Definitive
[dih-fin-i-tiv]
1. most reliable or complete.
2. serving to define, fix, or specify definitely: to clarify with a definitive statement.
3. having its fixed and final form; providing a solution or final answer; satisfying all criteria: a definitive answer to a dilemma.

Optimization
[op-tuh-muh-zey-shuhn]
1. the fact of optimizing; making the best of anything.
2. the condition of being optimized.
3. Mathematics, a mathematical technique for finding a maximum or minimum value of a function of several variables subject to a set of constraints, as linear programming or systems analysis.
PAL CASING PLUNGER SYSTEM

U.S. PATENT NUMBERS: US 6,554,580 B1 and 6,971,856
Other patents pending

Definitive Optimization (855) 933-3678
APPLICATIONS

- Liquid loading low pressure oil and gas wells less than 2000m
- Wells where tubing plungers are failing to perform
- Operator on demand swabbing
- 4.5” and 5.5” casing wells where casing is in good condition.
- Wells where good plan for fluid movement and production is in place.
- Casing Plunger in conjunction with other lift technology for multi-zone production optimization
The Plunger

Valve Shaft not Subject to Breakage

Corrosion Resistant Stainless Steel Used Throughout

Both Cups are Under Casing ID

Multiple Rubber Compounds Available

Cup Expands on Contact with Lower Stop

Centralizer Springs Used Top & Bottom

Undersized cup outside diameter allows the plunger to be effective in wells with varying casing weights or tapered strings.

The Lubricator

No Need to Break Lines for Service

Hammer Unions Facilitate Easy Servicing

Reliable Plunger Catch/Release Mechanism

Easy, One Hand Operation of Hydraulic Lift

Service Openings

Full-Opening Master Valve

Flexible control system allows for adaptability of plunger cycles according to individual well conditions.
Completed PAL Assembly
Wire line Access to Wellhead
PAAL Hinged Lubricator
5 ½ & 4 ½ PAAL Plungers
5 ½ & 4 ½ PAL Plungers

5 ½” WEIGHS
75 POUNDS

4 ½ WEIGHS
50 POUNDS
Old and new cup design
Diameter larger than I.D.
Diameter smaller than I.D.
Lower Cup Profile showing expansion of major diameter due to weight of plunger compressing the ring at the bottom of the cup. Once the lower cup expands and seals with the casing wall, the upper cup then expands and seals by inflation due to pressure build up in the internal chamber of the plunger.
MARLIN BOATES

REPLACE JETSTAR SYSTEM WITH “PAL” SYSTEM.

GAINED MORE ACCESSIBLE LUBRICATOR AND CONTROLLER.

POWER ASSISTED LIFT BENEFIT TO PERSONNEL
Ruth 1-36
MARLIN RUTH...SALES, MCF/MO
Install PAAL Casing Plunger
AMBER 1-31
Harper Co. OK
Perfs 7288-7314
Collar Stop @ 7251
Production 25 mcf/d
Increase with “PAL”
Over 80 mcf/d
AVAILABILITY

- 4 ½ “PAL” SYSTEMS, CURRENT
- 5 ½ “PAL” SYSTEMS, CURRENT
- MANUAL AND CONTROLLER OPTION
- SPECIALIZED TOOLS AVAILABLE