies and reliability occur along with an ability to increase production drawdown. The combination of increased pump efficiency and increased drawdown allows the pump to be positioned in vertical inclinations and at shallower depths. Shallower pump placement and smaller artificial lift equipment, can reduce CAPEX and OPEX. As a result smaller pumping equipment can efficiently achieve higher production rates while simultaneously maximizing drawdown and reducing unit lifting costs over the life of the well.*

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**Trystan Wall** has more than 15 years of oil and gas experience. In roles with progressive responsibility spanning production and exploitation his work has focused on optimizing wellbore design and artificial lift in thermal projects as well as multi-phase flow modelling. In his current role as Manager of Engineering with Production Plus his focus is on solving artificial lift challenges for clients by applying the HEAL system in horizontal wells. Trystan holds a B.Sc. in Chemical Engineering from the University of Calgary and is a member of SPE and APEGA.