Armstrong Oil Enterprises

7123 I-30 Suite 38
Little Rock, AR 72223
800.264.6316 / 501.562.2960 fax

<February 2005 -- For Immediate Release>

NEW COLEMAN JET PUMPS:

NCPC holds USA and selected foreign country patents on its line of Jet Pumps which were developed to produce large volumes of sub surface formation fluids with inclusions of moderate to high solid content. The products and services described in this brochure are subject to revision without notice.

The unique patented design allows easy retrieval of the pump from deviated and horizontal wells. Retrieval of the pump from the hole for replacement of the nozzle or expansion tube is done by manipulation of the surface valves and reverse circulation of fluid with the existing production equipment (plunger pump). No wire line, pulling unit or work over rig is required. These features plus the larger flow area, direct fluid flow path allowing high production volumes give the New Colman Jet Pump a marked advantage over existing designs of jet pumps and other types of artificial lift. The small size of the portion of the pump retrieved, referred to as "the carrier", is 6.5 inches to 8.5 inches in length, making it very attractive to clients with highly deviated or horizontal wells which require artificial lift both on land and offshore.

SPECIFICATIONS

Input Data

COMPANY:.....AEP
WELL IDENTIFICATION:.....K15
PUMP DEPTH:.....850Meters
TUBING ID:.....1.995inches
CASING ID.: 4.0inches
BH TEMP.:.....30Deg C
GAS LIQ. RATIO:.....10SCF/BBL
PROD. RETURN:.....Annulus
PROD. WATER GRAV: (Sp.Gr.):.....1.01
WAT. FRAC.: (50% = 0.50):.....0.01
PUMPING BHP:.....161psig

LEASE:.....REKSTAINI
REPRESENTATIVE:.....OA
TUBING LENGTH TO PUMP:.....850Meters
TUBING OD: 2.275Inches
POWER FLUID:.....Oil
FLOWING WH TEMP.:.....20Deg F
DESIGN LIQ. PROD. RATE:.....40BBL/DAY
PRODUCED OIL GRAVITY:.....30API
PRODUCED GAS GRAVITY:.....0.7
SURFACE HYD. PRESS.:.....700psig
FLOWING WH PRESS.:.....25psig

Date:: 07 - February - 2005

Computed Output Data - English Units

Pump Size	Power Press psig	Power Fluid Rate bblpd	Horse Power	Non-Cav Rate bblpd	Prod. Rate bblpd	Pumping Bot-hole psig	Nozzle Area inches	Throat Area inches
A:2	1258	352	8	110	40	61	.0055	.0189
A:2	1185	342	7	151	40	111	.0055	.0189
A:2	1123	333	7	183	40	161	.0055	.0189

Armstrong Oil Enterprises

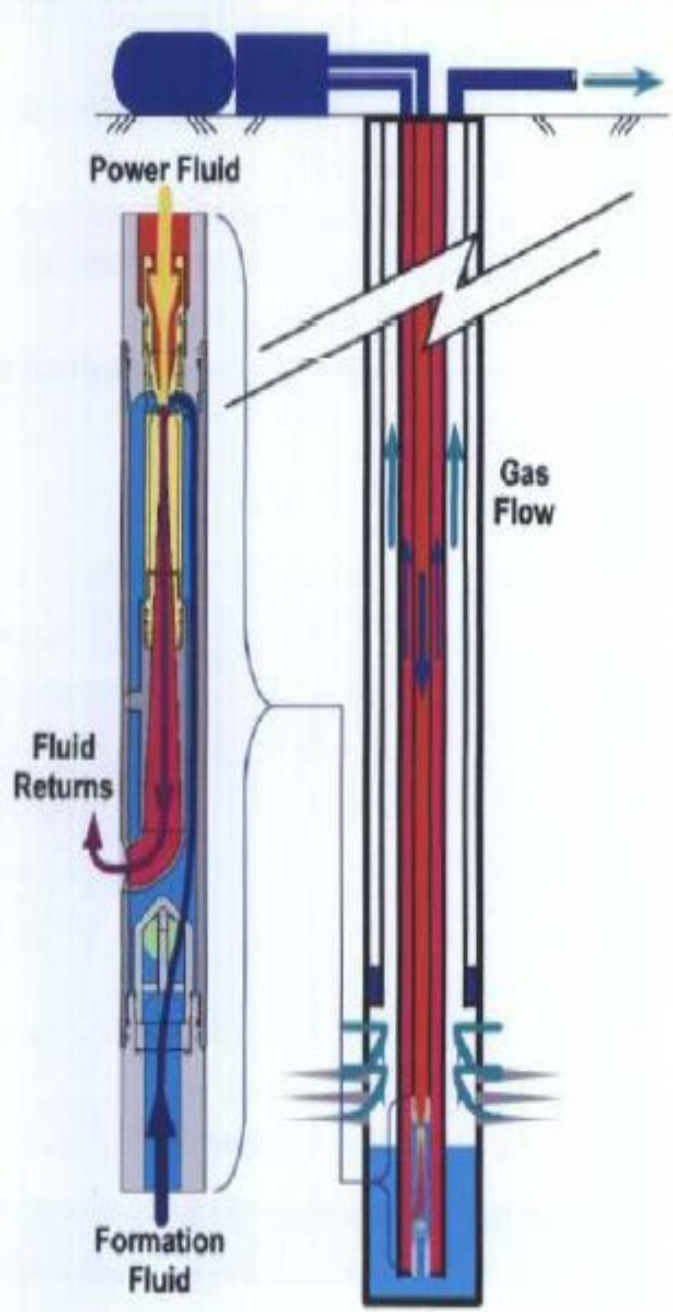
7123 I-30 Suite 38
Little Rock, AR 72223
800.264.6316 / 501.562.2960 fax

A new solution to an old problem!

Introduction

A recent evolution in artificial lift utilizes concentric 1.25” I.J. tubing and jet pump technology for gas well dewatering operations. The implications of this novel adaptation are quite significant.

In the Water Lift Gas Well Dewatering System, the inner 1.25” I.J. tubing string is used to power a downhole jet pump, returning produced wellbore fluids and power fluid up a concentric 1.25” I.J. tubing annulus through to the surface production equipment. This system allows for consistent draw-down of the reservoir. Benefits include "Dry Gas" flow performance and production characteristics.



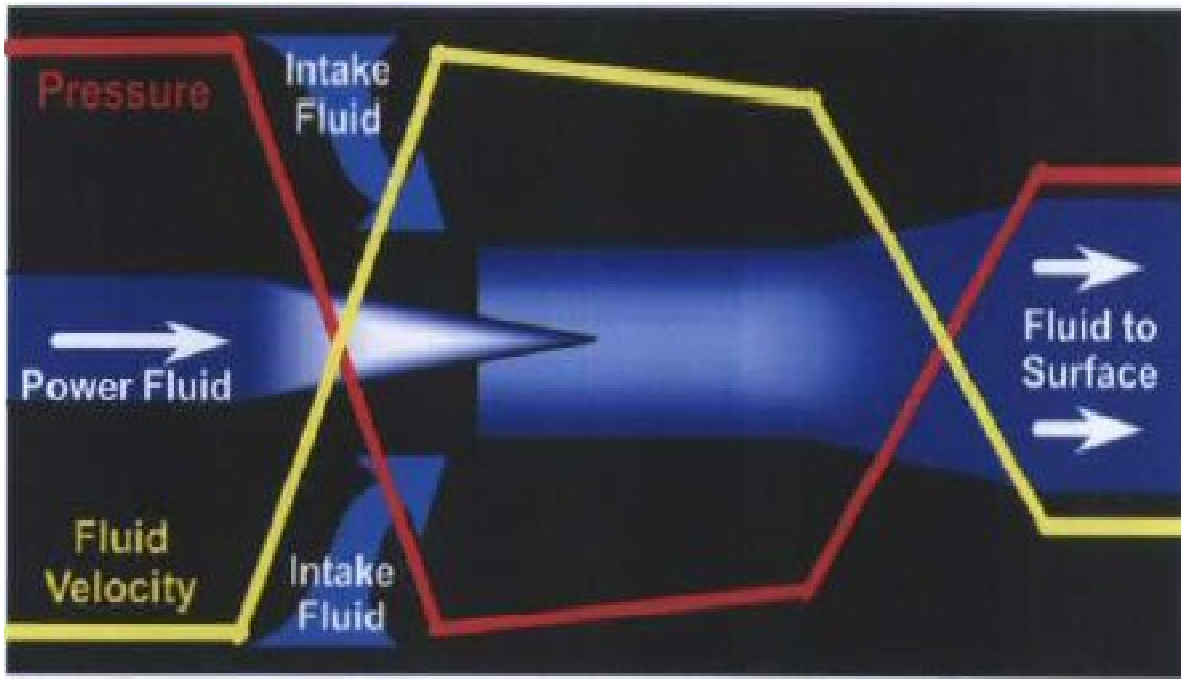
Armstrong Oil Enterprises

7123 I-30 Suite 38
Little Rock, AR 72223
800.264.6316 / 501.562.2960 fax

Background

Jet pumps are a proven technology used in various well configurations to artificially lift liquids from under-pressured reservoirs. The principals are quite simple. Based on a venturi effect, system fluid pressure is converted into a high-energy jet stream, creating low pressure at the pump intake. Subsequently, the flow enters a profiled diffuser section which converts the jet kinetic energy into pressure which is harnessed to drive fluid to surface.

Taking this technology one step further, the Water lift process combines a small jet pump jet pump with 1.25" I.J. tubing inside 2-7/8 tubing which is run in gas wells. The well can then flow gas up the annulus between the Water lift string and the completion (which is not liquid-loaded).



Armstrong Oil Enterprises

7123 I-30 Suite 38
Little Rock, AR 72223
800.264.6316 / 501.562.2960 fax

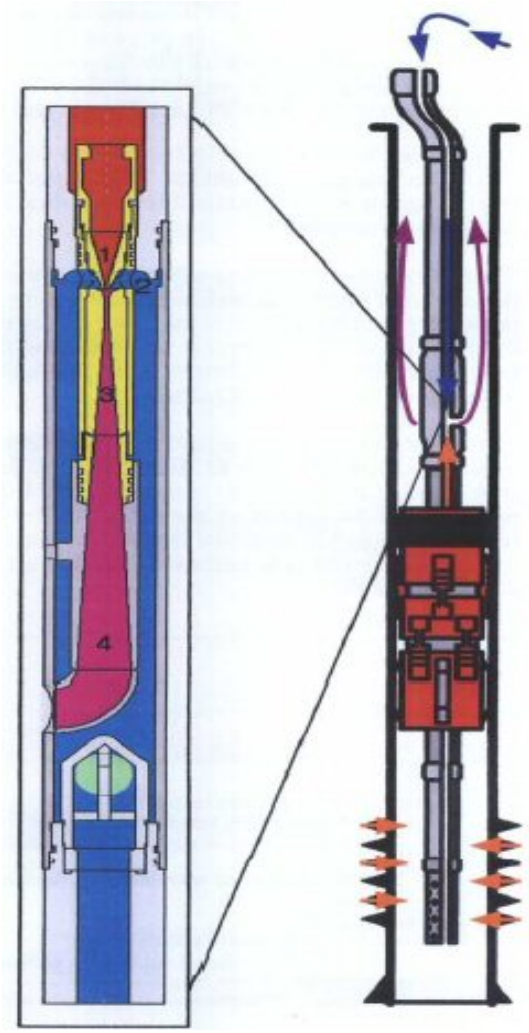
Down Hole Technology

The pump utilizes the momentum of one fluid to move another fluid.

The pump consist of :

(1) A nozzle to convert the pressure of the power fluid to velocity.

(2) An intake that directs the produced fluid into the jet.

(3) A mixing tube (throat) where the power fluid encounters the produced fluid and combines to reach some average velocity.

(4) A diffuser where the velocity of the mixed stream is converted back to pressure, and is then produced up the annulus.