A new approach to Optimising Well Production using Cable Deployed ESP's

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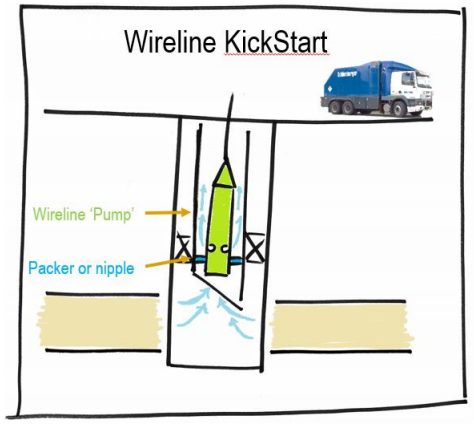
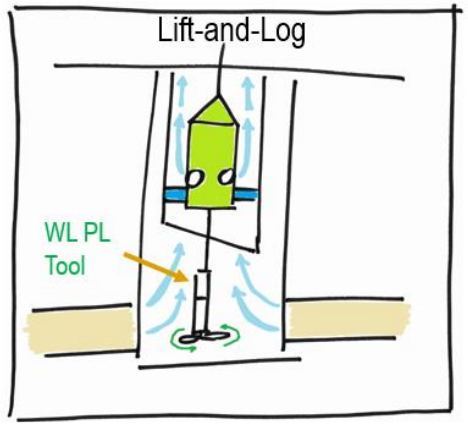
Applications

Wireline/CT Conveyance and Logging Technology + Compact Submersible Pumping Technology = ***Wireline/CT Intervention Pumping System***



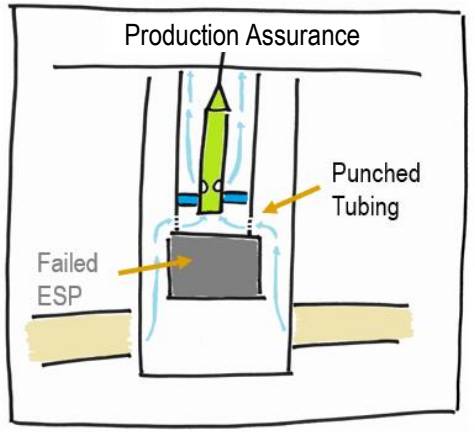
KickSTART

- Reduce Hydrostatic Overbalance
- Cost Effective Rigless Cable Deployed Well Startup
- Reduced Footprint and Eliminate Logistical Challenges.



Lift & Log

- Evaluate Idle Wells for Production Potential using Pump and Production logging
- Identify Best Zones
- Required remediation actions
- Correctly Size Artificial Lift Design



Production Assurance

- Maintain Production for a Failed Permanent ESP
- Wireline Unit Deployed ESP installed "Semi-Permanently" (i.e. Several Months)

Short term applications (days)

Longer term (months)

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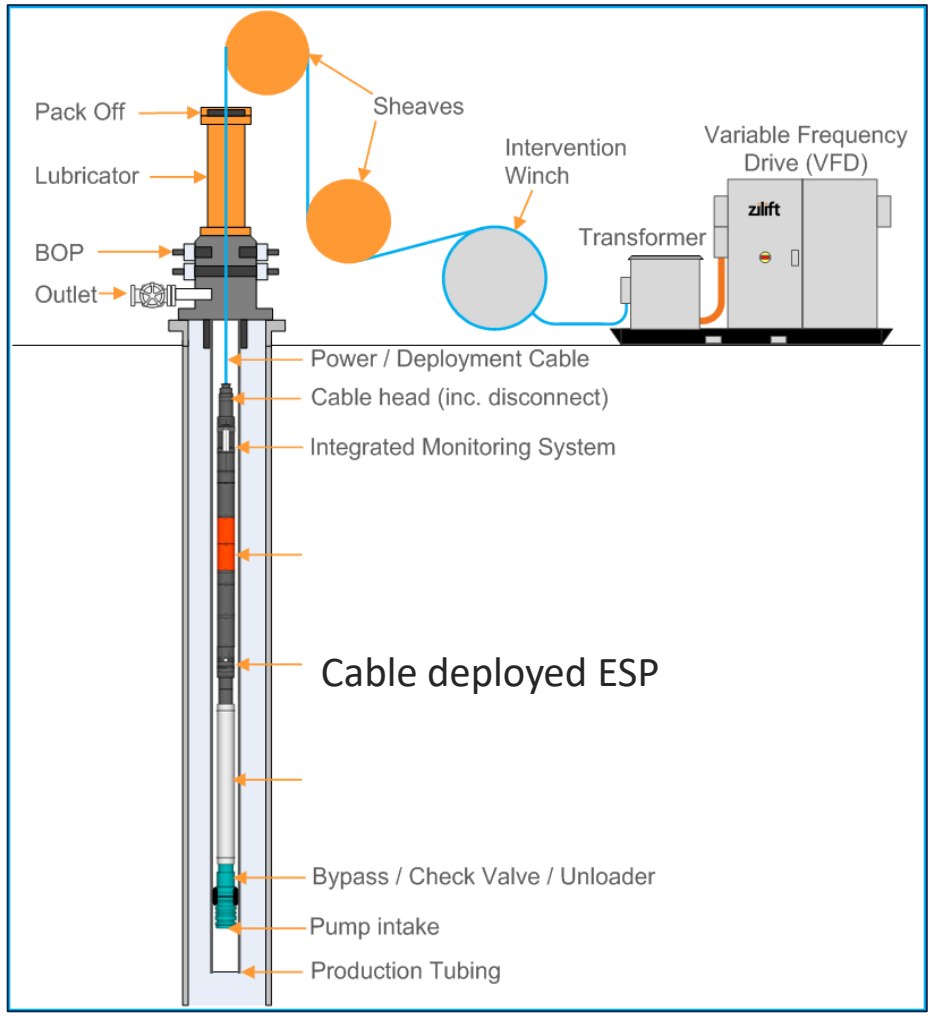
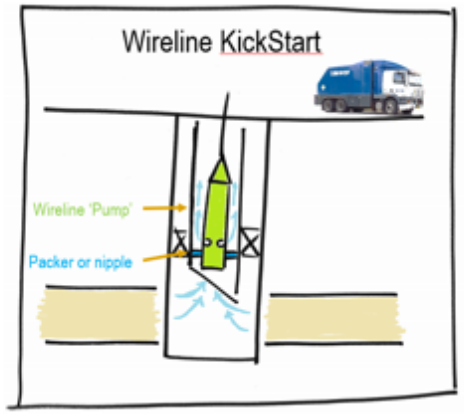
WIST/ KickSTART – Reinstate Production in Naturally Flowing Wells





KickSTART

- Reduce Hydrostatic Overbalance.
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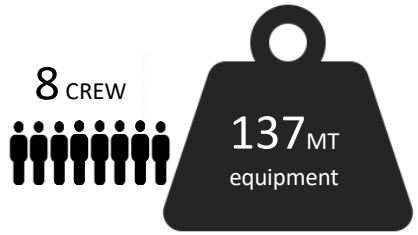
World first kickStart job completed Summer 2021

Reduce the hydrostatic overbalance of a well using a temporary cable deployed pump

Eliminate coiled tubing jobs offshore, desert, jungle, arctic



Coiled Tubing N_2 Job

kickSTART job

4 CREW

22 MT equipment

Faster, lower cost, safer
85% reduced emissions

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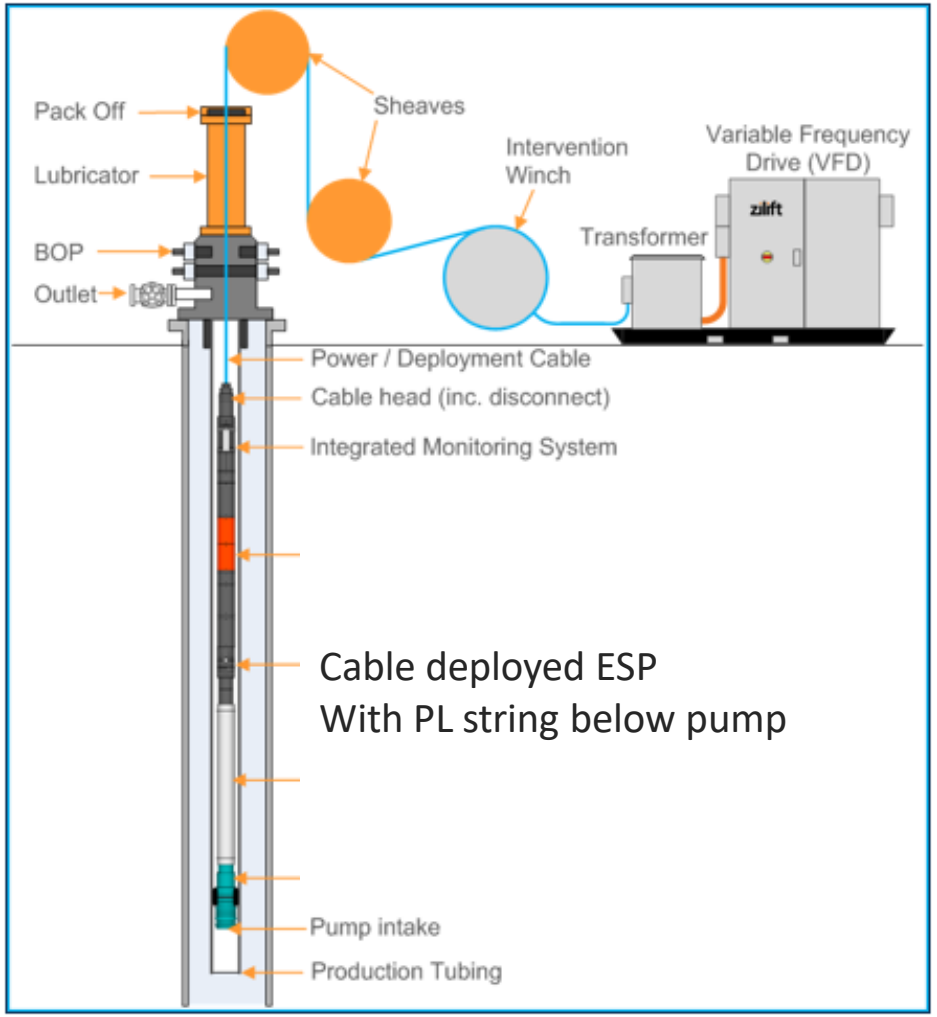
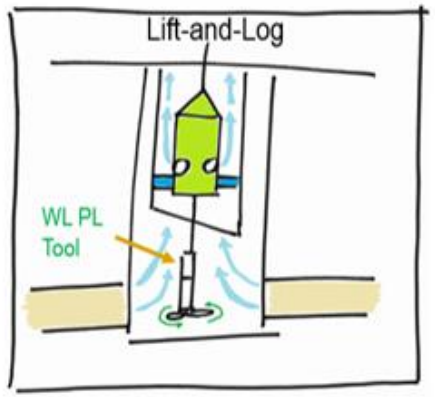
Lift & Log – Downhole Pumping & Evaluation (Production Logging)



Cable deployed ESP
With PL string below pump



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1st Lift & Log job in California

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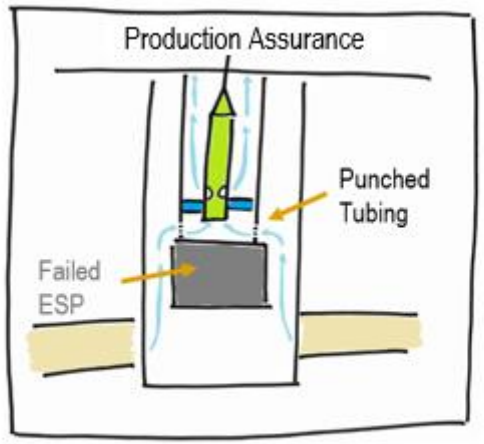
zilift
Innovative Artificial Lift
zilift
RIDGID
RIDGID
Calum Crawford

WPA – Wireline Production Assurance



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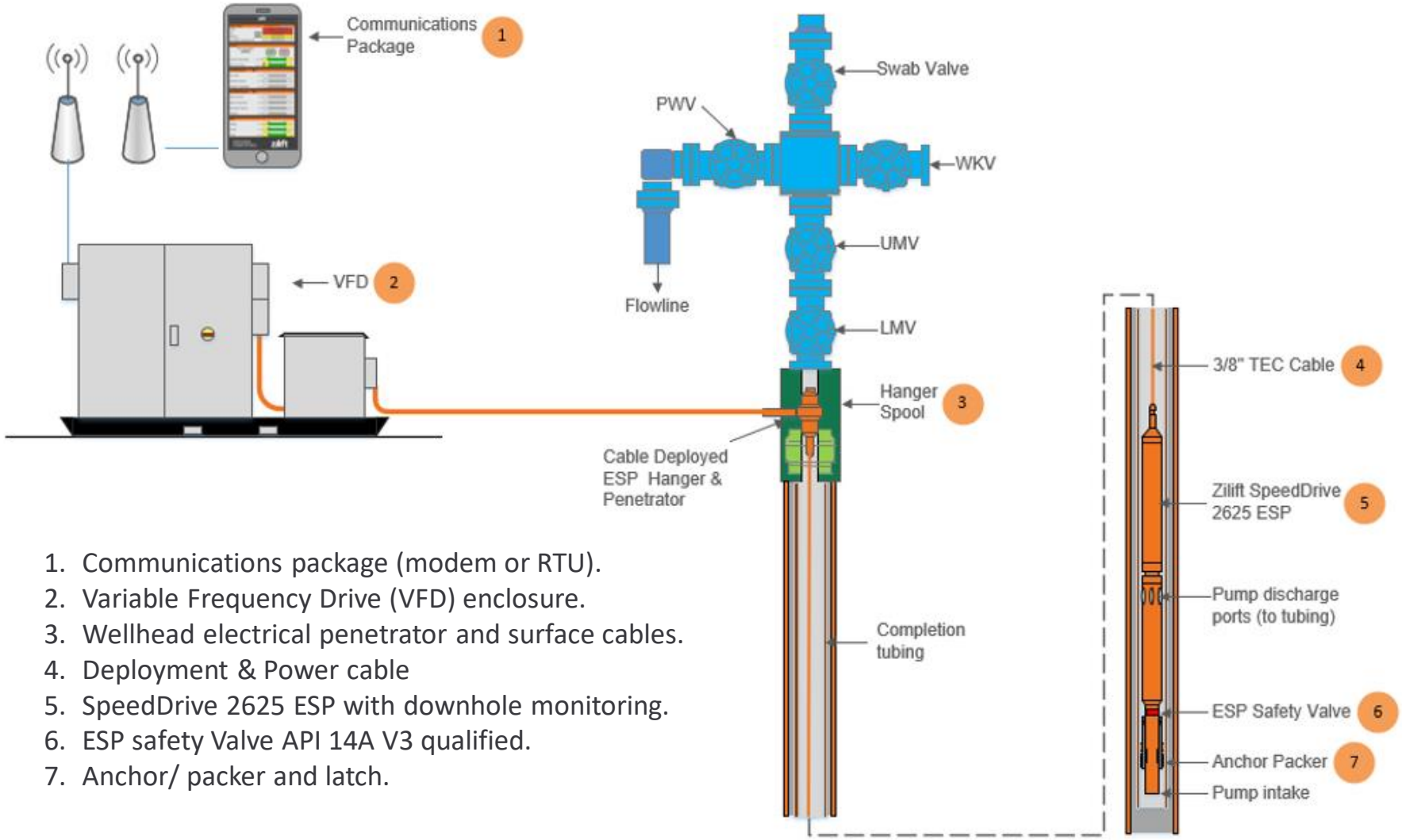

1. Communications package (modem or RTU).
2. Variable Frequency Drive (VFD) enclosure.
3. Wellhead electrical penetrator and surface cables.
4. Deployment & Power cable
5. SpeedDrive 2625 ESP with downhole monitoring.
6. ESP safety Valve API 14A V3 qualified.
7. Anchor/ packer and latch.

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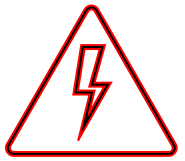
Wireline deployed ESP - Technology & present capability

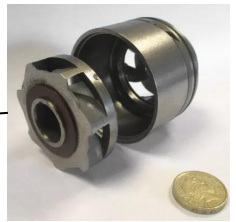
Several field jobs conducted. Technology demonstrated to work and developing track record

SpeedDrive 2625	
Technical Specifications	
OD	2.70” nominal
Min. Tubing	3-1/2”
Power	To 120hp
Flow Rate	1,000 & 2,000 bpd BEP
Depth	To 7,000ft
Ambient Temp.	120°C (248°F)
Live Well	Yes – Install & Retrieve

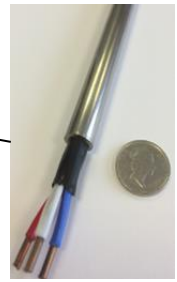


API 11S9 – PMM Safety

PMM motors can generate dangerous voltages even when powered down!



2.625” OD, 7500rpm



TEC available in 316SS & Alloy 825

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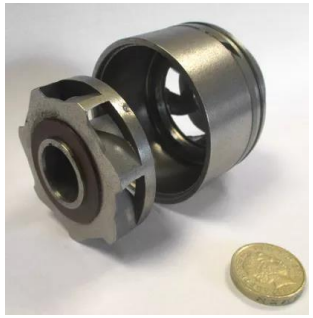
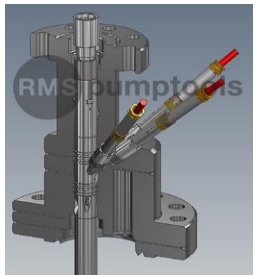
Wireline deployed ESP – Making it Better, Making it Easier



Pumping performance

- 3,000bpd BEP stage designed (2.7”)
- Gas handling stage designed (2.7”)
- Gas separation solution in manufacture



Easier well interface being developed

- Developing a more standardised well interface
- Reduce wellhead related work
- Reduce system delivery times
- Easier to install where available height or crane has limitations

Deviated wells

- Roller solutions
- PumpDown

Cable

- New cable using latest SLB StreamLINE polymer locked technology in manufacture
  - Increased depth, Higher SWL
  - Increased power
  - Increased fatigue life

Test the ESP before terminating the cable – being developed

- While Wireline is on location
  - Is the system working?
  - Is the ESP correctly sized?
  - Is it at the right depth?
  - Any issues simply retrieve to surface

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The complete service – Evaluation to Production

The steps;

- Lift & Log – **Evaluate the well** with Wireline ESP & Production Logging
- Take **Remedial actions** with light intervention – stimulation, close water zones
- Install permanent Wireline deployed ESP
  - **Evaluate ESP performance** while Wireline Unit & field crew are on location (few days)
  - Leave Wireline deployed **ESP on production**

- The **Disruptive technology** enables **New commercial models**
  - **Service models** rather than equipment sales.
  - **Performance based** – linked to pump operation, production barrels?
  - **Win – Win** for Operators and Service sector

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Thank you and Questions?

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