2024 GAS LIFT WORKSHOP

Gas Lift Design Automation

M. Daanyal, C. Flippin, H. AlSadah, Saudi Aramco

ارامكو السعودية
Saudi Aramco

ALRDC.COM

Agenda

- Introduction & objectives
- Challenges in traditional Gas Lift Design
- Overview of the innovative Automation Tool
- Results overview
- Novel Information and Advancements
- Case study and Data Visualization
- Challenges and Expansion
- Conclusion and Final Thoughts

Introduction & Objectives

- **Introduction;** Evolving landscape of oil and gas industry automation
  - Rapid advancements in technology
  - Increased focus on efficiency and sustainability in production processes
- **Objective;** Automate the entire gas lift design process
  - Streamline the entire gas lift design
  - Enhance well performance across its entire lifecycle
- Importance of Automation in Gas Lift Design (GLD)
  - Achieve consistent, optimal and fit for purpose GLD
  - Leverage data driven decision to maximise production

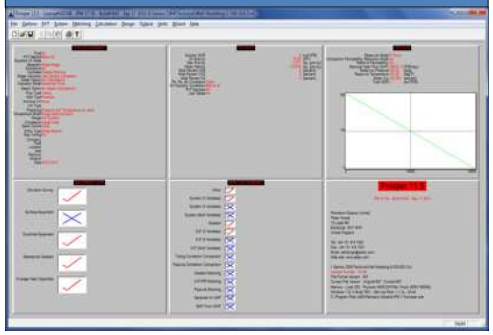
Challenges in Traditional gas Lift Design

- **Limitations and inefficiencies in manual processes**
  - Susceptible to human error, affecting overall design accuracy
- **Challenges with adapting to unforeseen scenarios while maintaining accuracy**
  - Often fails to predict and plan for unforeseen scenarios
- **Time consuming procedures**
  - Design cycles extend over days, impacting operational responsiveness
- **Limited Scope of Analysis**
  - Focuses on worst case or end of life scenarios
- **Operational risks and costs**

Tool's Overview

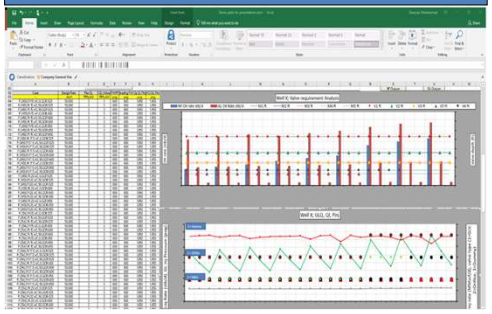
- **Tool development**
  - Developed inhouse
- **Automation & integration**
  - Entire gas lift design process from data input to final design
  - Enable adjustment to real-time updates
- **Advanced data processing**
  - Handles vast array of scenarios
  - Generate multiple design combinations
- **User friendly interface**

PROSPER: Used to perform gas lift design iterations



Input parameters and boundary conditions fed into PROSPER using VBA / OpenServer

Excel: Used to input well and reservoir parameters



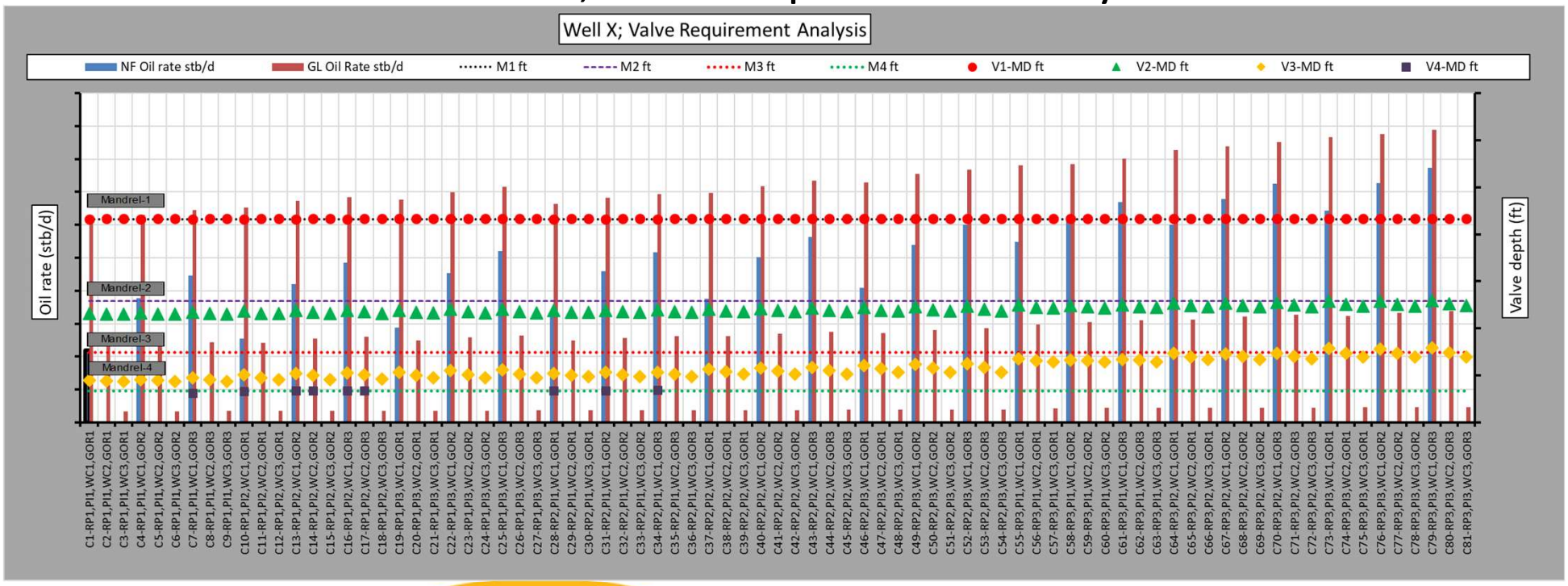
PROSPER model results (rates and pressures) read into Excel using VBA / Openserver

Key Features and Methodology

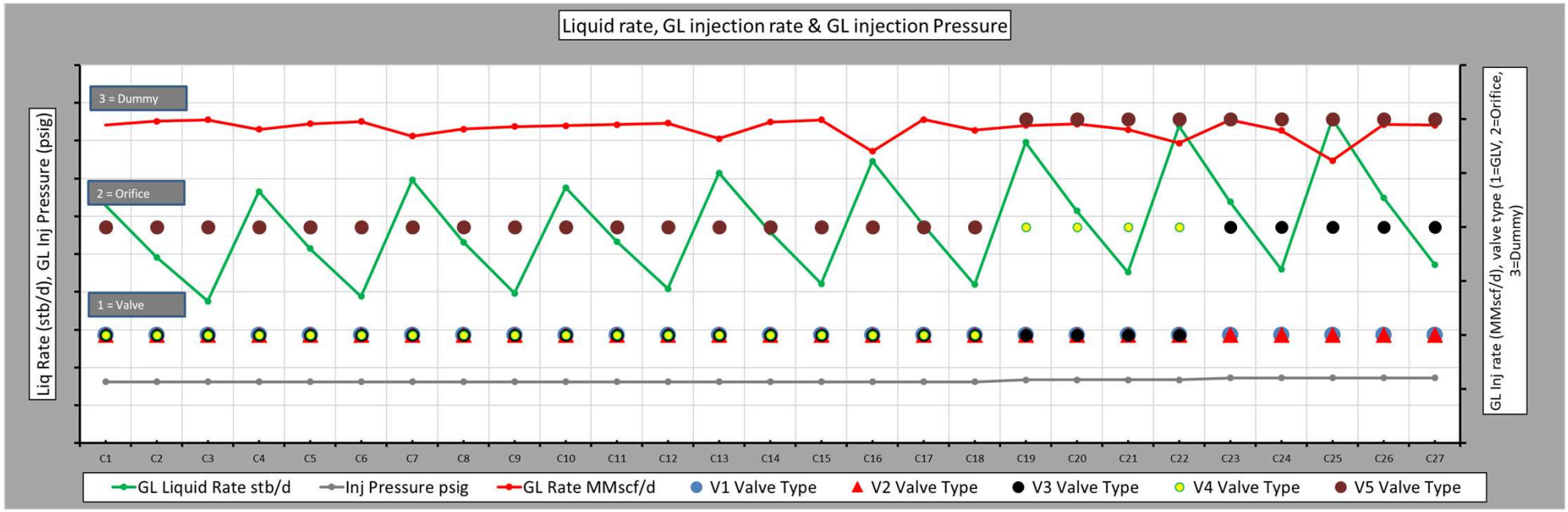
- Dynamic data input
- Integration with industry standard applications
- Robust design generation
- Efficient sensitivity analysis
- Visualisation and reporting

2024 GAS LIFT WORKSHOP

Results overview; Valve requirement analysis



Results overview; QL, GLQ, GL InjP



Novel Information and Advancements

- **Reduction in human error**
  - Minimises human error by eliminating manual data handling
- **Speed and robustness**
  - From 5-6 hours to about 1 hour
- **Maximized efficiency**
  - Streamlined workflows, bespoke design
- **Advanced analytics**
  - Deep dive into well performance and explore new design with predictive modelling

2024 GAS LIFT WORKSHOP

Question Time

ALRDC.COM

2024 GAS LIFT WORKSHOP

Copyright

2024 GAS LIFT WORKSHOP

Disclaimer

The following disclaimer shall be included as the last page of a Technical Presentation or Continuing Education Course. A similar disclaimer is included on the Gas Lift Workshop webpage.

The Artificial Lift Research and Development Council and its officers and trustees, and the Gas Lift Workshop Steering Committee members, and their supporting organizations and companies (here-in-after referred to as the Sponsoring Organizations), and the author(s) of this Technical Presentation or Continuing Education Course and their company(ies), provide this presentation and/or training material at the Gas Lift Workshop "as is" without any warranty of any kind, express or implied, as to the accuracy of the information or the products or services referred to by any presenter (in so far as such warranties may be excluded under any relevant law) and these members and their companies will not be liable for unlawful actions and any losses or damage that may result from use of any presentation as a consequence of any inaccuracies in, or any omission from, the information which therein may be contained.

The views, opinions, and conclusions expressed in these presentations and/or training materials are those of the author and not necessarily those of the Sponsoring Organizations. The author is solely responsible for the content of the materials.

The Sponsoring Organizations cannot and do not warrant the accuracy of these documents beyond the source documents, although we do make every attempt to work from authoritative sources. The Sponsoring Organizations provide these presentations and/or training materials as a service. The Sponsoring Organizations make no representations or warranties, express or implied, with respect to the presentations and/or training materials, or any part thereof, including any warrantees of title, non-infringement of copyright or patent rights of others, merchantability, or fitness or suitability for any purpose.