Session Highlights

ARTIFICIAL LIFT SUMMIT

Conference & Exhibition

Year 2021, 2022

Rigless deployed ESP - Comparisson of current available technologies

- Rigless ESP: benefits, available technologies, completion characteristics and its limitations
- Deployment methods, OPEX & CAPEX
- Comparisson chart
- Success stories (To be confirmed with clients if I get their permission)

Revised ESP trip setting strategies along with Realtime monitoring saves unnecessary ESP trips and failures

- As the number of Artificial lift wells increase within a field, there is a continuous need of distant Realtime
- monitoring for Artificial lift wells, especially with a lack of sufficient manpower.
- In this presentation, we will get an overview of the impact of Realtime ESP monitoring saving a lot of trips,
- failures Abd deferment.
- In addition to monitoring, a robust trip settings strategy should be in place to shut down the system in case
- of out of range parameters that could harm the equipment with a very costly maintenance.

Optimizing Artificial Lift with Surface Multiphase Boosting

- Technology background and advantages of multiphase boosting systems
- Benefits from the combination of artificial lift with surface multiphase boosting
- Applications of multiphase boosting in oil and gas fields



Martin Querol Business Development and Artificial Lift Expert Consultant



Abdallh Moustafa Artificial lift engineer



Luis Martinez Vice President

ESP Analysis and Optimization by Operational Trends

- Operators are exercising ESP Operating data trend analysis through its networks system. It enables real time monitoring, control, and design of ESP's thereby optimizing, Safety and environment protection, Operating Cost, Production Rates, Capital Cost, Preventable Failures, Personal Effectiveness and Minimizes Losses.
- Data trend plots are used to show Well level and System level variable vs. Time.
- The prime parameters deducted for Well analysis are Gradient Traverse plots thereby monitoring well & inflow performance, which changes with the time.
- The diagnosis based on all such concepts enables right / real time decision to sustain ESP at optimum range, leading to enhancing ESP run life. In a typical application, the continued practice of this concept has resulted in +2000 m3/d gain in production, enhancing ESP Run life by 6% and saving \$ 0.5 million, in one year, in one of its concession areas.

System Performance Improvement in ALS wells by adoption of innovative methodologies

- Performance evaluation of boronized tubing & HDPE lined tubing in PCP wells.
- Well specific Artificial Lift selection methodology. Change from field specific Lift Selection strategy.

Artificial Lift optimization using Machine Learning

- Data and Model exploratory to check model quality and model integrity
- Gas Lift performance evaluation and optimization by ML
- Identify out-performer wells and Lower performer reservoirs using AI to benchmark as surveillance tool and EBS tool

ESP predictive maintenance

- Pump data collection, validation and visualization.
- Using machine learning algorithm (DBScan) to detect anomalies in pump work due to free gas followed by scale deposition.
- Implementing expert rules in order to stabilize pump work, decrease the amount of anomalies and increase pump mean time between failures.



Iqbal Sipra Consultant Artificial Lift/Prod. Tech. Advisor



Joy Singhal Lead Artificial Lift



Arnold Martin Sr. Production Engineer



Filip Matovic eProduction Engineer

Heavy Oil & Harsh Well Condition Production Using Beam Pump System Challenges & Mitigation-Case Histories

- Heavy oil harsh well condition challenges & operational performance of beam pumping system in such these conditions.
- Solids & abrasives related failures investigation & solution planning
- Success stories maximizing pump efficiencies and minimizing failure rates of beam pumping system
- Cost saving impact after using solutions

Real time application techniques to eliminate power surges for uninterrupted ESP Operation to achieve sustainable oil production

- Impact of power surges in the tripping of ESP resulting loss of oil production
- Frequent stoppage of ESP lead to reduced life of operating equipment
- Leveraging real time data for the mitigation of power surges in the ESP distribution network

"Mystery Solved" – What is really happening to your Sucker Rod System and why the conventional wave equation is not enough

- Identify when parts of the string go in compression
- Troubleshoot problem wells by analyzing real data collected downhole
- Justify cost by verifying the effectiveness of new and existing hardware. Is it really helping?
- Downhole measurements determine when the rod string is in SYNC, reduces MTBF and optimizes well production

Artificial Lift Monitoring at Surface through Point to Point IOT Solutions

- How point-to-point IoT can bring artificial lift monitoring quickly to the market
- Mobile app for monitoring artificial lift
- Custom sensors for artificial lift

Replacing Sucker Rods with Coiled Tubing

- Drilling and production alternatives
- How to increase oil production ?
- CTLift proven History
- ALS CTLift alternatives



AbuelFotouh AbdelNaser Rod Lift System Lead



Debabrata Pattnaik Specialist Power Mgmt



John MacKay VP Commercial and Sales



Blake Burnette CTO



Humberto Leniek Owner

Wireless UT Sensors for Upstream Erosion Monitoring

- Structural health/asset integrity monitoring and life extension for upstream/E&P well head piping/infrastructure using wireless ultrasonic sensors for wall-thickness/erosion trending
- Operators who are leveraging wireless UT sensors are optimizing flow and thus returns from their wells/assets by monitoring and at the same time reducing downtime by using predictive maintenance strategies – all by using near real-time erosion data from wireless UT sensors
- These ultrasonic sensors can utilized for a variety of process applications

 wired or wireless, installed permanently or temporarily, at extreme high (up to 500C/935F) or low (-40F/C) temperatures, and above ground or buried

Supporting artificial lift with multiphase pumping

- Multiphase pumping lowers bottom hole pressure and increases well inflow
- Improves uptime and performance of ESP's and SRP's and lowers CAPEX and OPEX
- Increases production rate and adds to total hydrocarbon recovery while limiting GHG emissions

"30%+ reduction in energy intensity and lifting cost on horizontal wells is no longer a dream

- Reduce electric cost per unit of production by decreasing both total power consumption and power demand cost
- Preliminary data indicates 50% reduction in energy intensity from 24 demonstration wells in SE Saskatchewan
- 50% reduction in power intensity directly translates to a decrease in operating costs and GHGs
- Deployment of Akine technology on conventional and tight oil wells in Western Canada has the potential to reduce emissions by at least 8.5M tonnes CO2e annually

A Financial Approach to Whether or Not to Employ Artificial Lift in an Oil Well or Wells

- This approach will be based on a discounted cash flow analysis
- Generate a stream of projected cash flows for the well or group of wells without artificial lift over the expected producing life of the well
- Generate a stream of projected cash flows for the well or group of wells utilizing artificial lift over the expected producing life of the well
- Determine an appropriate risk accounted discount rate
- Calculate the discounted value of the well(s) net of capex with and without artificial lift
- As an alternative method to confirm discount assumptions, a Black Scholes analysis could be done



Steve Strachan VP Sales - North America



Sven Olson Senior Consultant



Krzysztof (Kris) Palka CEO



Richard Reeves Managing Director



ESP Predictive Analytics using a single application with Machine Learning and Fault tree models

- Industrial scale predictive analytics for Artificial lift equipment with emphasis on Electrical Submersible pumps
- An innovative approach for reducing multi-dimensional problems to a unique index indicative of equipment health while preserving ability to drill down to root cause variables
- ESP Health index and results show clear deviation between actual and expected ESP performance indicative of ESP health problems and / or changes in reservoir performance

Digital plunger lift application in Tight Gas field

- Reducing production loss and liquid loading
- Increase field efficiency
- Auto-optimize production cycle to increase gas rate and water production

Providing cost effective solution to improve production on low energy or idle oil wells

- Introduction: What is AutoBooST Artificial Lift Technology and how it works?
- AutoBooST new package, MkII Specifications s and Improvements
- Case Studies Review and Candidate Wells Selection Process

Digital Twins – Integrated Enterprise Asset Management Optimization for fields utilizing Artificial Lift

- More than 90% of every Oil and Gas field drilled and developed will require artificial lift in the field's production life cycle
- The effective management of artificial lift is central to the economic success of most Oil and Gas projects. Due to the significant decline rates and pressures of most unconventional wells artificial lift is often necessary within the first 3-5 year
- Technological advances around Digitalization, HPC Cloud, GPU Edge Computing, Digital Twins, Integrated Enterprise Asset Management systems, AI/ML, and Non-Invasive Sensor Arrays are helping operators increase their EUR (Economic Ultimate Recoverable) reserves for any new and/or legacy brownfield assets



Vineet Lasrado Global Technical Lead -Oil & Gas Industry



Jingfei Tang Lead Artificial Lift



Hichem Mansour Chairman & CEO



Dan Morrison Director of Energy and Natural Resources

ESTSP (Electric Submersible Twin Screw Pumps) - Multiphase & PMP (Pipe Line Multiphase Pumps) Zero Leak & Extreme GVF Handling Capabilities

- ESTSP (Electric Submersible Twin Screw Pumps), is the only true multiphase pump where it can handle GVF of up 97 % and yet cool the motor due to JT effect.
- All fluid that can be displaced by the pump, can be moved up the tubing. This reduces hp requirement as the column weight is reduced. Major savings in hp. Put the gas to work in your favour.
- Handle gas in a compressed state downhole rather than handle large amounts of gas on surface with surface multiphase pumps
- In the case of surface multiphase pumps- the PMP (Pipe Line Multiphase Pumps) is a solution where leaks cannot be tolerated at all. All systems including the motor is inside a casing and hermetically sealed. No preventive maintenance at all with redundant systems when one system fails without stopping operation in any manner"

Leveraging digitalization, reduce unplanned downtime and optimize maintenance processes through real time application

- Database of ESP units to make digital version of units. Which contains around 100 main parameters for each unit
- This allows to make universal " language " to communicate between costumer and contractor (manufacturer). Speeding up back and forth communication
- Allows to create digital interface to configure ESP units into ESP systems avoiding "paperwork" and Catalogs and brochures
- Easy understanding design software for ESP configuration with minimum training and zero chance of mistake
- Potential to implement "Artificial intelligence" solutions since all digitalised units will contain all information within its-elves. Including characteristics, sizes, limitation, connection parameters, materials etc.

Traditional Scada VS Modern Scada Or llot : Demand Response VS Report By Exception

- The difference between Demand Response and Report by Exception or traditional SCADA VS IIoT
- The benefits of this new way of getting data
- The details of a case study and Field deployment AUTOSOL has with MQTT where the bandwidth consumption was reduced by 99.26%. It got the client 60x the data for their plunger lifts, cut optimization time from 14 days to 1 day, and increased production by 3-11%

Autonomous LRP[®] Sucker Rod Pumping Unit and Controls

- Well data gathering systems are efficient at collecting tremendous amounts of information, so much so that pertinent information may go unnoticed or unreported/delayed
- The solution is an expert, autonomous pumping system coupled with smart instrumentation that provides an immediate and automatic response to dynamic well conditions with intelligent data reporting
- The LRP® linear rod pumping unit and controls for sucker rod pumping
- A Pump Clean[™] mode automatically engages if loss of pump valve action is detected



Pradeep Dass President & CTO



Aydar Khaydarov Business Development Manager



Lee Cysouw Regional Sales Manager



Rick Gearheart Design Engineer III

Safety Leadership Through Emotional Intelligence

- Emotional Intelligence is a Fundamental Soft Skill in Leading in Safety
- Applications of Emotional Intelligence in the Safety Space (e.g. group and individual)
- Proven Positive Outcomes of Emotional Intelligence in the Safety Space



Britt Howard Group Director, Assurance

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