

UK TECHNOLOGY LEADERSHIP BOARD ·  
NORTH SEA TRANSITION AUTHORITY ·  
PRODUCTION EFFICIENCY

# Enhanced LPPU™ (PBoost™)

Surface multiphase boosting for liquid-loaded and backpressure-choked wells.

Recovering production downstream of the choke —  
without compression, without flaring.



# Who is NGLTech Group

14 Years of Field Deployments  
 17 Offshore EPC Packages  
 22 Offshore Deployments (Technology)  
 60+ Eng FEED Studies

## TECHNOLOGY SUITE

**NGLTECH**  
 · Technology IP holder · patent owner ·

**NGL  
TECH**  
**Core Suite**

**NGL x MALAYSIA (NOC) PETRONAS**  
**Sep-iSys Suite**

· EPCC · EPCIC ·  
 · EPC · O&M ·

**NGLTECH SERVICES**

**O & G  
CONSULT**

· Multi-discipline Engineering ·  
 · FEED Studies · HAZOP ·

· PETROS ·  
 · SEDCE ·

**NGLTECH (SARAWAK)**

**VERDYGEN  
SDN BHD**

· Green Energy ·  
 · Decarbonization Technologies ·



**Enhanced LP-CRS™**  
 Low Pressure Condensate Recovery System  
 (Associated Flare Gas Recovery)



**Enhanced LPPU™ (Pboost)**  
 Low Pressure Production Unit  
 (Multiphase Surface Wellhead Booster)



**Sep-iSys™**  
 Desander  
 (Cyclonic Flow Stabilizer Desander)

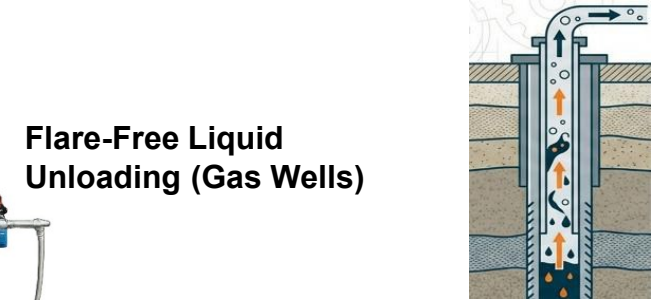
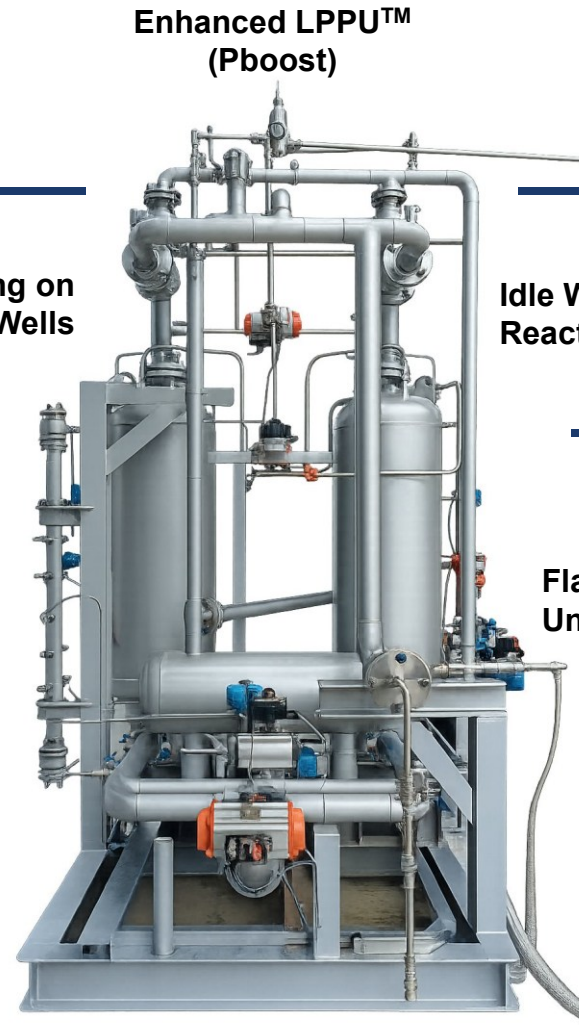
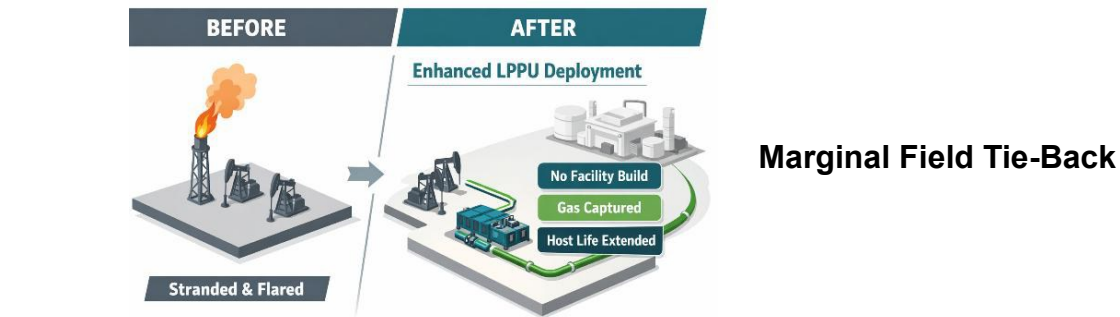
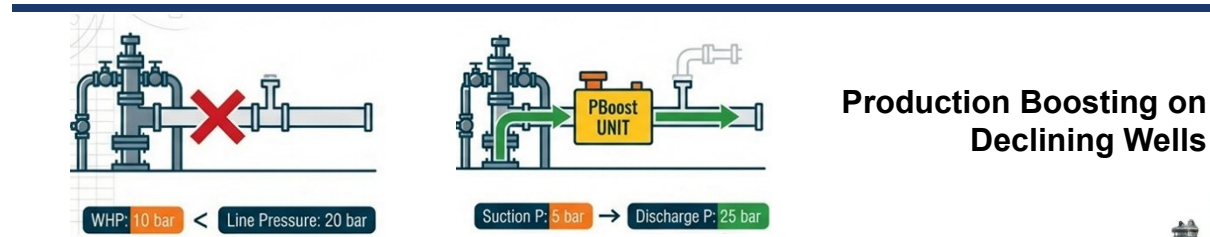
## NGLTech THROUGH THE YEARS

Modularization, Standardized Skid Sizes & Proprietary Optimization across core Technologies

- 2009**  
NGLTech Sdn Bhd Founded · Kuala Lumpur, MY
- 2012**  
First field deployment
- 2014**  
First LPPU™ deployment · (PETRONAS Carigali)
- 2018**  
IChemE Winner OTC Asia Spotlight #1
- 2019**  
SPE International recognition
- 2023**  
ADIPEC Awards Finalist
- 2024**  
First Vietnam deployment  
Enhanced LP-CRS™ OTC Asia Spotlight #3
- 2025**  
Enhanced LPPU™ Live Pilot R&D Facility Set Up

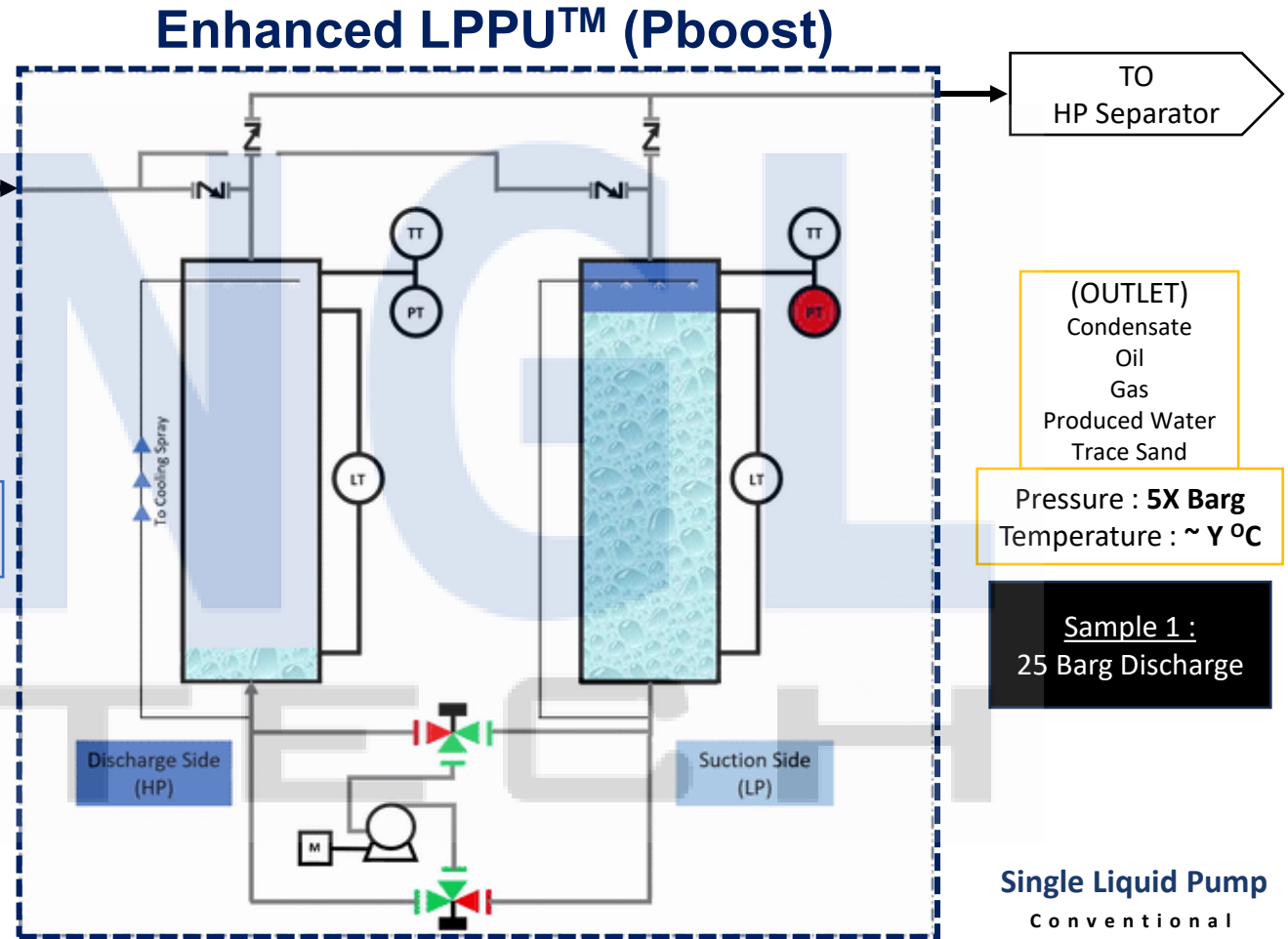
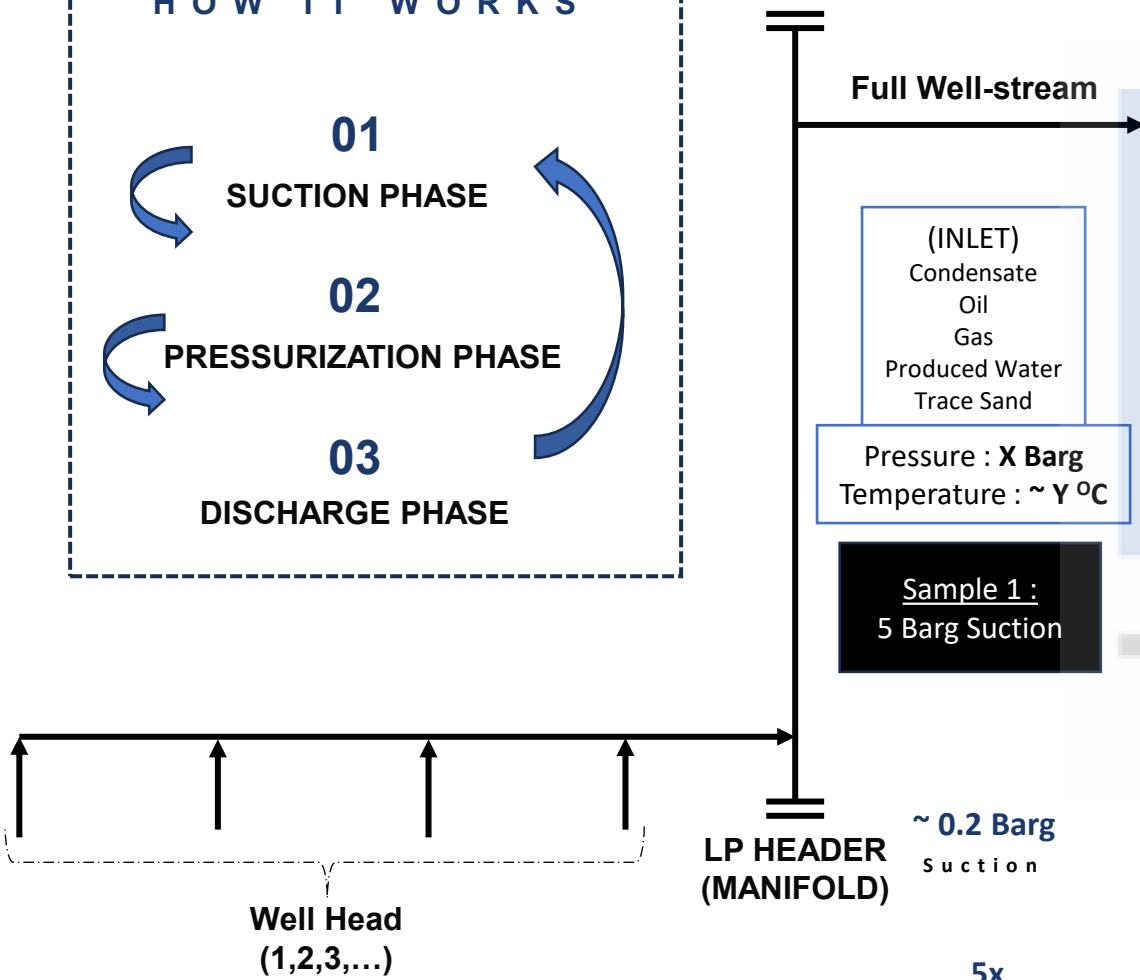
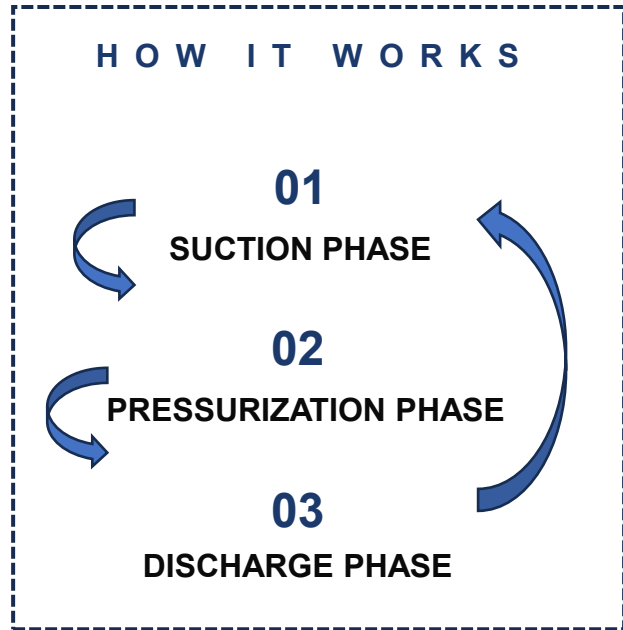
# Six operating-envelope problems. One Unit.

## APPLICATIONS



**Flash Gas Recovery on FPSOs**

# A liquid piston, not a compressor.



- 5x**  
Suction - Discharge DP
- Automatic Flushing**  
Sand Boot
- Continuous**  
Well Unloading
- Axial Flow - Non-slam**  
Check Valves
- Cooling System**  
Integrated

# Field-proven components. Live pilot.

## TRACK RECORD

### THE SEP-ISYS™ LPPU FOR WLDP-B OFFSHORE MIRI



CLIENT	
PETRONAS	Award Date 2014
Scope	
Provision of Leasing of LPPU (ongoing contract – O&M by NGLTECH)	

PRODUCTION PARAMETERS	
Facility Name	WLDP-B
Duty	Oil
Max Gas	5 MMscfd
Max Liquid	3,500 BLPD
Current Status	Production since Oct 2014

INSTALLED SEP-ISYS LPPU™	
Average Incremental Production	600 BBL
Suction Pressure	3 Barg
Discharge Pressure	15 Barg

### THE SEP-ISYS™ LPPU FOR ANDR-A OFFSHORE TERENGGANU



CLIENT	
PETRONAS	
Scope	
Provision of Engineering Procurement Construction Installation and Commissioning of LPPU	

PRODUCTION PARAMETERS	
Facility Name	ANDR-A
Duty	Oil
Max Gas	7 MMscfd
Max Liquid	8,000 BLPD
Current Status	Production since Oct 2016

INSTALLED SEP-ISYS LPPU™	
Average Incremental Production	1200 BBL
Suction Pressure	5 Barg
Discharge Pressure	12 Barg

### THE SEP-ISYS™ LPPU FOR ANDP-C OFFSHORE TERENGGANU



CLIENT	
PETRONAS	
Scope	
Provision of Engineering Procurement Construction Installation and Commissioning of LPPU	

PRODUCTION PARAMETERS	
Facility Name	ANDP-C
Duty	Oil
Max Gas	10 MMscfd
Max Liquid	8,000 BLPD
Current Status	Production since Nov 2016

INSTALLED SEP-ISYS LPPU™	
Average Incremental Production	800 BBL
Suction Pressure	8 Barg
Discharge Pressure	24 Barg

LIVE  
OPERATING  
DEMO  
MODULE

Enhanced LPPU™  
(Pboost)



### (DEMO) UNIT SPECIFICATIONS

Liquid Flowrate :	500 BBL/D
Gas Flowrate :	0.7 MMscfd
Suction Pressure :	5 barg
Discharge Pressure :	15 barg
Weight (Dry) :	12 T
Skid Dimensions :	2.7m (L) 2.5m (W) 3.5m (H)

Standardized  
4 standardized  
skid modules

Customizable  
Engineered for  
larger  
volumes

# Focused Recognition. Active engagements.

PRODUCTION  
TECHNOLOGY  
RECOGNITION

ACTIVE  
ENGAGEMENTS

## LPPU RECOGNITION

**FOCUSSED RECOGNITION**

I want to recognise **PTVSB & NGL Tech** for demonstrating

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

in the following manner:  
 - Working 7 day /week, with no holidays during Raya...  
 - Immediately responded to queries and requests from PSSB.  
 - Strong, competent & reliable engineering team during design stage.

By doing this, you have positively impacted the following key results:  
 Timely delivery of LPPU unit to KSB with no cost impact

Mohamad Husein Pts Hand 22/07/16  
 Given by Date

PETRONAS Cultural Beliefs

Focused Recognition Certificate from PETRONAS Peninsular Malaysia Asset (PMA)

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

15 May 2017  
 Date

Focused Recognition Certificate from PETRONAS SK-Oil

**236,000 BBL**  
 -->  
**USD 19 Mil**  
 incremental recovery in 18 months through implementation of LPPU



**NOC's**

**OPERATORS**

THE OFFER · DATA REQUEST

Complete the attached Enhanced LPPU™ Data Request Form for any well where backpressure, liquid loading, or LP flash gas is limiting production. We return a screening-level Enhanced LPPU™ feasibility **within 48 hours.**

WHAT WE RETURN

- 01 **Sizing envelope**  
Suction / discharge / boost / power per candidate well — against the PBoost reference and engineered variants.
- 02 **Indicative skid**  
Footprint, weight, single-crane liftability, electrical demand, utility tie-ins.
- 03 **Techno-Commercial Preliminary Proposal**  
Indicative Costing & Unit Selection

· NO FEE · · NO COMMITMENT ·

**Yohgern Jothy · Principal Technologist**  
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**Enhanced LPPU™ (PBoost) — DATA REQUEST FORM**  
*Modular Surface-Multiphase Pressure Booster*

*Please complete the items below so we can perform a preliminary screening of your well as an Enhanced LPPU candidate (no compressor required).*

PROJECT INFORMATION			
Client / Operator		Project / Field	
Well Name / ID		Country / Location	
Contact (PIC)		Phone	
Date of Request		Email	

INFORMATION REQUEST FOR ENHANCED LPPU			Client Response		
#	Information Requested	Units	Min	Typical	Max
1	Gas rate (min / typical / max)	MMSCFD			
2	Oil rate (min / typical / max)	BPD			
3	Water rate (min / typical / max)	BPD			
4	Gas MW	—			
5	Oil density	kg/m <sup>3</sup>			
6	FWHP (min / avg / max) (Note 1)	bar(g)			
7	SITHP (Note 1)	bar(g)			
8	Wellhead temperature (min / max)	°C			
9	Well tubing size	in			
10	Well tubing depth	m			
11	Solids / wax / emulsion issues	—			
12	Gas composition (incl. H <sub>2</sub> S, CO <sub>2</sub> , mercury)	%, ppm			
13	Downstream pressure profile (min / avg / max)	bar(g)			
14	Required discharge setpoint(s) (fixed / variable)	bar(g)			
15	Turndown requirement	—			
16	Number of wells & tie-in concept (single / manifolded) (Note 2)	—			
17	Metering requirement (Y / N)	—			
18	Power available	V/Hz/kVA			
19	Instrument air available	bar(g)			
20	Ambient temperature (min / avg / max)	°C			
21	Relevant P&IDs / PFDs (please attach)	—			

**Note 1:** For wells where historical data of SITHP, FTHP and flow are available, please provide.  
**Note 2:** For multiple wells, please provide the relevant well data in separate sheets for each well

*Submit completed form (and any attachments) to NGLTech Representative.*

DATA REQUEST FORM

# THANK YOU



For more information::

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**Yohgern Jothy · Principal Technologist**