NGL TECH

Creating Value Thru' Innovation

MULTIFUNCTIONAL PRODUCTION UNIT (MPU) FOR MATURE FIELDS

(Low Pressure Production Unit With Integral Desanding And Bulk Dewatering)

MULTIFUNCTIONAL PRODUCTION UNIT (MPU) FOR MATURE FIELDS

Multifunctional Production Unit is a compact system designed to boost the pressure of production fluids from low pressure wells whilst minimizing the backpressure on wells, removes sand upstream of the processing system and removes bulk water on the wellhead platform. The compact and light-weight design of the system makes it suitable for remote and unmanned wellhead platforms where wells have insufficient pressure to deliver well fluids to production header, high sand production wells and/or high water-cut wells.

MAIN FEATURES AND BENEFITS

- Self-contained system with no external power or motive requirement;
- Integral sand removal facility to prevent erosion or clogging in downstream processing facility;
- Automated sand cleaning and transport within the system without any external high pressure motive fluid requirement;
- Performs bulk dewatering on wellhead platform to allow production from high water-cut wells;
- Provides gas, oil, water and sand measurement that enables the system to function as a well test facility;
- Compact & light weight;
- Automated system with minimal operator attendance and maintenance; and
- Suitable for remote unmanned wellhead facilities.

West Lutong Bravo (WLDP-B) for
PETRONAS CARIGALI
SARAWAK OPERATIONS

Angsi Field (ANDR-A) for
PETRONAS CARIGALI
PENINSULAR MALAYSIA OPERATIONS

Angsi Field (ANDP-C) for
PETRONAS CARIGALI
PENINSULAR MALAYSIA OPERATIONS

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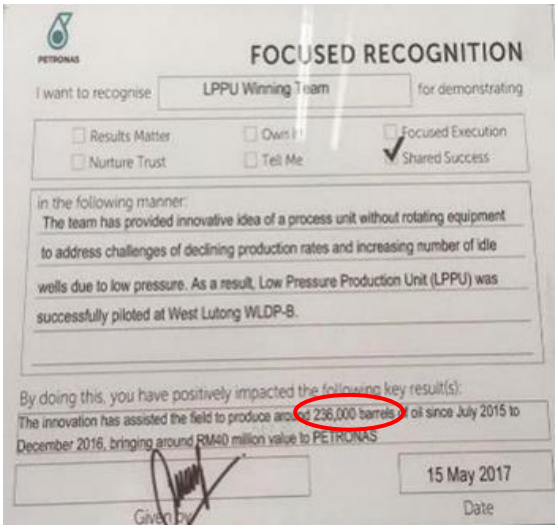
"OTC Asia 2020 Spotlight on New Technology Award Winner" announced NGLTech as the Winner for its innovative system, Multifunctional Production Unit (MPU)



PETRONAS

FOCUSED RECOGNITION

I want to recognise: LPPU Winning Team for demonstrating

- Results Matter
- Own It
- Focused Execution
- Nurture Trust
- Tell Me
- ✓ Shared Success

in the following manner:

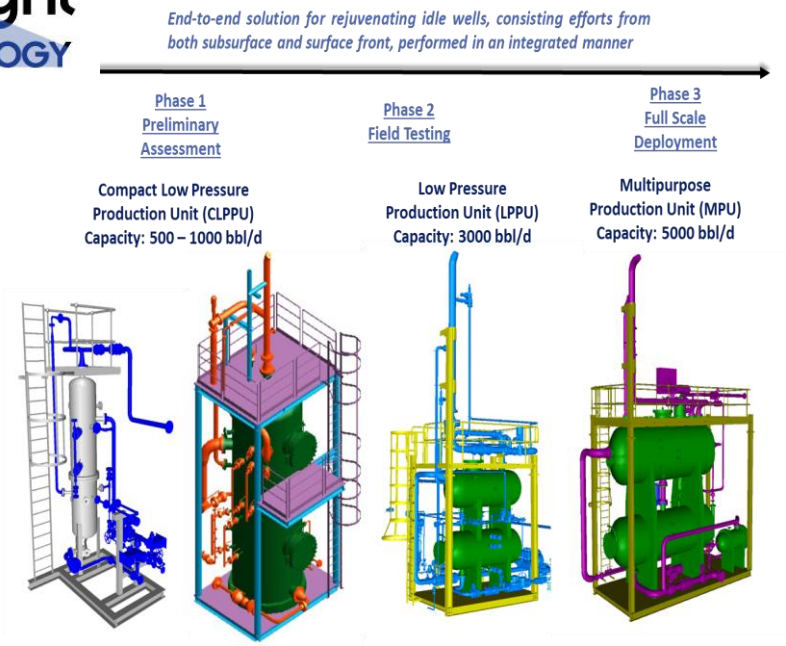
The team has provided innovative idea of a process unit without rotating equipment to address challenges of declining production rates and increasing number of idle wells due to low pressure. As a result, Low Pressure Production Unit (LPPU) was successfully piloted at West Lutong WLDP-B.

By doing this, you have positively impacted the following key result(s):

The innovation has assisted the field to produce around 236,000 barrels of oil since July 2015 to December 2016, bringing around RM40 million value to PETRONAS

15 May 2017

Given By: Date



General Specifications

Design Capacity
- Liquid Rate : up to 10,000 blpd
- Gas Rate : up to 10 MMscfd

Operating Envelope
- Inlet Pressure : Atmospheric to 4 barg
- Discharge Pressure : up to 30 barg
- Inlet Temperature : ambient to 100°C

Flow Measurement
- Gas Flow, Total Liquid Flow, Oil Flow, Water flow and Sand Production.

Oil in Water Content For Disposal
- Less than 30ppm

Sand Removal Efficiency
- 98% down to 30 microns

Availability
- > 97% uptime

Mechanical Construction
- Material : Carbon Steel
- Vessels designed to NACE
- Vessels design code : ASME VIII Division 1
- Piping design code : ASME B31.3

External Requirement
- Motive Gas Consumption : up to 0.6 mmscfd (typically from gas-lift supply)

Electrical System
- AC/DC power feeder (400 Watt)

Option (if power feeder not available):
- Self-contained solar powered system
- 24DC Battery/Charger System
- CENELEC/ATEX Zone 2, Ex'e / Ex'd

Instrument System
- Instrument: 4-20mA HART,
- CENELEC/ATEX Zone 2, Ex'd, IP66

On skid Unit Control Panel
- CENELEC/ATEX Zone 2, Ex'e, IP56
- Single CPU for Control & Shutdown Functions
- Local HMI

Field programmable
- Serial Link / Radio interface for remote access
- Electronic/wireless instrument

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