



Noven IIoT Basics

Vision

We aim to develop technologies that will help accelerate energy transition and offer low-cost solutions for efficient decarbonization of the energy system.

Provide smart digital technology platform for decarbonization energy industry

Mission

Integrates Hardware, Firmware, Software expertise to design, build and implement end to end solutions. Digital platform for decarbonization; produce more with less, reduce emissions & energy intensity

Value proposition

- A. Keep **Mature Oilfields Producing (MOP) lowest Carbon Dioxide (CO₂)** emissions per barrel oil produced
- B. Green House Gas (**GHG**) emissions, **Methane** monitoring **at the source**, leak detection and loss prevention

The NOVEN Technology platform comprises:

- Dedicated proprietary & patented sensors. They are specifically designed for targeted industrial application
- Shared common electronic boards that digitize and pre-process the sensor signal
- Sensors' communication via Bluetooth to an onsite computer (Gateway) for data analysis and system diagnostics (EDGE Computing) using dedicated proprietary **Artificial Intelligence** Algorithm proprietary to Noven.
- The synthesis results (diagnostic of the *state of the system and immediate actions to be taken*) are then transmitted via Cell or Satellite coverage to the operator of the system, (oil field operator) who can take the necessary action with no need for more analysis.
- The whole platform is **fully automated, inexpensive, fast** and **efficient**

1. Monitor

Sensors capture and transmit data to Gateway

2. Diagnose

Artificial Intelligence Apps Detects issues, explain the cause of the anomaly

3. Guide

Cloud Platform visualize and reports to users

4. Act

Users perform intervention & improves the system performance, efficiency

Noven Sensors and Gateway



Wireless
Inclinometer



Wireless
Polished Rod
Load Cell



Wireless
Pressure Gauge



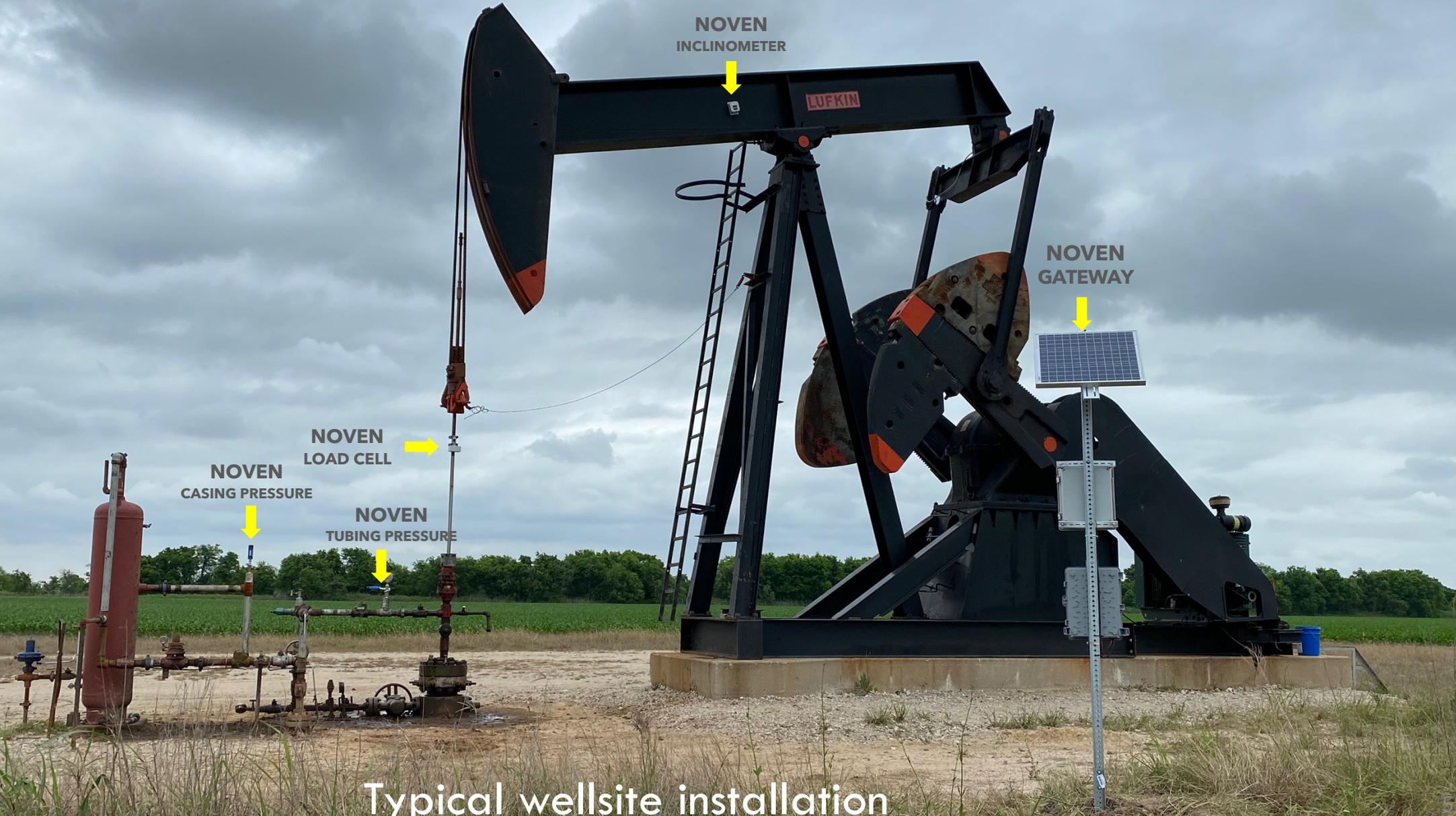
Acoustic
Tank Level
Sensor



Wireless
Gateway

Automated data capture, processing and diagnostics using proprietary AI/ML algorithms

Noven Technology at Work



NOVEN
INCLINOMETER

NOVEN
GATEWAY

NOVEN
LOAD CELL

NOVEN
CASING PRESSURE

NOVEN
TUBING PRESSURE

LUFKIN

Typical wellsite installation

MOP Value Proposition for Sucker Rod Pumping wells

Assumption: 100 wells with 300BOPD/well

- One single Engineer can manage the whole field with never attained results
- Very early identification of pump integrity (leaking valve, rod, gas issues)
 - If only 5% of the wells get an issue and we detect it 10 days earlier, what is would translate?
 - Customer can react to the issue 10 days earlier saving an equivalent of 50 well/days of full production
 - If one assume the issue resulted in 50% loss of pumping efficiency, this represents 7,500bbls oil in a month
- In the same way early detection of flow assurance (casing, tubing, formation damage)
 - 5% of the well with issue and saving again 10 days to react (very conservative)
 - making up for a 50% production loss represents again 7,500bbls/month savings
- The deployment of the Noven System in a 100 wells field
 - will cumulatively save 15,000bbls oil / month production

Full cash payback in few months

700,000+ candidate wells in USA