



# Retrofit Intelligent Well Technology

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# Wireless Communications

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The industry requires a reliable range of wireless communication methods downhole to compliment surface capability

- No Cables
- No Control Lines
- Limited Downhole Jewellery.

# Downhole Wireless Communications

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Credit:  
[www.webwormcpt.blogspot.com/2008/01/tube-rupture-pressure-relief-valve-psv.html](http://www.webwormcpt.blogspot.com/2008/01/tube-rupture-pressure-relief-valve-psv.html)



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# Downhole Wireless Communications

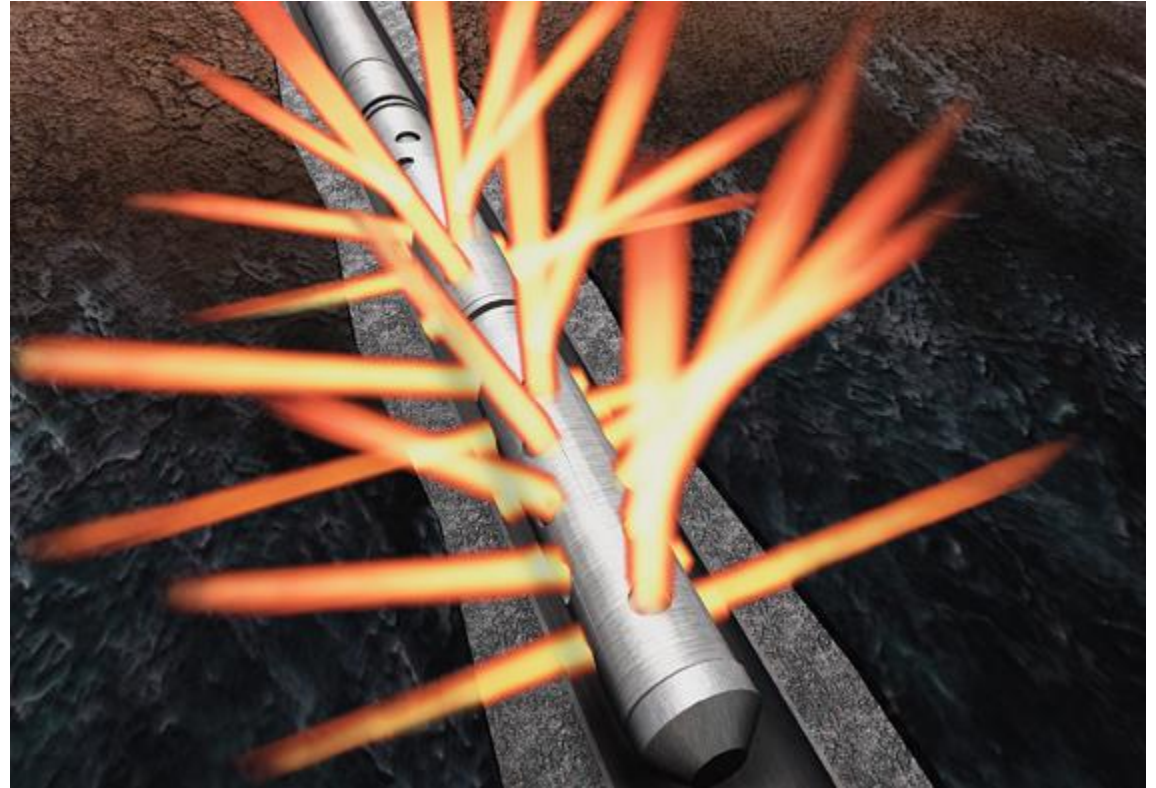
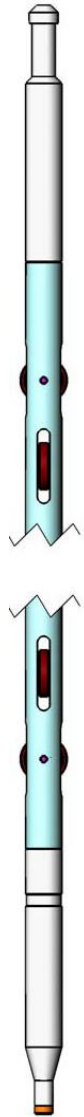
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# Downhole Wireless Communications

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Credit: [www.ic.pro-quip.no](http://www.ic.pro-quip.no)

# Downhole Wireless Communications

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Traditional methods - Binary outcome

- Tool functions....
- Or it doesn't

# What is PulseEight

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Unique pressure pulse telemetry communicating wirelessly between downhole and the wellhead and vice versa

- No Cables
- No Control Lines
- No Signal Boosters or Repeaters
- No Additional Surface Kit\*

Retrofit design allows it to be positioned into most completions

# Communications

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- Communication to surface
- Tool briefly chokes well flow

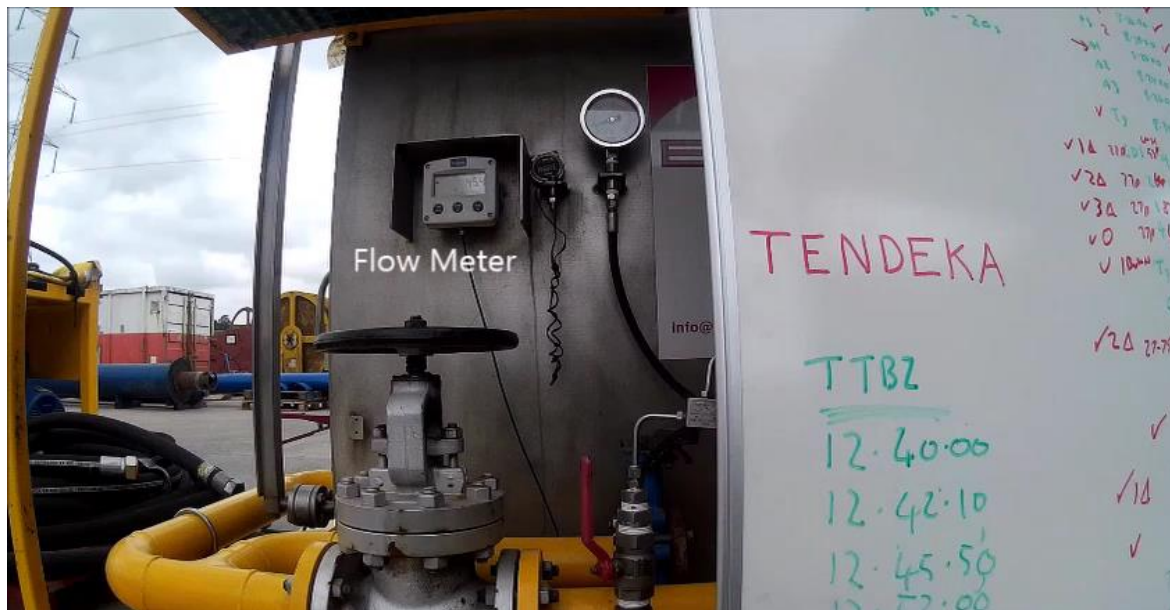




# Communications

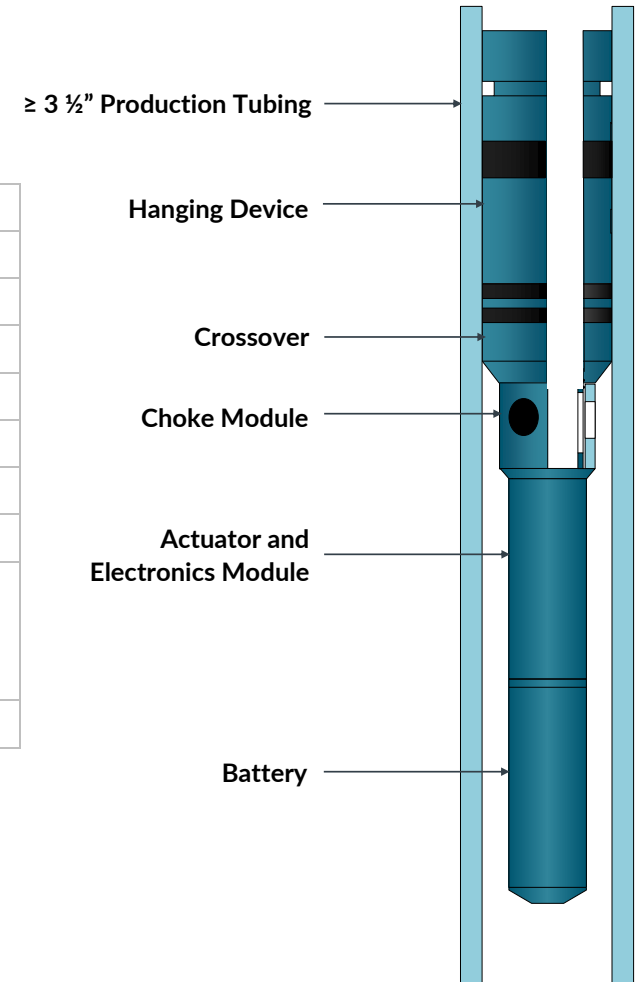
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- Communication from surface
- Brief choking of well flow by surface valve manipulation



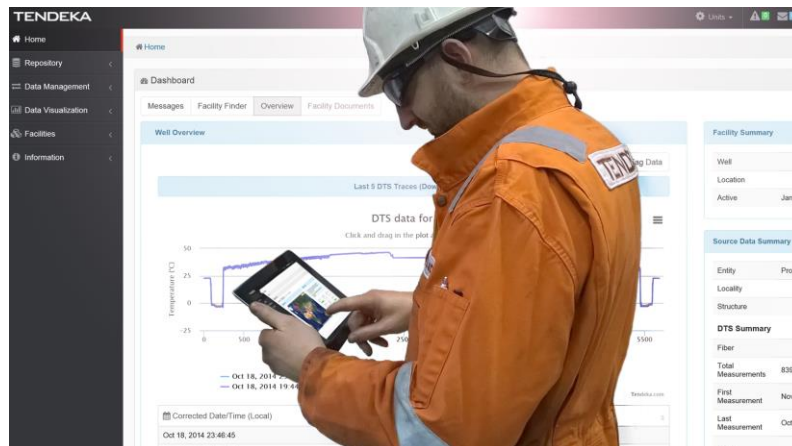
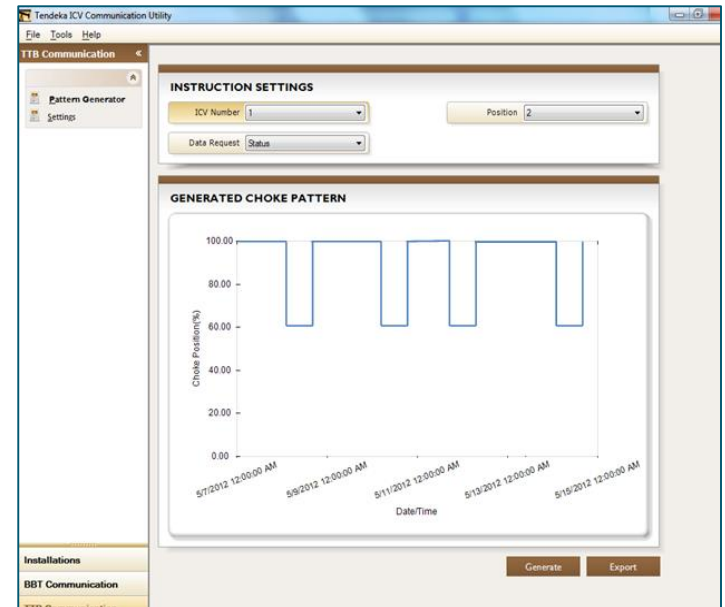
# Deployment Configuration

Technical Specification	PulseEight Range
Max OD	2.50" - 5.00"
Max Rate	10,000bpd - 30,000bpd
Max Length	30.30ft
Body Pressure Rating	10,000psi
Static Seal Rating	5,000psi
Unloading Seal Rating	1,500psi
Max Design Temperature	150°C/302°F
Max Operating Temperature	110°C/230°F *Qualified limit can be reviewed on application basis
Lifetime	Up to 5 years



# Intelligent Completion Management System

- Interpret telegrams from tool
- Seamless data transfer to operator system
- Generate pulse sequences
- Verify correct pulse generation
- Record device status
- Monitor battery usage



# Applications

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1. Multilateral Control
2. Gas Lift Optimisation
3. Pressure Temperature Monitoring

# Multilateral Control

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- Increasing water cut
- Suspend existing bore
- Interventionless reopening based on time or command
- Longer term production at higher oil rates
- Improved recovery factors

# Gas Lift Optimisation

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- Utilise gas cap to drive production
- Minimise the need for traditional gas lift
- Surface/autonomous control of downhole flow regime

# Pressure and Temperature Monitoring

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- Long term pressure or temperature trend analysis
- Real Time data
- Ability to easily replace existing failed PDHG's
- Reduction in interventions required
- Downhole shut in capability
- High speed data recording

# Case Study - PT Monitoring

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Wireless pressure/temperature monitoring onshore well Austria

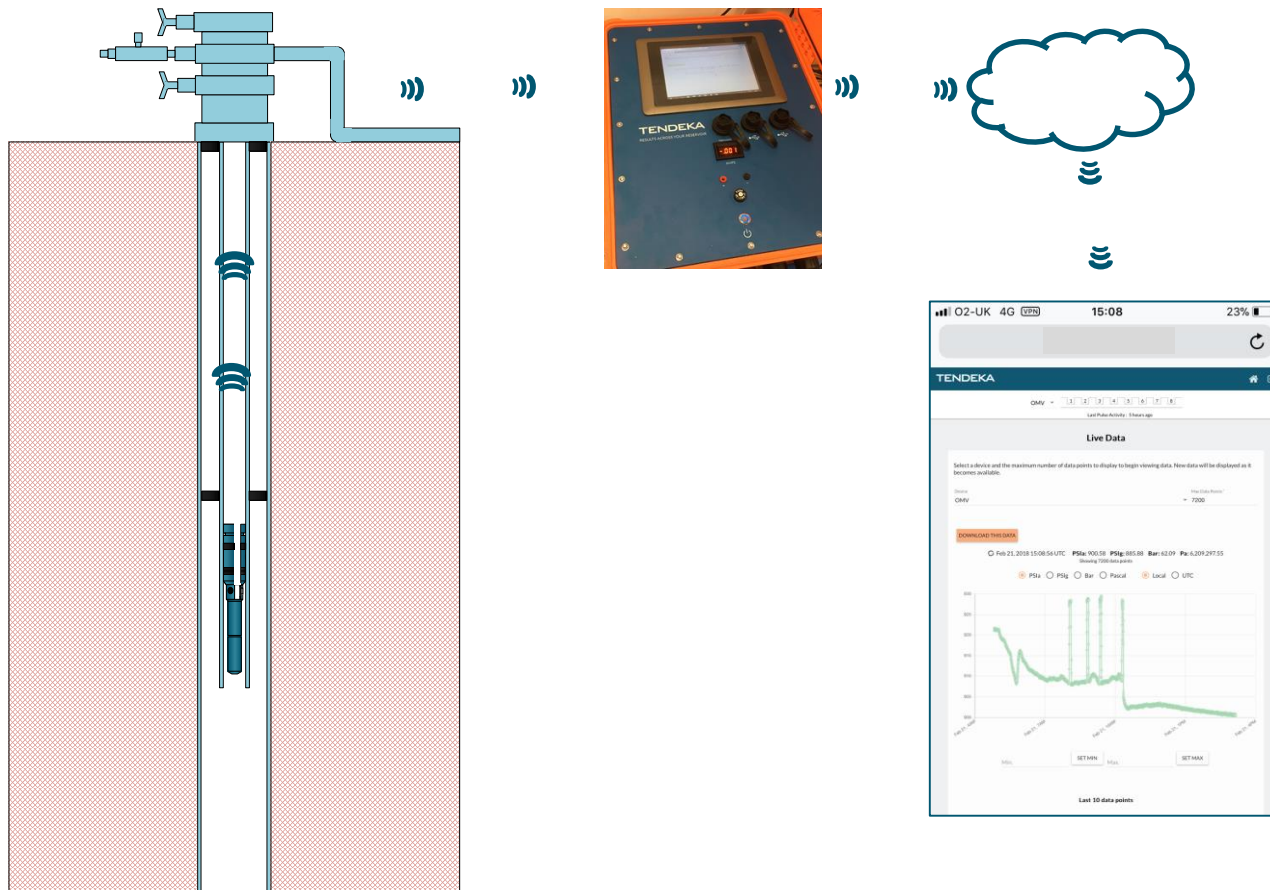
Production rate - 4-5MMscf/d  
Setting depth - 1000m  
Pressure - 100-110Bar  
Temperature - 68°C  
Well Type - Gas Storage





# Case Study - PT Monitoring

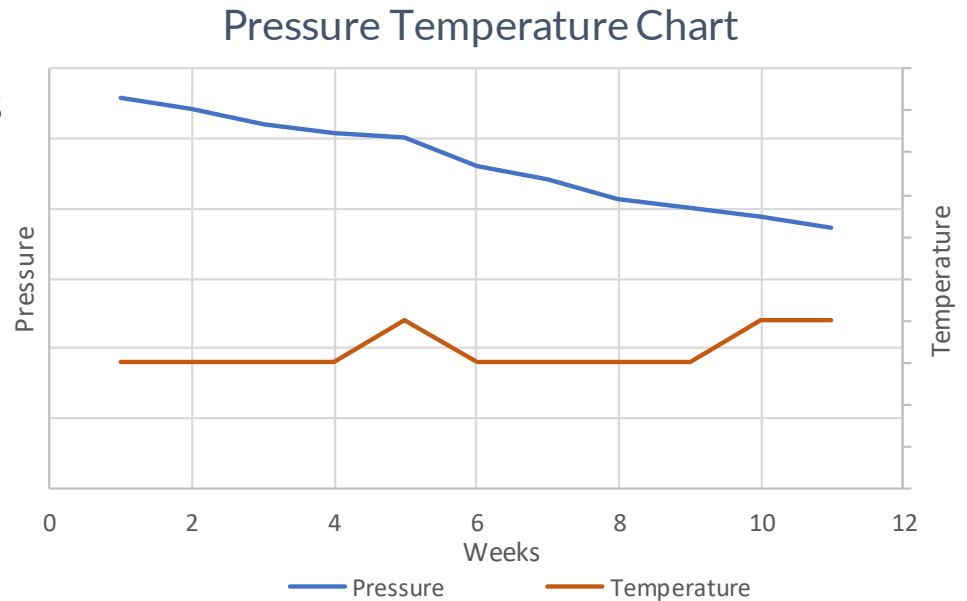
Demonstrate Cloud Connected Wireless Communication from Reservoir to Desk



# Case Study - PT Monitoring

## Results:

- 11 weeks in hole
- Weekly Pressure/temp signals
- Data Access
  - Onsite
  - Remote Desktop
  - iPhone App
- Downhole shut-in



# Future?

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Is there value in Big Data?

# Questions?

