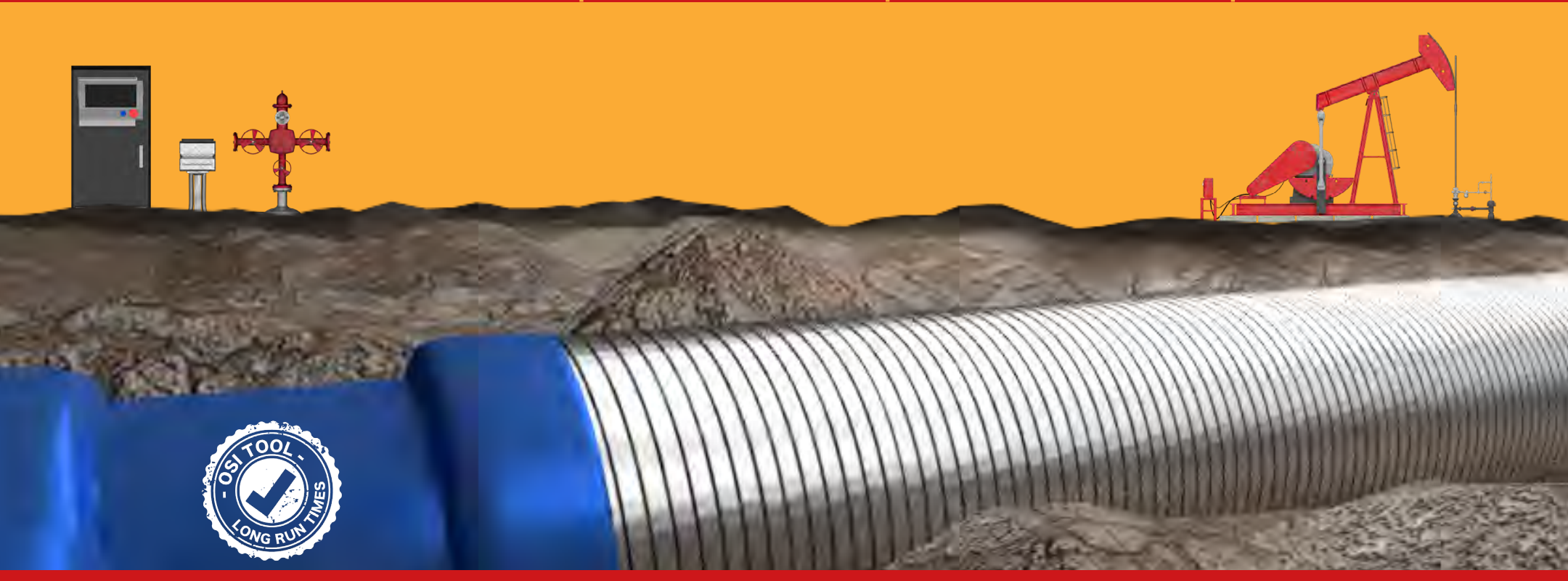
Odessa Separator, Inc

Fluid Conditioning Systems

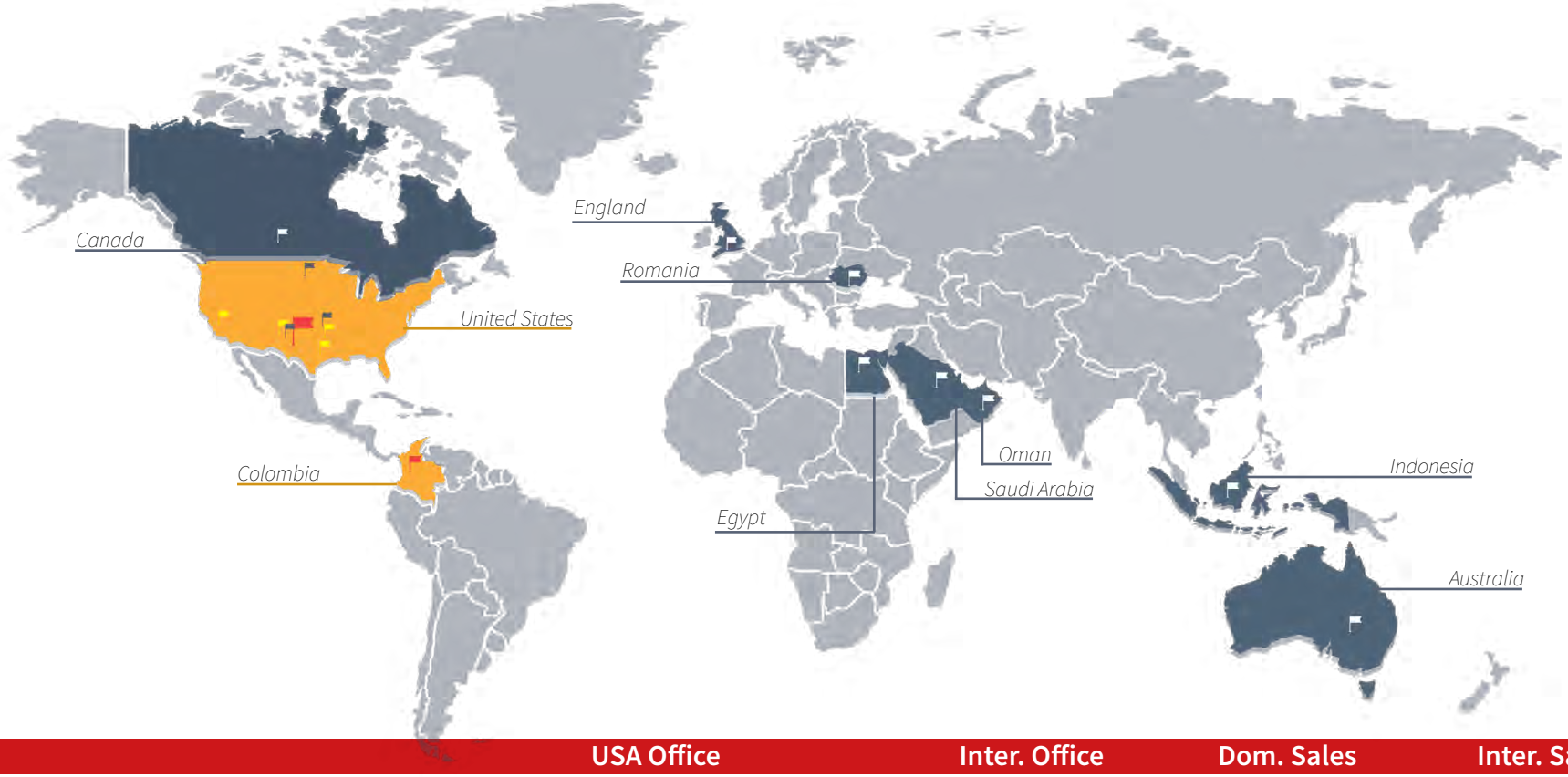
Maximizing production performance with integrated artificial lift solutions.

ESP PREMIUM PACKAGES | **SUCKER ROD PUMP** | **GAS LIFT & PLUNGER LIFT** | **PCP**



Odessa Separator Inc. is a world leader in downhole fluid conditioning systems

Our Domestic & International Offices



USA Office	Inter. Office	Dom. Sales	Inter. Sales
Odessa (Principal Office)	Colombia	California	Canada
Hobbs		New Mexico	Indonesia
North Dakota		San Antonio	Australia
Oklahoma			Egypt
			Oman
			England
			Saudi Arabia
			Romania

Contents

#OSISolutions

OSI Products

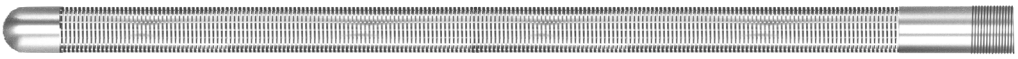
Filtration / Sand Control

ESP Sand Lift

Tubing Screen

Top Bypass Valve

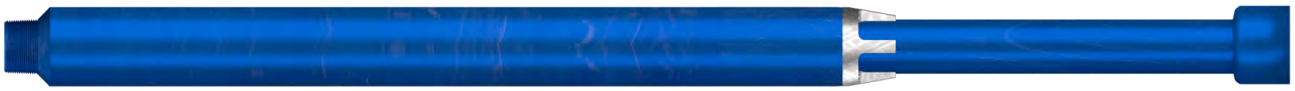
Super Perf



Pump Guard Screen

Vortex Sand Shield

Gas Separation



Slotted On Top Gas Separator

Gas Separator

Gas Shield

Slotted Gas Shield

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Chemical Tools

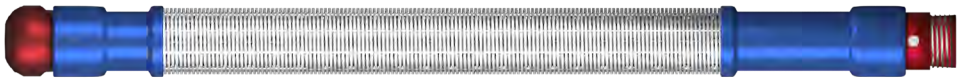
Top

Center

Bottom

Slow Release

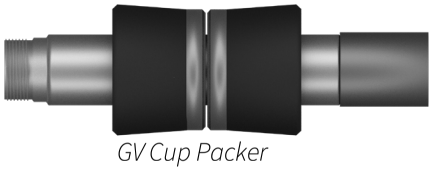
Chem Screen



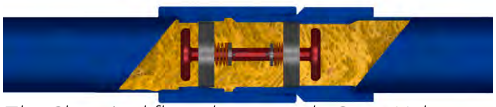
Quick Release

Retrievable Chem Tool - SRP / Gas Lift

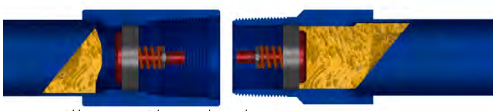
Components



GV Cup Packer



The Chemical flow downward - Open Valve



No spillage - Closed Valve

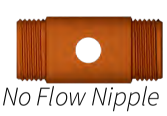
Shut Off Valve

Gas Vent

Bull Plug

Seating Nipple

Tubing Connection



No Flow Nipple

Flow Nipple

Collar

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Oilfield Challenges SAND

Sand in the well damages downhole assembly and restricts efficient fluid pumping operations.

TYPES OF SAND

- Formation sand is generally smaller and irregular in size.
- Frac sand is comparably larger, very uniform in size, and more abrasive.

Slot Size	Description	Plugging Potential
0.006 - 0.008	Fine Formation Sand	High
0.012	Med Formation Sand and 20-40 Frac Sand	Medium
0.015	Large Formation Sand and 16-30 Frac Sand	Medium
0.018 - 0.020	Small Trash & 12-20 Frac Sand	Low
0.025 - 0.035	Med Trash - No Sand	Medium
0.050	Large Trash - No Sand - Large Iron Particles	Medium
0.075	Large Trash - No Sand - Large Iron Particles	Low

Slot size is the opening between the V-wires.

This space indicates filtration size and type.

It is not common for tubing screens to plug when the OSI APPROACH is followed. OSI conducts solids and sieves analysis to applied size slots, tool lengths, & stages of filtration to maximize pump operations.

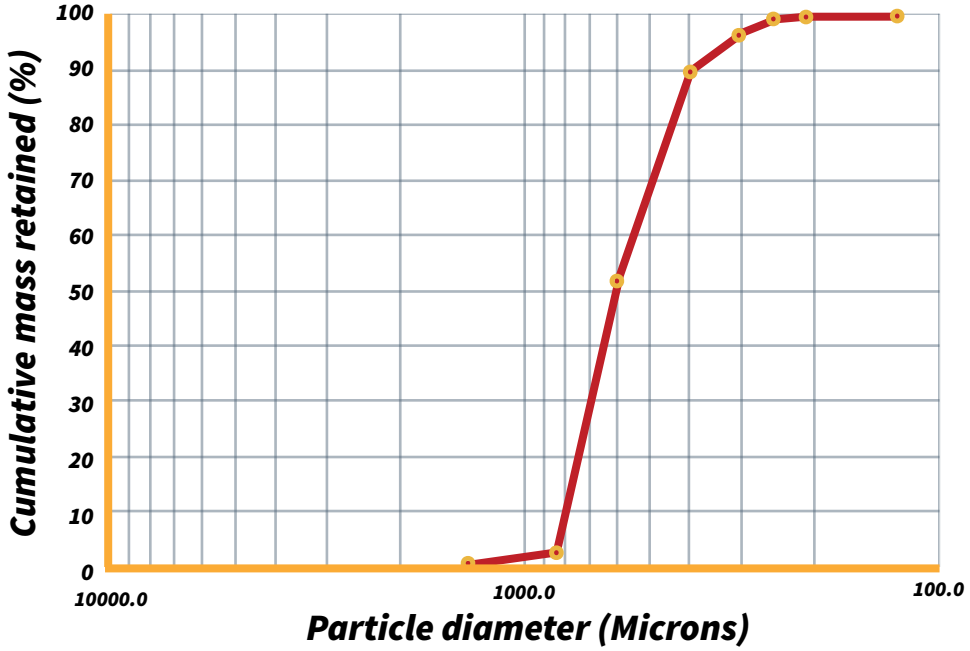
GRANULOMETRIC DISTRIBUTION

The particle size distribution is a graphical representation of a sieve analysis that can be performed in a laboratory.

In the case of sieve analysis, the particles are retained for each mesh according to the size of the opening.

This procedure is performed to identify the percentage by weight which has been retained by each sieve, which makes relative to a certain particle size.

Slot	Size (Microns)	US. Mesh Sieves	Retained Weight (gr)	Retained Weight (%)	Cumulative % (gr)
50	1,410	14	0.2	0.2	0.2
30	841	20	0.4	0.4	0.4
20	595	30	2	2	2.61
15	400	40	53.3	53.41	56.01
12	297	50	21.6	21.64	77.66
10	250	60	12.8	12.83	90.48
8	210	70	6.4	6.41	96.89
7	177	80	2.4	2.4	99.3
Pan	Pan	Pan	0.7	0.7	100
		Total Weigth =	99.8	100	100

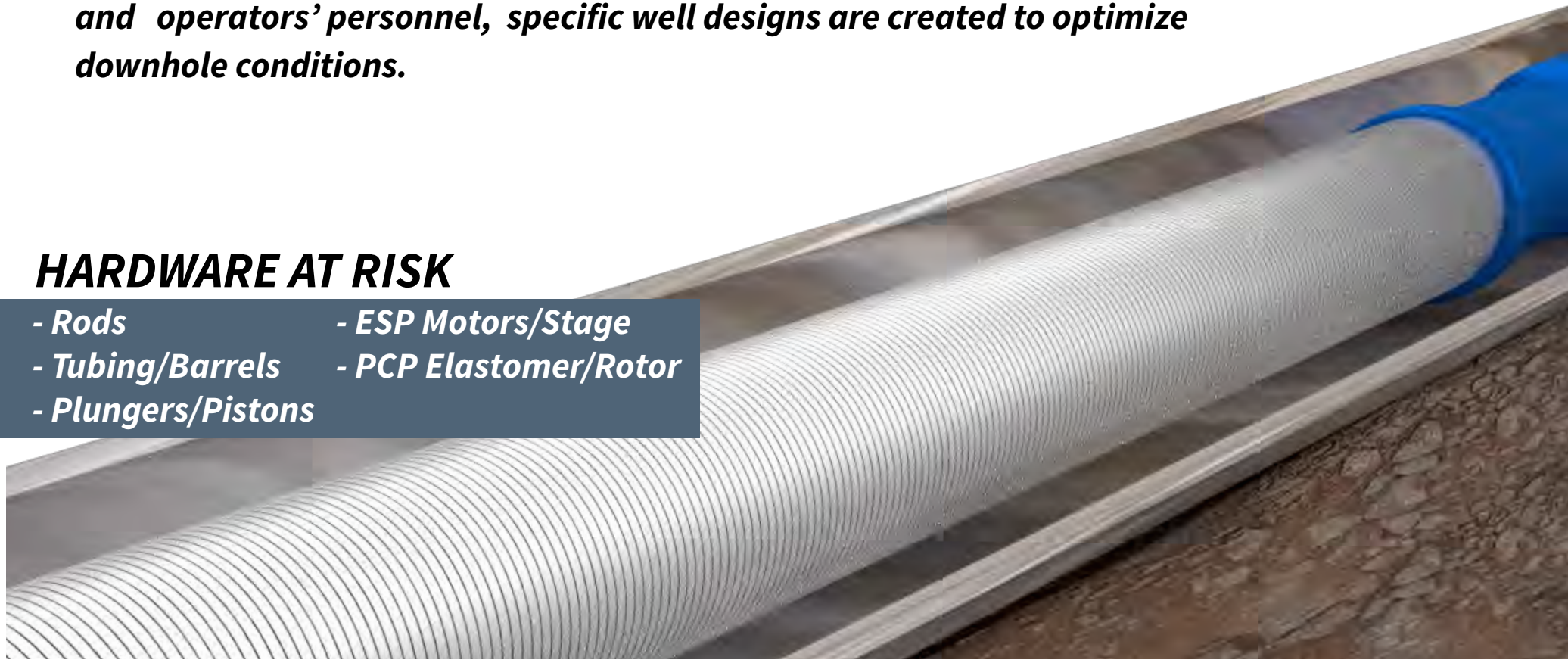


The cumulative weight percentage is illustrated in a semi-logarithmic graph where the x-axis corresponds to grain size values in logarithmic scale and a linear scale in the y - axis with the ordered values accumulated weight percentage of sand sample.

OSI understands that sand in a well will hinder efficient pumping operations.

OSI APPROACH

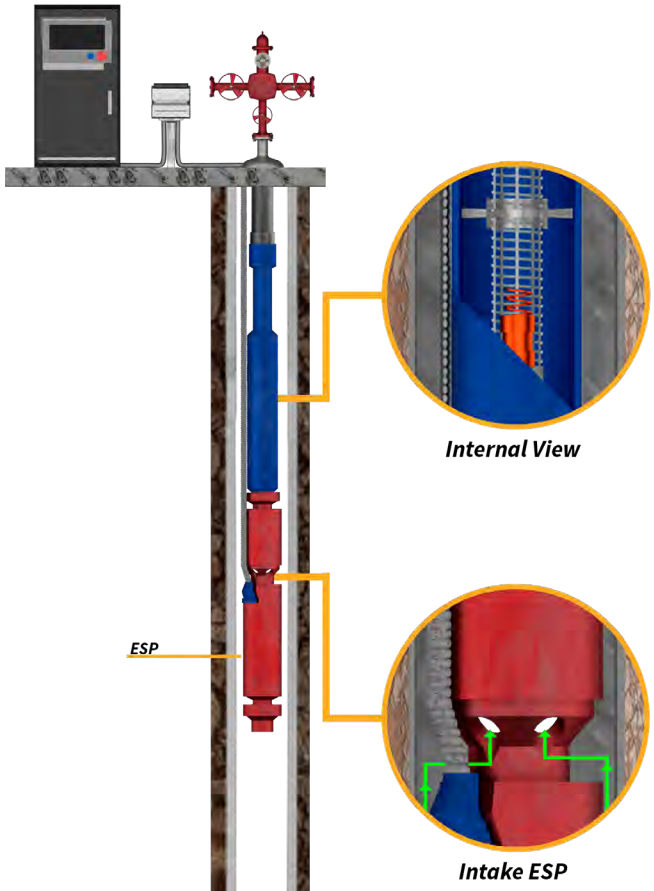
Through the application of specialty tools and the combined capabilities of OSI and operators' personnel, specific well designs are created to optimize downhole conditions.



HARDWARE AT RISK

- Rods
- Tubing/Barrels
- Plungers/Pistons
- ESP Motors/Stage
- PCP Elastomer/Rotor

ESP SAND LIFT™



Internal View

Intake ESP

The OSI SAND LIFT is installed above the ESP pump discharge. When the ESP restarts the differential pressure created by the pump pushes the dart-sand breaker off the open landing pad to the top position. Fluid and entrained solids flow through the tubular ports in one flow path to the surface.

It is OSI's unique solution for unconventional wells where the sand fallback causes ESP failures.

BENEFITS

- *Prevent Workover operations due to sand failures.*
- *Extend the run life of the ESP regulating the rate of sand falling into the pump stages.*
- *Avoid packing pump stages with sand.*
- *Backflush operations can be carried out easily.*
- *Highly Sand Resistance housing.*

The protection your ESPs needs

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VIDEO

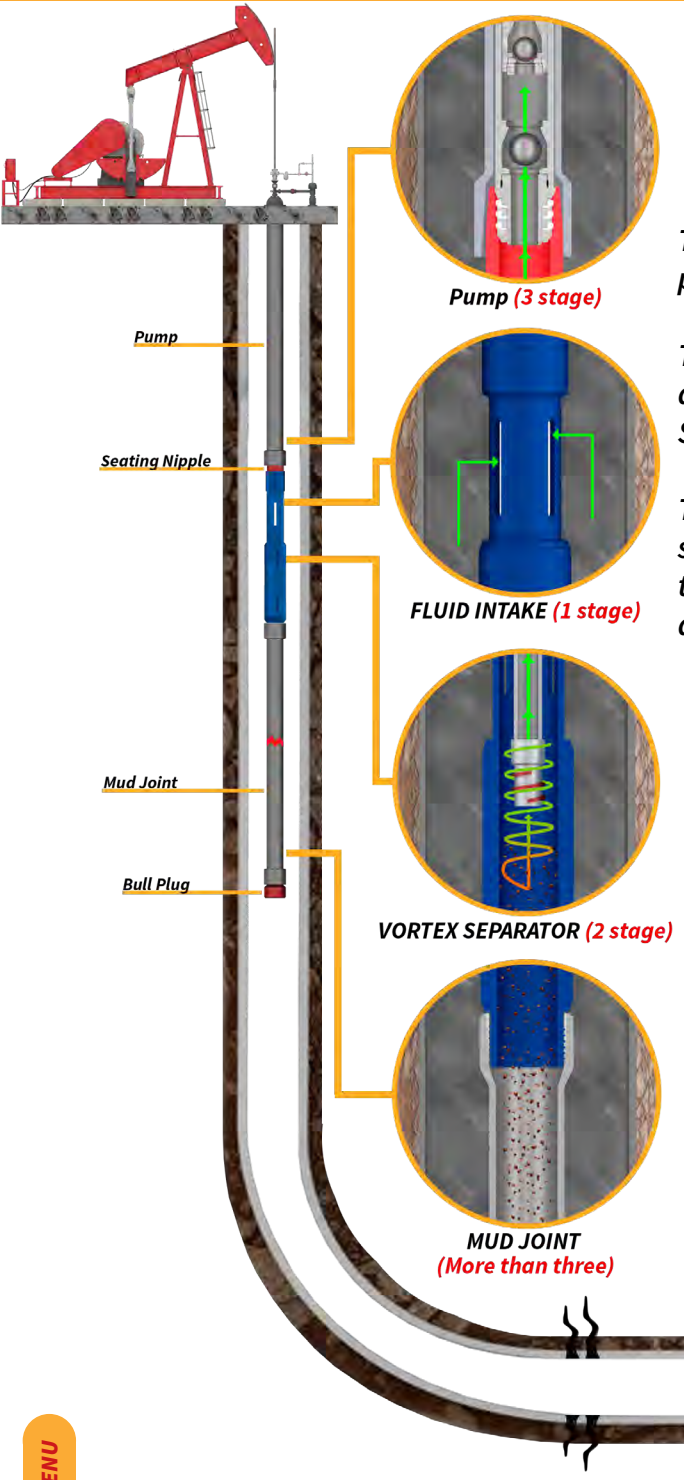
AUGMENTED REALITY

Description	Lifting Neck OD (in)	Body OD (in)	Connection Top	Connection Bottom	Capacity of the Cavity (in^3)	Total Open Area (in^2)
Series 350	2-7/8	3.5	2-7/8" EUE Box	2-7/8" EUE Pin	1453.6	293.6
Series 400	2-7/8	4	2-7/8" EUE Box	2-7/8" EUE Pin	2060.5	293.6
Series 450	2-7/8	4.5	2-7/8" EUE Box	2-7/8" EUE Pin	2773.1	293.6
Series 550	3-1/2	5.5	3-1/2" EUE Box	3-1/2" EUE Pin	4454.4	368.8

HOW IT WORKS

FLUID

VORTEX DESANDER™



Pump *(3 stage)*

FLUID INTAKE *(1 stage)*

VORTEX SEPARATOR *(2 stage)*

MUD JOINT
(More than three)

The Vortex Desander is a high efficiency desander designed to separate sand particles prior to entering the pump.

The intake consists of a specifically engineered slotted design. These slots are cut using a plasma cutter which creates smoother cut surfaces than other cutting methods. Smooth surfaces are less likely to be affected by corrosion.

The helix creates the vortex using centrifugal force, which separates the smaller solids and deposits them into the tail pipe[s] (mud joint[s]). This improved version of the Vortex Sand Shield was designed to withstand the high speed of the sand in the tool and prevent the failure of the solids separation system.

BENEFITS

- *Reduces the downtime due to solids issues.*
- *Fewer interventions and less investment in CAPEX.*
- *Avoid the premature failures of the pump components caused by the solids.*
- *Avoid problems such as sand cutting.*

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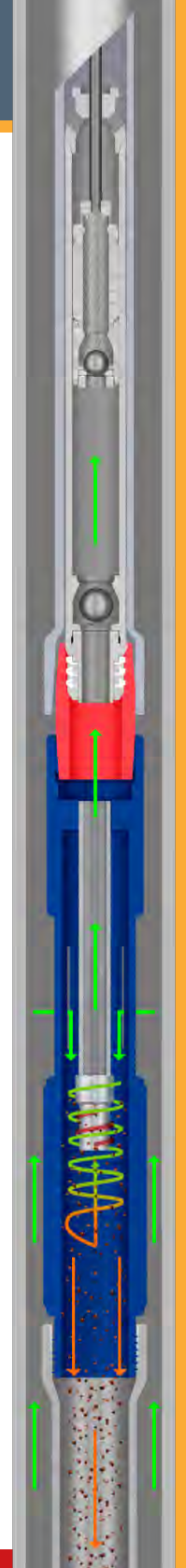
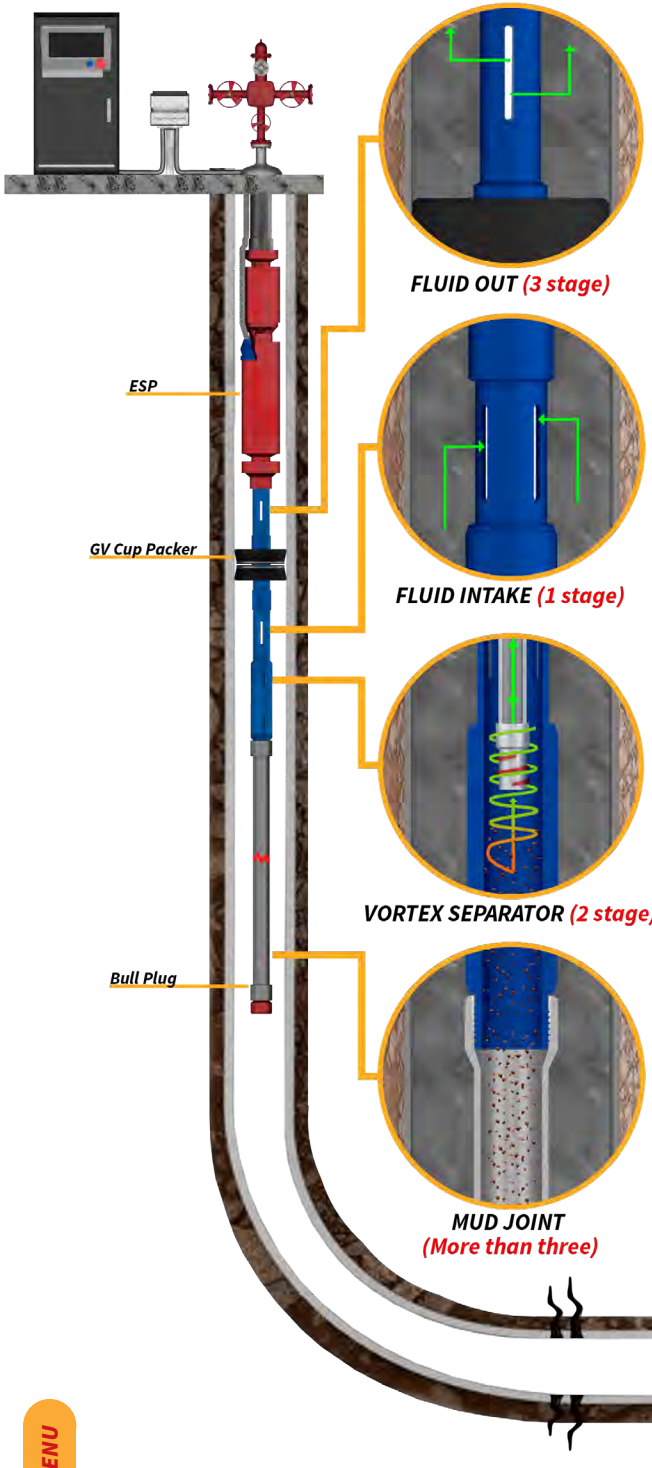
VIDEO

AUGMENTED REALITY

HOW IT WORKS



ESP VORTEX DESANDER™



The ESP Vortex Desander is designed specifically for wells where high lifting costs are a result of sand problems. The intake slots are cut with a plasma cutter making them smoother and much more corrosion-resistant.

The OSI Vortex Desander technology, employs centrifugal force, created by a helix to achieve maximum separation efficiency. This centrifugal force separates the smaller solids and deposits them in the tail pipe made up of multiple mud joints.

The ESP Vortex Desander was engineered to withstand the high speed of the particles avoiding sand "cutting" and system failures.

BENEFITS

- *Lower lifting costs, reduces downtime, and greater operating efficiency.*
- *Reduces pump failures resulting from sand damage.*
- *Plasma cut intake slots resist corrosion.*
- *Centrifugal force greatly increases sand separation efficiency.*

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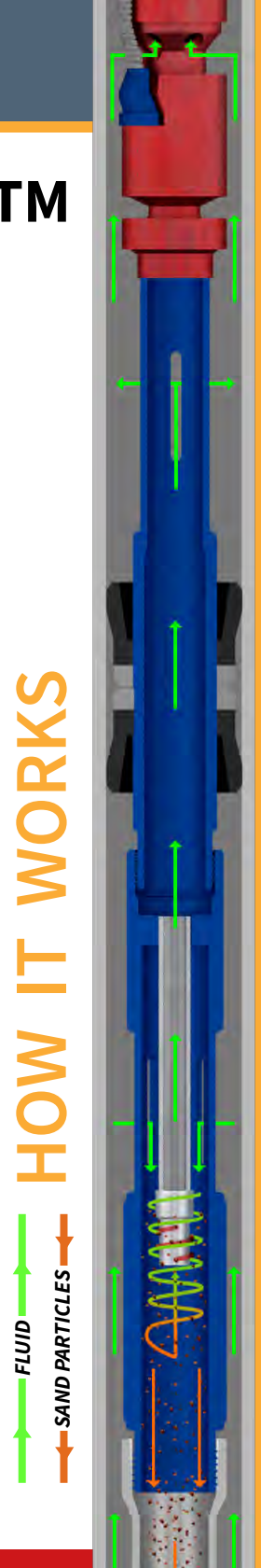
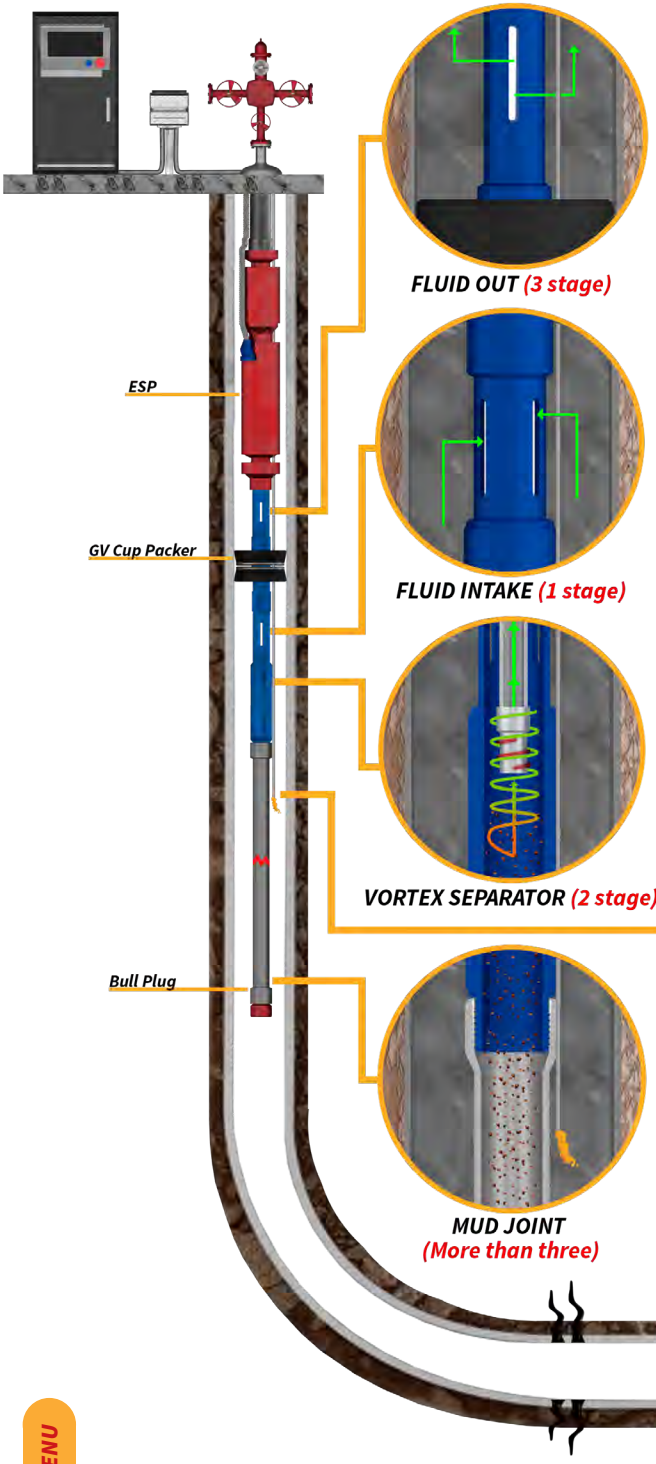
VIDEO

AUGMENTED REALITY

HOW IT WORKS



ESP VORTEX DESANDER™
WITH CAPILLARY STRING



The ESP Vortex Desander w/Capillary String employs a cup packer with CT line that allows chemical treating below the packer in a specific, targeted area where it is most effective. Furthermore, this precise placement of chemicals makes dispersal more consistent as the chemicals disperse from the bottom up.

This new combination maintains the benefits of our desander while giving the capacity to eliminates chemical problems

BENEFITS

- *Allows chemical treatments below the packer, in a targeted area.*
- *Precise placement of chemicals where it is most effective.*
- *Lower lifting costs, reduces downtime and greater operating efficiency.*
- *Reduces pump failures resulting from sand damage.*
- *Centrifugal force greatly increases sand separation efficiency.*

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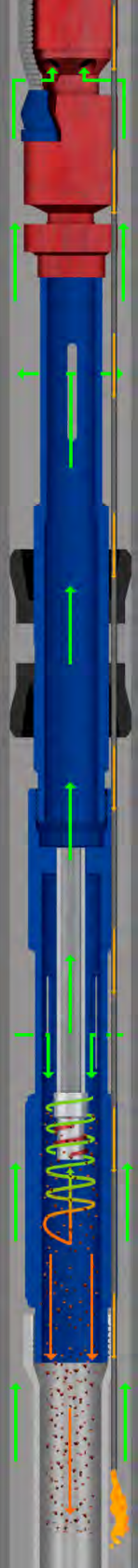
VIDEO

AUGMENTED REALITY

HOW IT WORKS

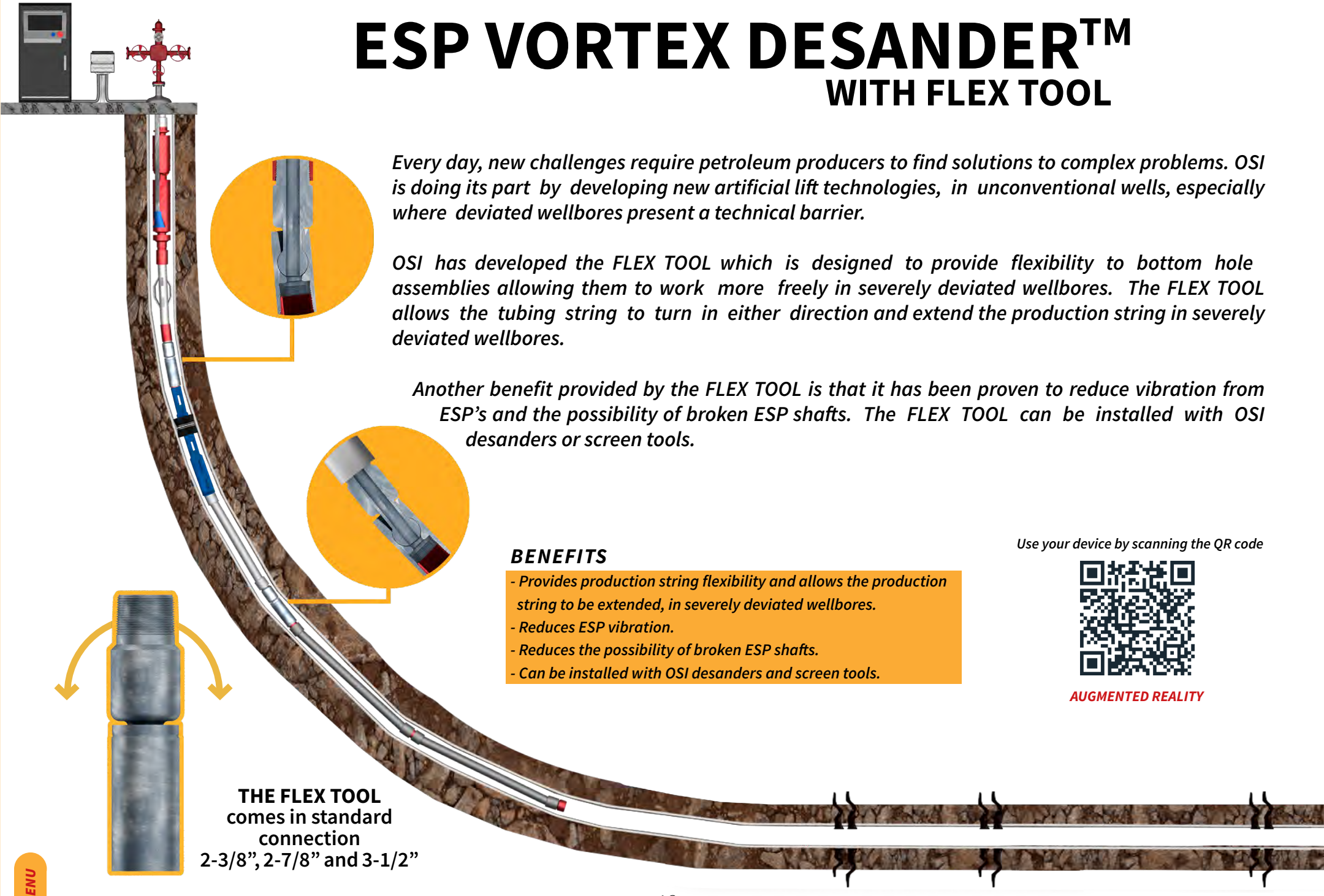


ESP VORTEX DESANDER™
WITH FLEX TOOL

Every day, new challenges require petroleum producers to find solutions to complex problems. OSI is doing its part by developing new artificial lift technologies, in unconventional wells, especially where deviated wellbores present a technical barrier.

OSI has developed the FLEX TOOL which is designed to provide flexibility to bottom hole assemblies allowing them to work more freely in severely deviated wellbores. The FLEX TOOL allows the tubing string to turn in either direction and extend the production string in severely deviated wellbores.

Another benefit provided by the FLEX TOOL is that it has been proven to reduce vibration from ESP's and the possibility of broken ESP shafts. The FLEX TOOL can be installed with OSI desanders or screen tools.



BENEFITS

- *Provides production string flexibility and allows the production string to be extended, in severely deviated wellbores.*
- *Reduces ESP vibration.*
- *Reduces the possibility of broken ESP shafts.*
- *Can be installed with OSI desanders and screen tools.*

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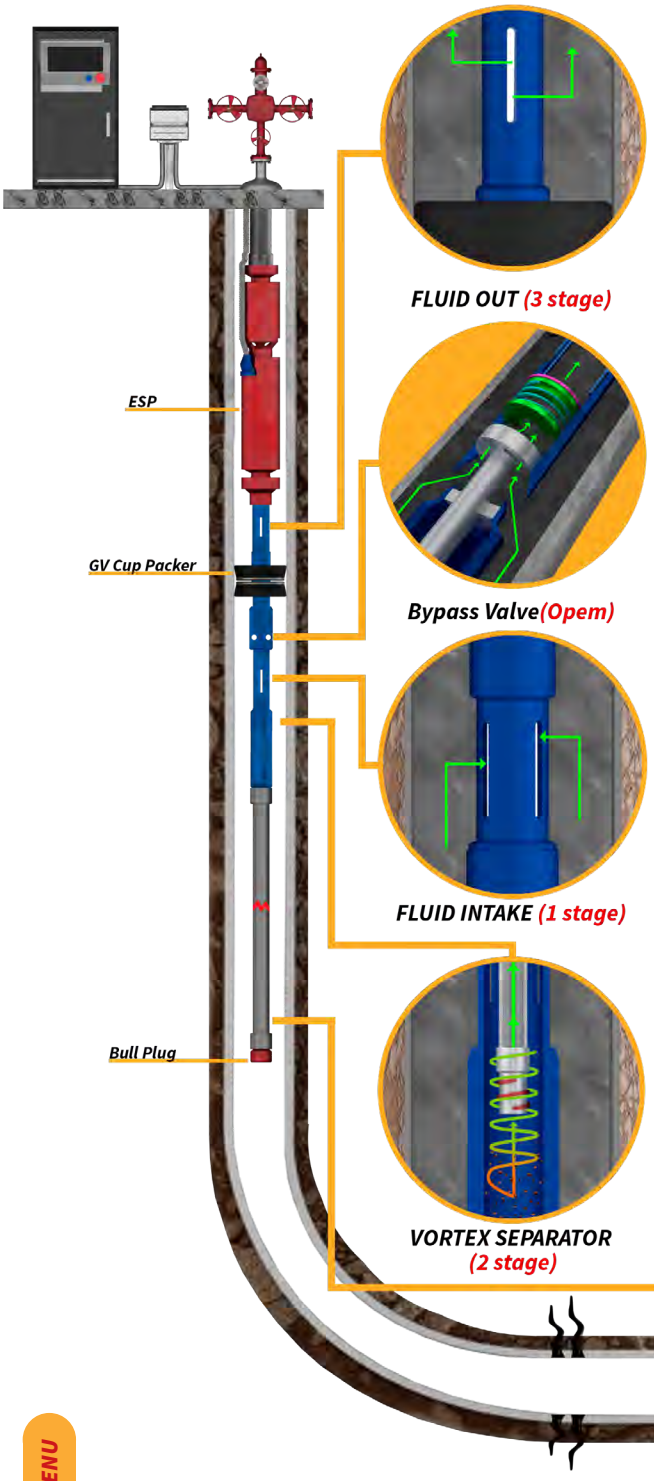
AUGMENTED REALITY

THE FLEX TOOL
comes in standard connection
2-3/8", 2-7/8" and 3-1/2"

ESP VORTEX DESANDER™
WITH BYPASS VALVE

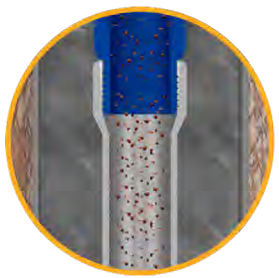


FLUID OUT *(3 stage)*

Bypass Valve*(Opem)*

FLUID INTAKE *(1 stage)*

VORTEX SEPARATOR
(2 stage)



MUD JOINT
(More than three)

The ESP Vortex Desander w-Bypass Valve was designed to solve the problem when the tail joints are full of sand. The Bypass system activates when the differential pressure between the section below and above the packer is greater than 33 psi.

This solution maintains the flow to the ESP after the ESP Vortex desander has reach is maximum capacity.

BENEFITS

- *Reduces the downtime due to sand issues.*
- *Fewer interventions and less investment in CAPEX.*
- *Stable pump parameters: Vibration, frequency, voltage and motor current.*
- *Avoid the premature failures of the pump components caused by sand production.*
- *Keeps fluid flow to the ESP.*

HOW IT WORKS

Dual Flow System

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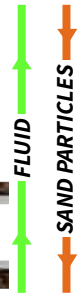
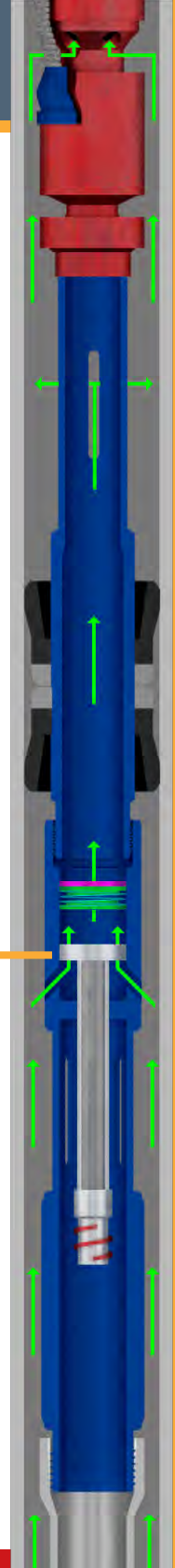
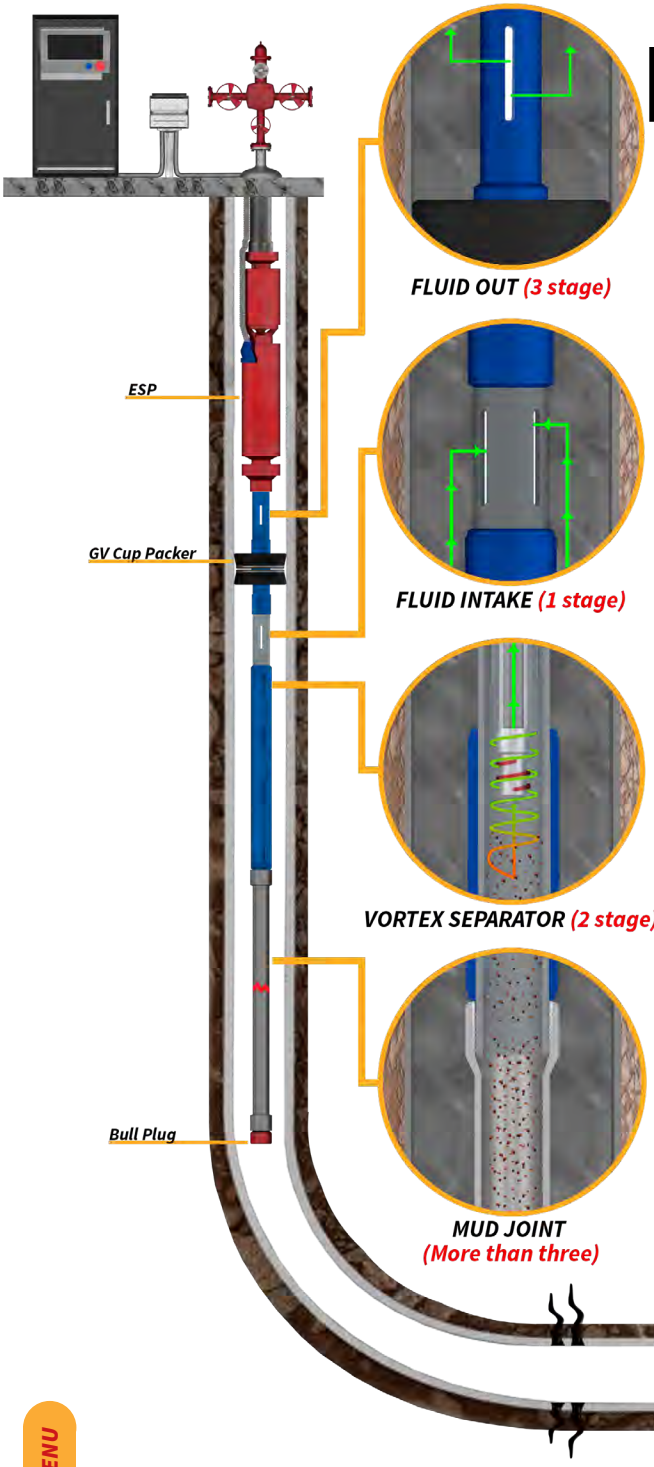
AUGMENTED REALITY





ESP VORTEX DESANDER™
HIGH RESISTANCE MATERIAL



FLUID OUT (3 stage)

FLUID INTAKE (1 stage)

VORTEX SEPARATOR (2 stage)

MUD JOINT
(More than three)

The ESP Vortex Desander w/Boronized Sleeve has a Boronized hardened wear resistant tubular body, designed for high rates of abrasive flow. It is our solution to a conventional tool, that can be prone to excessive erosion in the vortex body.

The improved sleeve is available is two versions: 6' and 15'.

BENEFITS

- *Eliminates sand cutting problems*
- *Eliminates workovers and lost production*
- *Denser surface resistant to high corrosion due to H2S and CO2 in solution.*
- *It is not a coating so there is no reduction in the inner diameter.*

Longer sleeve provide a most effective protection by keeping the centrifugal wave inside the double-wall high resistance sleeve

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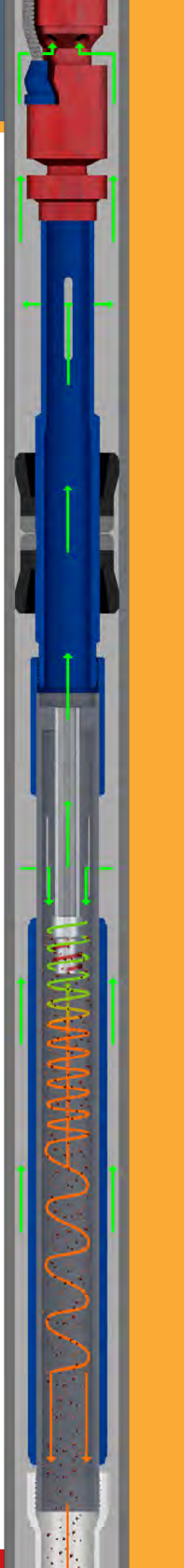
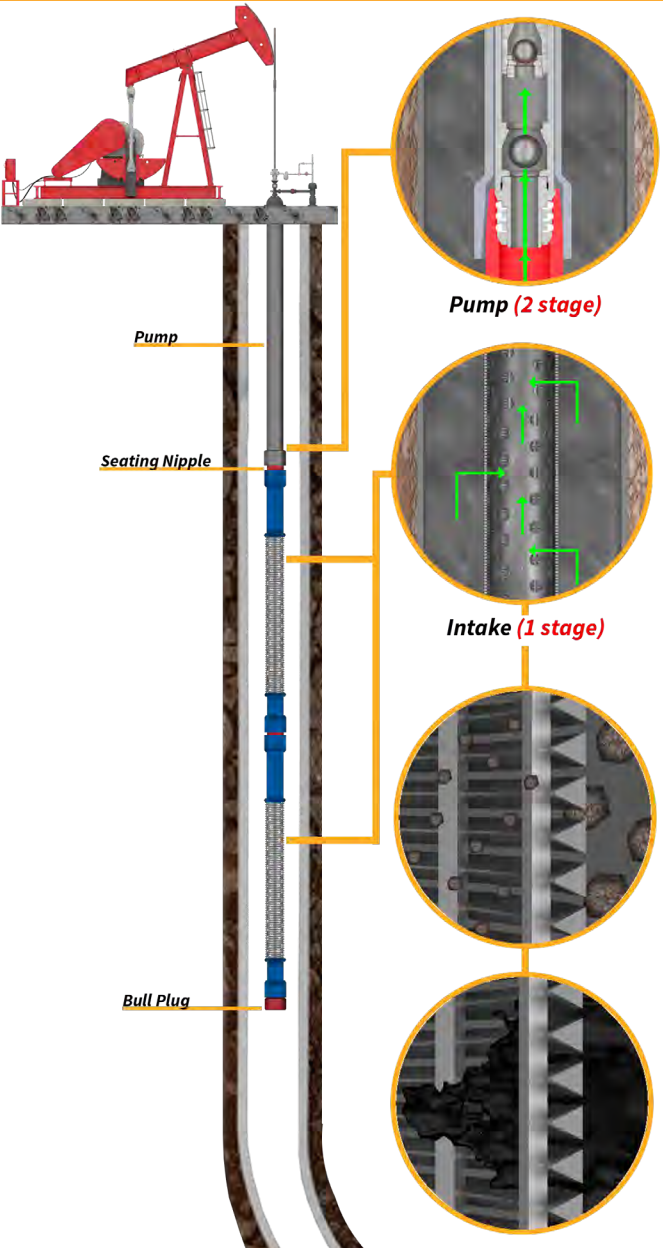
AUGMENTED REALITY



TUBING SCREEN™



The Tubing Screen™ is a multifunctional system designed to extend the run life of the artificial lift systems through the management and homogenization of sand production in downhole.

This innovative system uses a V-shaped mesh design that allows the separation of abrasive solids while maximizing the open area to flow fluid. This operational advantage makes the Tubing Screen™ one of the best options against the abrasive effects of sand.

The size and length of the system sand management in downhole are designed based on the production and mechanical conditions of each well.

BENEFITS

- Homogenizes sand slugs extending the run life
- Reduction in the number of interventions
- The decrease in non-productive time
- Reduces sand failure.
- Large intake area, reducing pressure drop.
- "V" shaped design provides a small contact area, reduces flow friction.
- A wide range of filtration slot sizes.
- Corrosion resistant screen.

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VIDEO

AUGMENTED REALITY

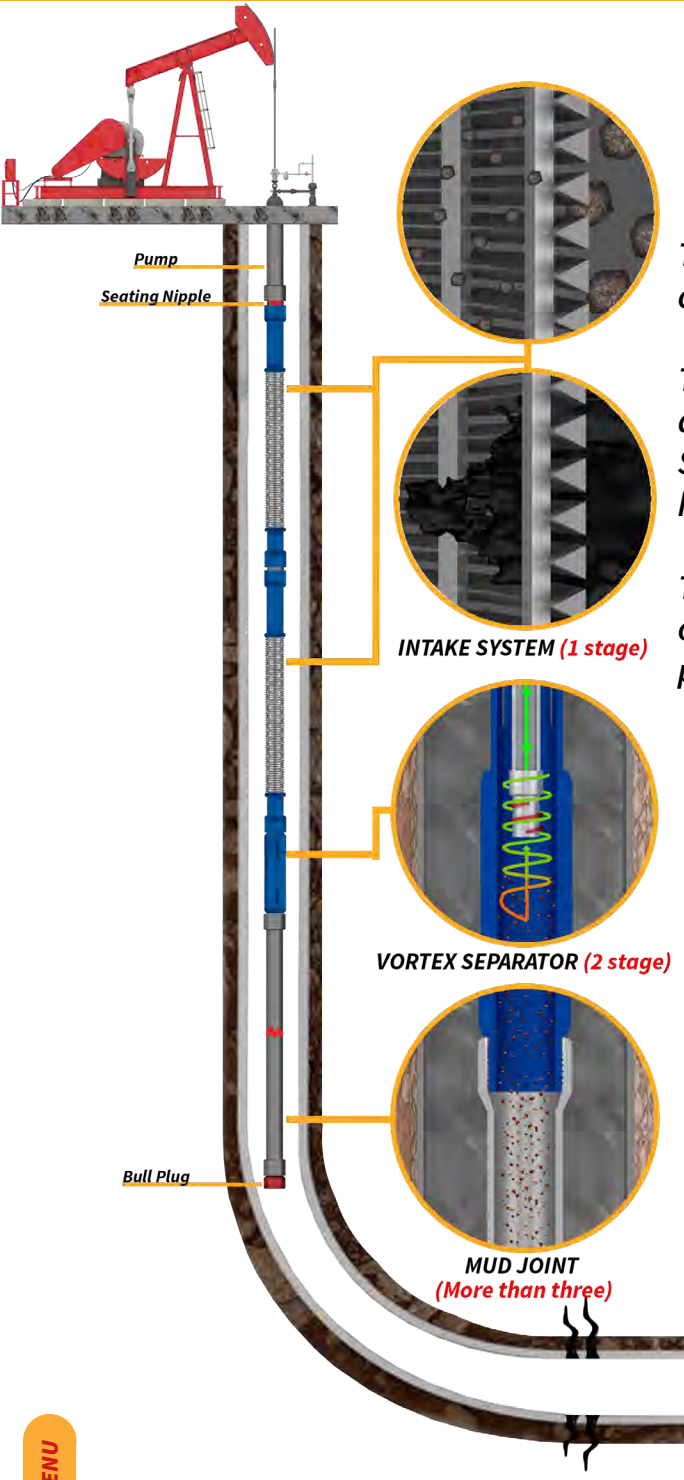
HOW IT WORKS

SCREEN VORTEX DESANDER™

The Screen Vortex Desander is designed specifically for wells where high lifting costs are a result of sand problems.

The OSI Vortex Sand Shield technology, which employs centrifugal force to achieve maximum separation efficiency, can be combined with the OSI Tubing Screen or the OSI Super Perf to achieve two-stage sand separation. This system has been successfully proven in multiple installations worldwide.

The Screen Vortex Desander is a versatile system that can be combined with other OSI tools solids control and gas separation to greatly improve the performance of artificial lift systems.



BENEFITS

- Lower lifting costs, reduces downtime and greater operating efficiency.
- Reduced pump failures resulting from sand damage.
- Two-stage sand separation.
- Centrifugal force greatly increases sand separation efficiency.

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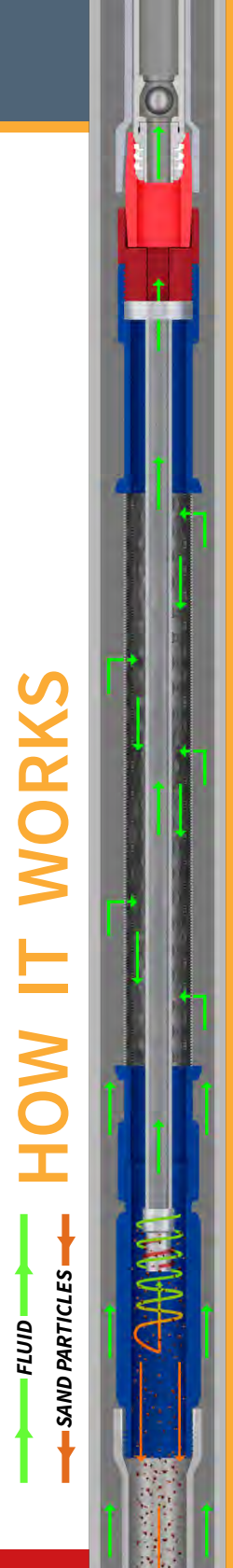
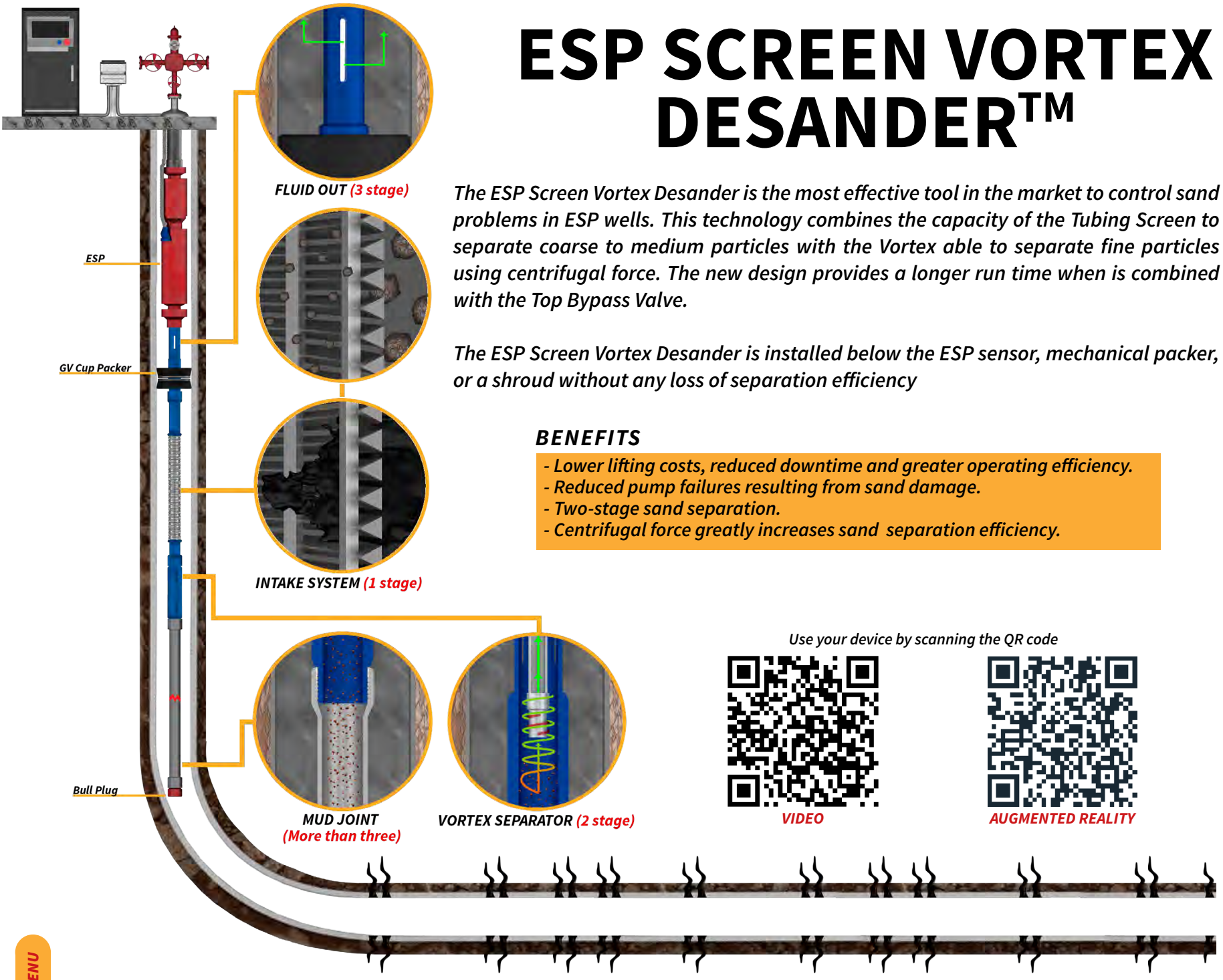
VIDEO

AUGMENTED REALITY

HOW IT WORKS



ESP SCREEN VORTEX DESANDER™



The ESP Screen Vortex Desander is the most effective tool in the market to control sand problems in ESP wells. This technology combines the capacity of the Tubing Screen to separate coarse to medium particles with the Vortex able to separate fine particles using centrifugal force. The new design provides a longer run time when is combined with the Top Bypass Valve.

The ESP Screen Vortex Desander is installed below the ESP sensor, mechanical packer, or a shroud without any loss of separation efficiency

BENEFITS

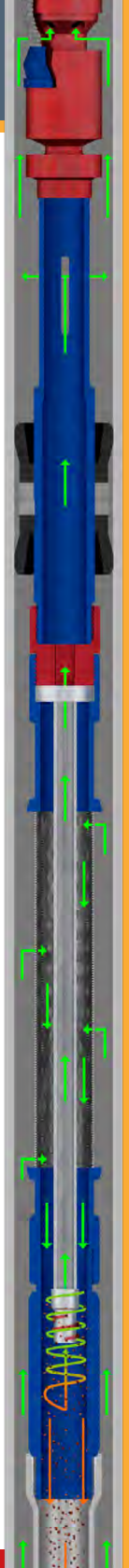
- *Lower lifting costs, reduced downtime and greater operating efficiency.*
- *Reduced pump failures resulting from sand damage.*
- *Two-stage sand separation.*
- *Centrifugal force greatly increases sand separation efficiency.*

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS

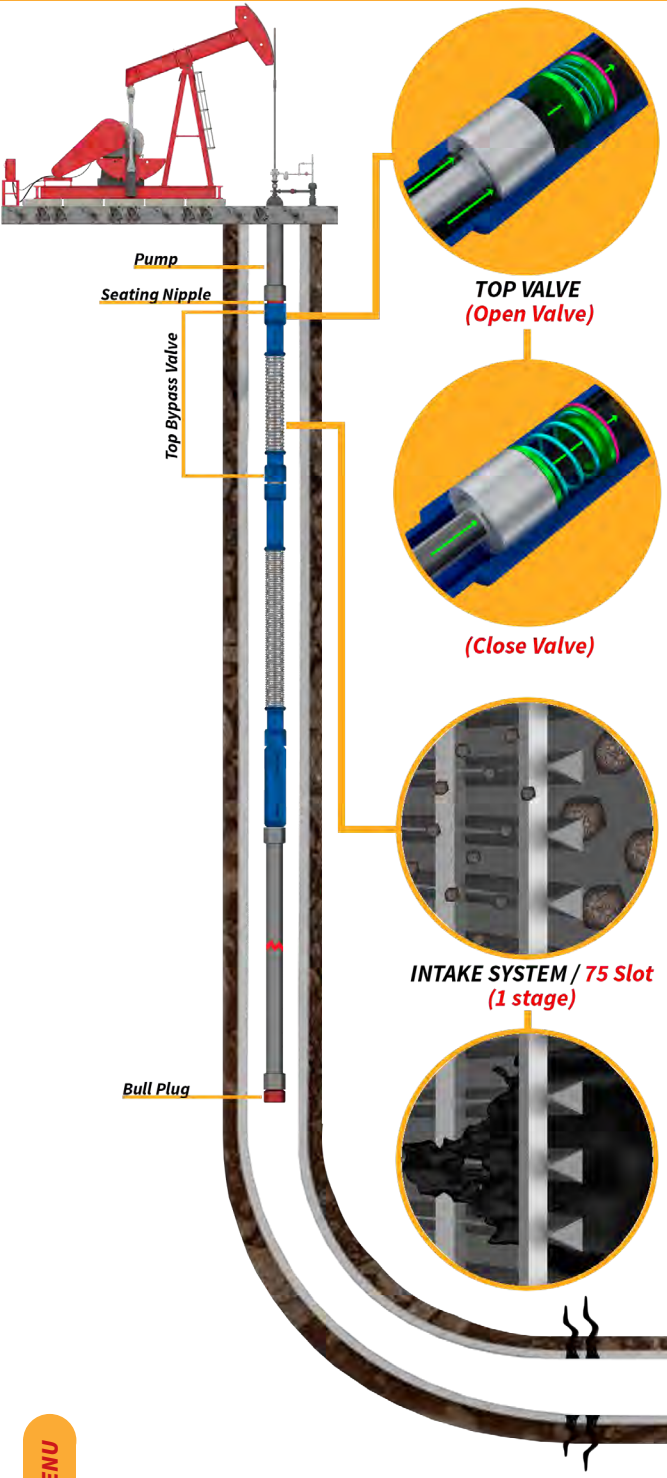


TOP BYPASS VALVE™

The TOP BYPASS VALVE was designed to extend pump runtimes by ensuring flow to the pump if the intakes plug off from sand, scale, or paraffin deposits.

The Top Bypass Valve is installed at the top sand control BHA.
If a pressure differential greater than 33 psi is reached, the valve opens, bypassing the plugged intakes, allowing continued production.

The Top Bypass Valve can be used in combination with any OSI system.



Increase pump runtimes

BENEFITS

- Minimizes effects of plugging issues.
- Reduces the risk of production loss.
- Extend equipment run life.
- Large particle filtration.
- Valve is replaceable.

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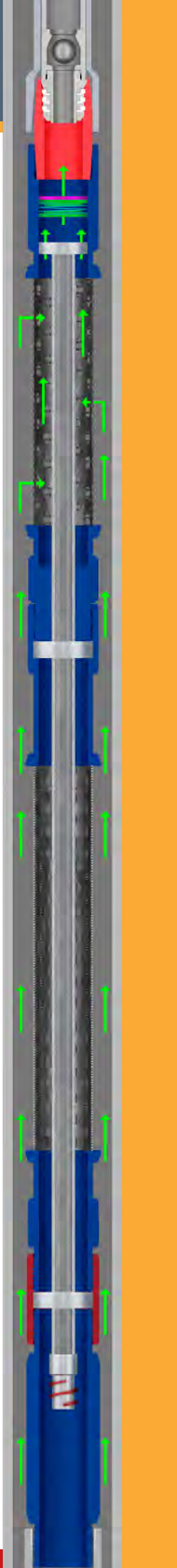
VIDEO

AUGMENTED REALITY

HOW IT WORKS

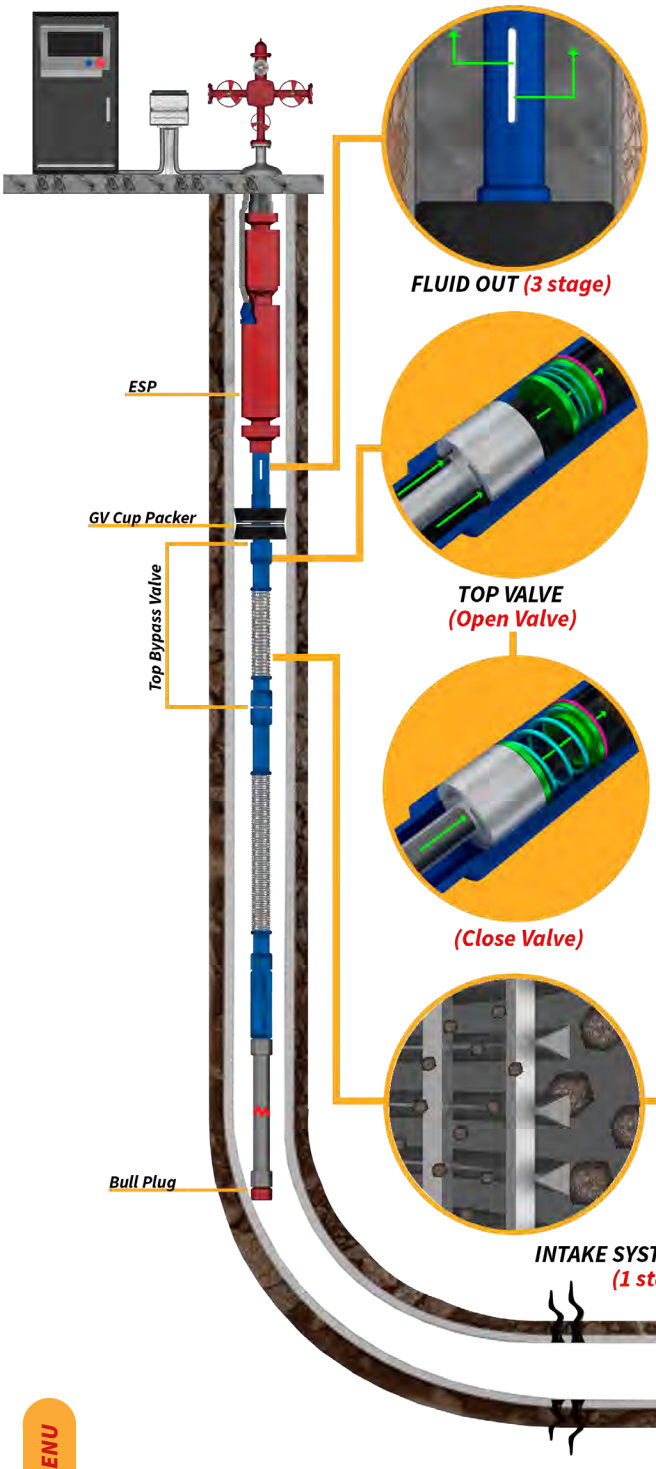


ESP TOP BYPASS VALVE™

The ESP TOP BYPASS VALVE was designed to extend pump runtimes by ensuring flow to the pump if the intakes plug off from sand, scale, or paraffin deposits.

The ESP Top Bypass Valve is installed at the top of the bottom hole assembly. If a pressure differential greater than 33 psi is reached, the valve opens, bypassing the plugged intakes, allowing continued production.

The ESP Top Bypass Valve can be used in combination with any OSI system.



BENEFITS

- Lower lifting costs, reduced downtime and greater operating efficiency.
- Reduced pump failures resulting from sand production.
- Two-stage sand separation.
- Centrifugal force greatly increases sand separation efficiency.

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS

FLUID

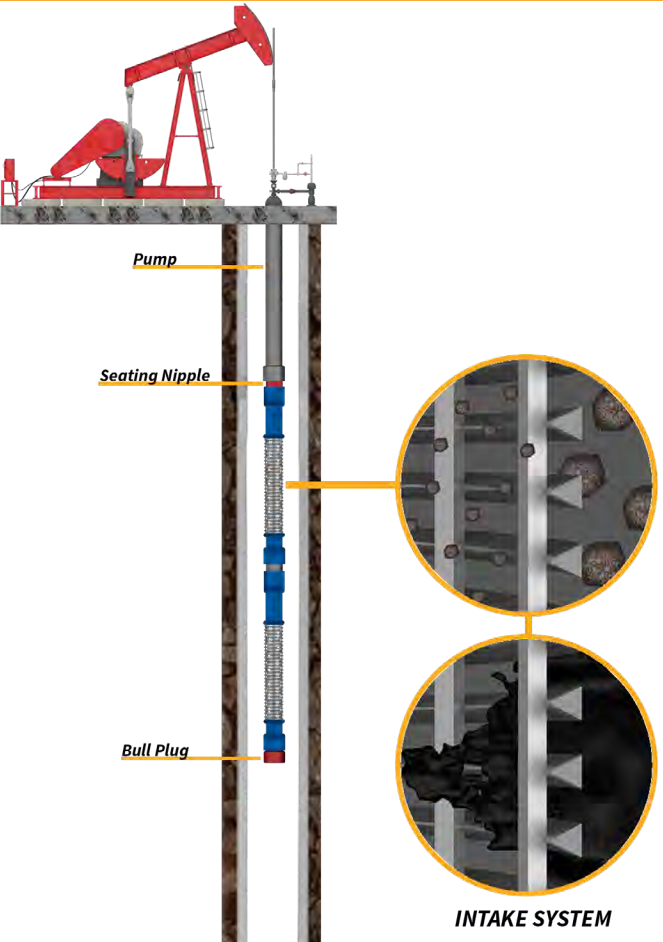
SAND PARTICLES

SUPER PERF™

OSI's SUPER PERF homogenizes sand slugs coming from the formation which allows improved sand management downhole.

The large opening mesh provides 27 times the open area of a traditional perforated joint.

The Super Perf is compatible with any artificial lift system and is a vast improvement from perforated subs.



INTAKE SYSTEM

BENEFITS

- Downhole equipment failure due to sand production are greatly reduced.
- Large opening mesh provides 27 times the open area of a traditional perforated joint.
- Compatible with any artificial lift system.

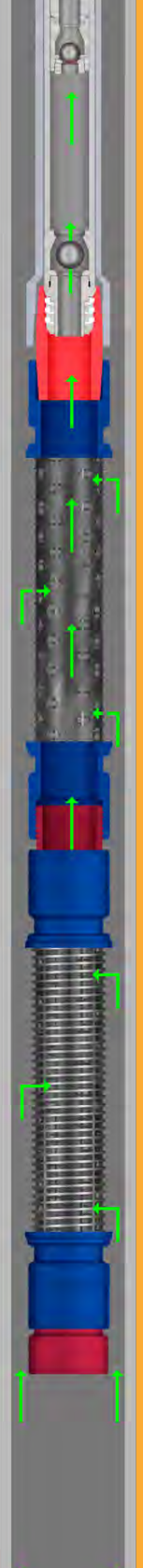
OSI's SUPER PERF is a high efficiency filtration system that homogenizes sand slugs from the formation. The sand screen is corrosion resistant while reducing flow restrictions.

Use your device by scanning the QR code

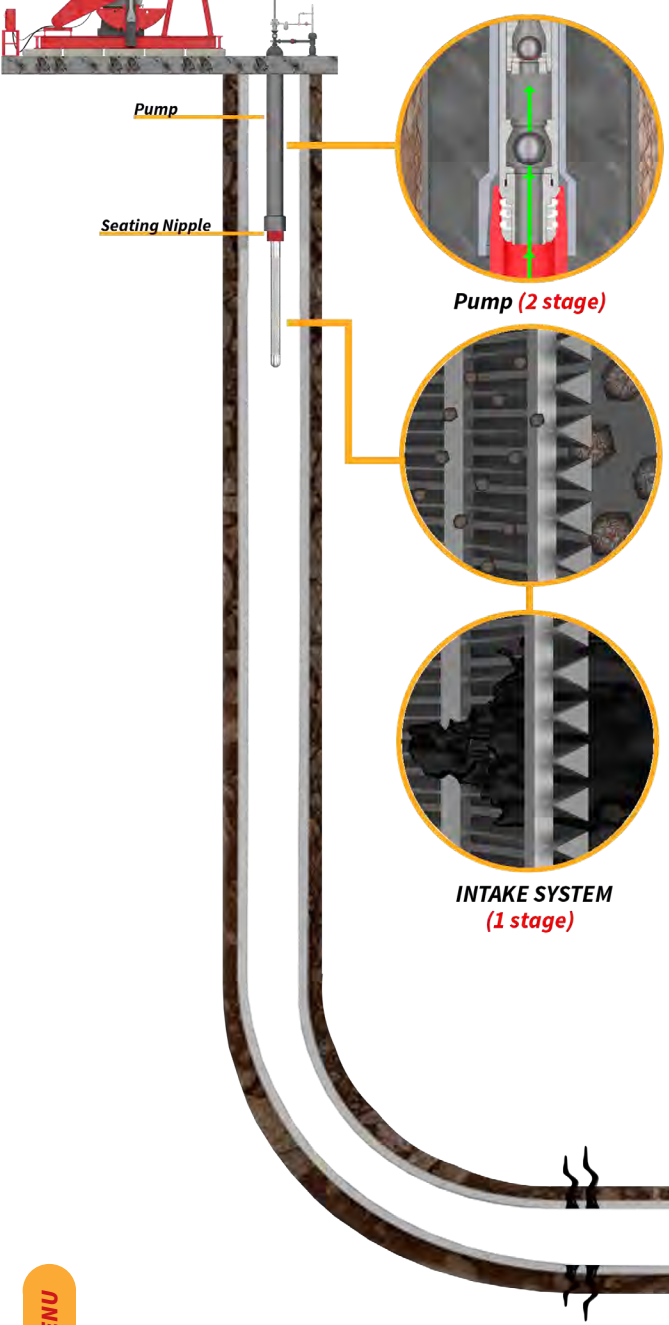
VIDEO

AUGMENTED REALITY

HOW IT WORKS



PUMP GUARD SCREEN™



Pump *(2 stage)*

INTAKE SYSTEM
(1 stage)

- *V-shaped mesh design allows the separation of abrasive solids while maximizing fluid flow area.*
- *The outer wrap "V" shaped wire and ribs are constructed of corrosion-resistant, stainless steel.*
- *Precise electric resistance welding provides high-strength joints.*
- *Clog-resistant slot design.*
- *Large intake area reduces pressure drops while a small contact area reduces flow friction.*

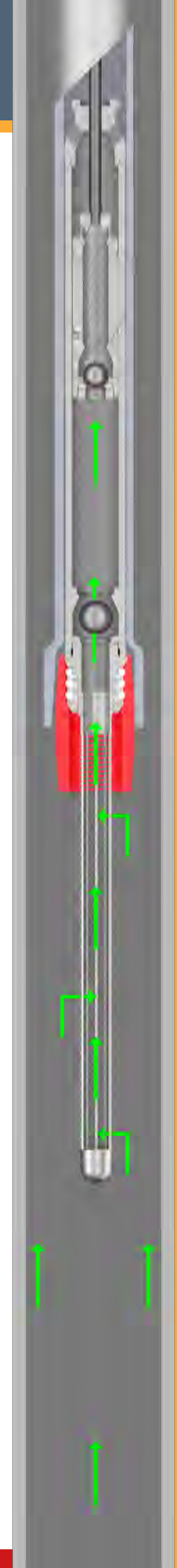
The OSI PUMP GUARD SCREEN is a low-cost solution to sand problems and is available in a large selection of lengths and slot sizes

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS

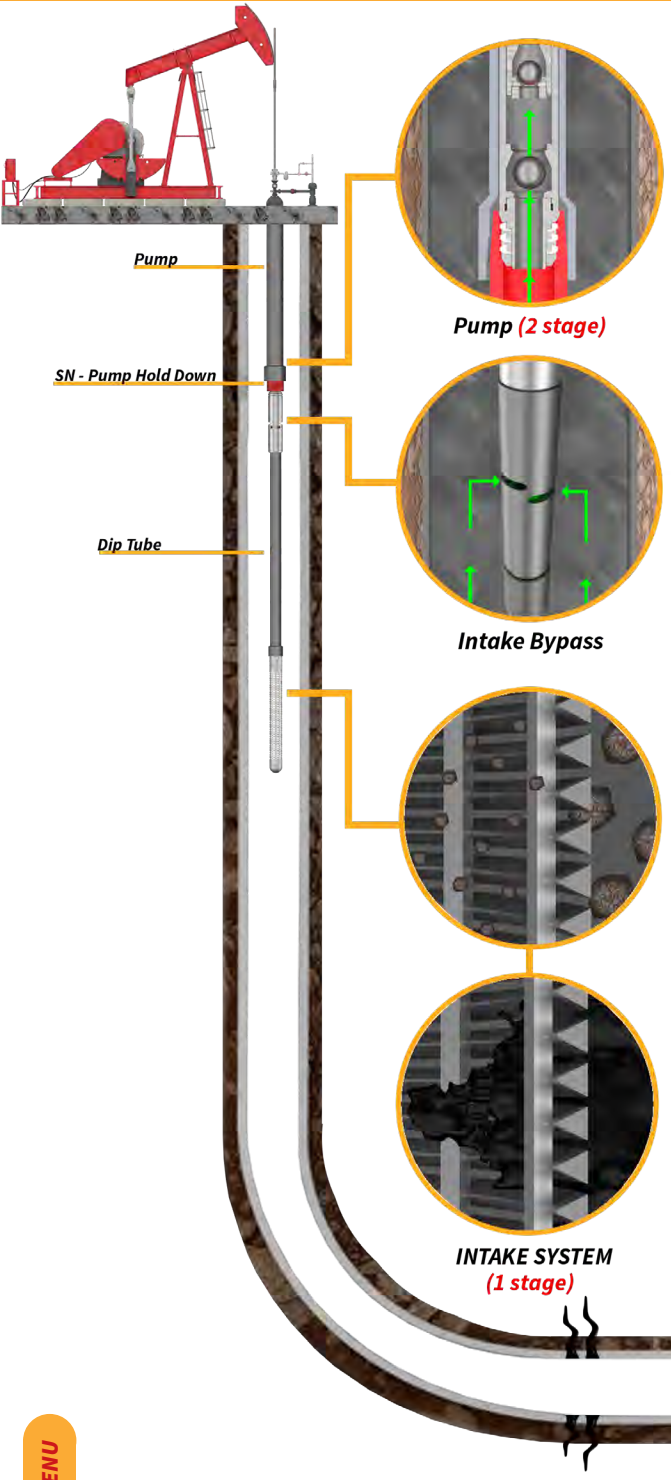


DIP TUBE BYPASS™

OSI Top Intake Bypass allows for a bypass to open, creating a secondary flow path when the dip tube intake becomes plugged.

Preventing premature pulling of the well. This allows the equipment to reach maximum run life.

This tool can be run on any dip tube filtration tool.



SIZES

- 1'' x 9''
- 1 - 1/4'' x 9''
- 1 - 1/2'' x 9''

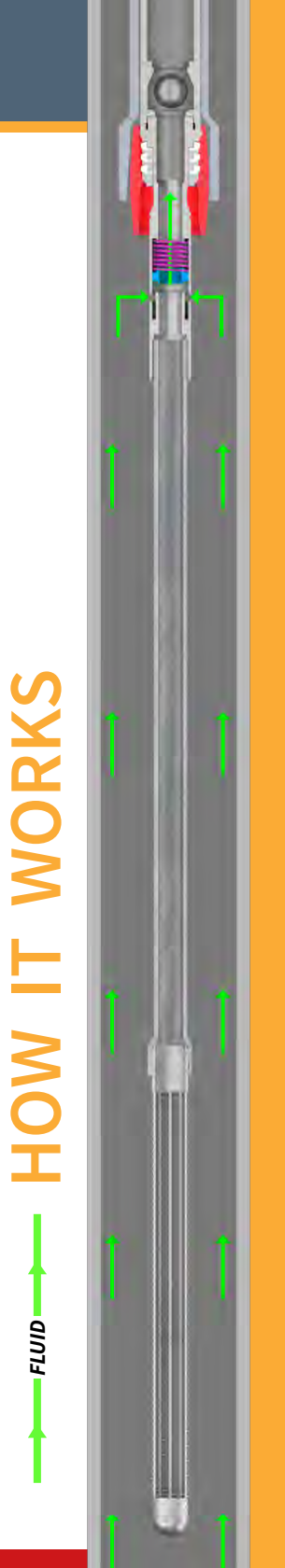
Provides significant savings over pulling the well!

Keep it in the hole longer

Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS



Oilfield Challenges GAS

Improperly conditioned produced gas causes pump pounding, and gas lock ultimately pumping equipment failure.

HARDWARE AT RISK

- Rods
- Tubing
- ESP Motors / Stages
- PCP Elastomer/Stator
- SRP Valves / Guides

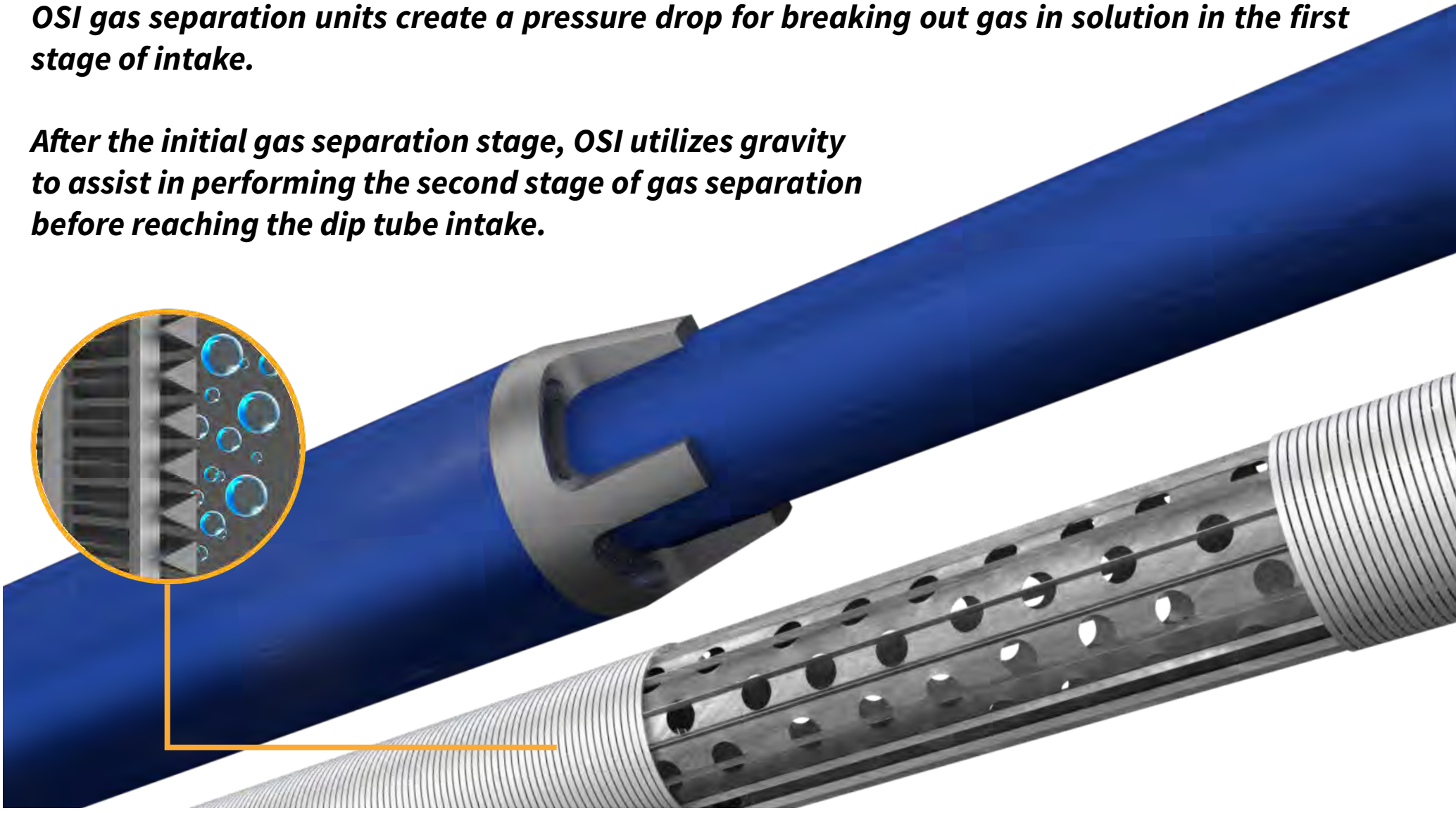
OSI APPROACH

Using a variety of downhole conditioning tools utilizing single & multi stages for separation & filtration, OSI minimizes gas & solids in the well by harnessing the knowledge of OSI sales, engineers, chemists, & field service personnel to work with producer partners to achieve effective and real time solutions.

DIFFERENT STAGES OF GAS SEPARATION

OSI gas separation units create a pressure drop for breaking out gas in solution in the first stage of intake.

After the initial gas separation stage, OSI utilizes gravity to assist in performing the second stage of gas separation before reaching the dip tube intake.

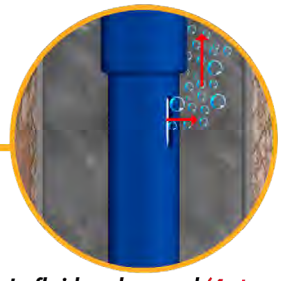


SLOTTED ON TOP GAS SEPARATOR™

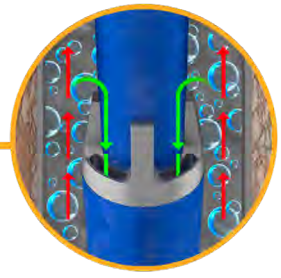
Pump

Seating Nipple

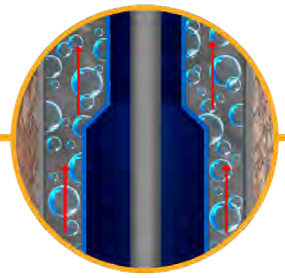
Bull Plug



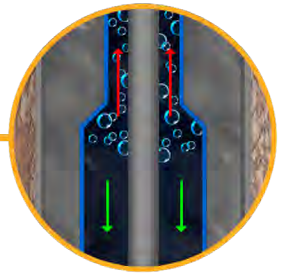
In fluid and ascend (4 stage)



Intake / side view (2 stage)

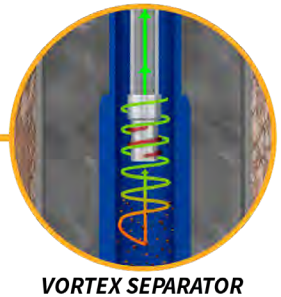


GAS SEPARATION (1 stage)



GAS SEPARATION (3 stage)

DIP TUBE 45 Degrees (5 stage)



VORTEX SEPARATOR

OSI's SLOTTED ON TOP GAS SEPARATOR represents a significant design improvement from traditional gas separators. The intake slots have been positioned at the top, of the separator requiring the fluid flow to change directions upon entering the separator.

The change of direction in the fluid flow breaks gas out of solution, into the annulus. Any solution gas remaining in the fluid will break out of solution as it flows through the separator and out the venting ports. This simple, effective, and low-cost separator is easily installed below the seating nipple and can be combined with a Vortex Desander to provide solids separation.

BENEFITS

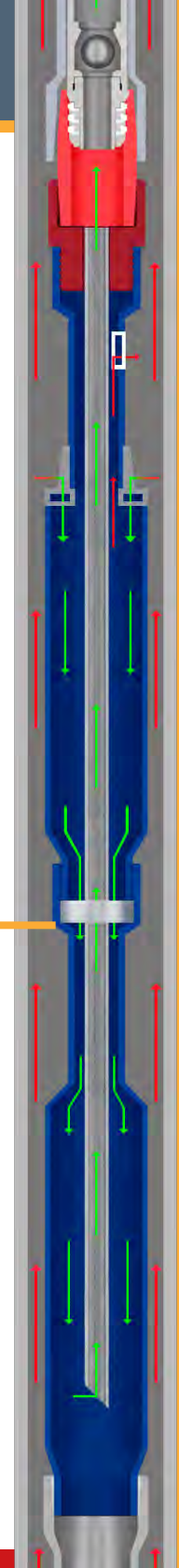
- It can be installed with Vortex Desander
- Reduces or eliminates gas interference and gas locking
- Provides multiple stages of gas separation

Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS

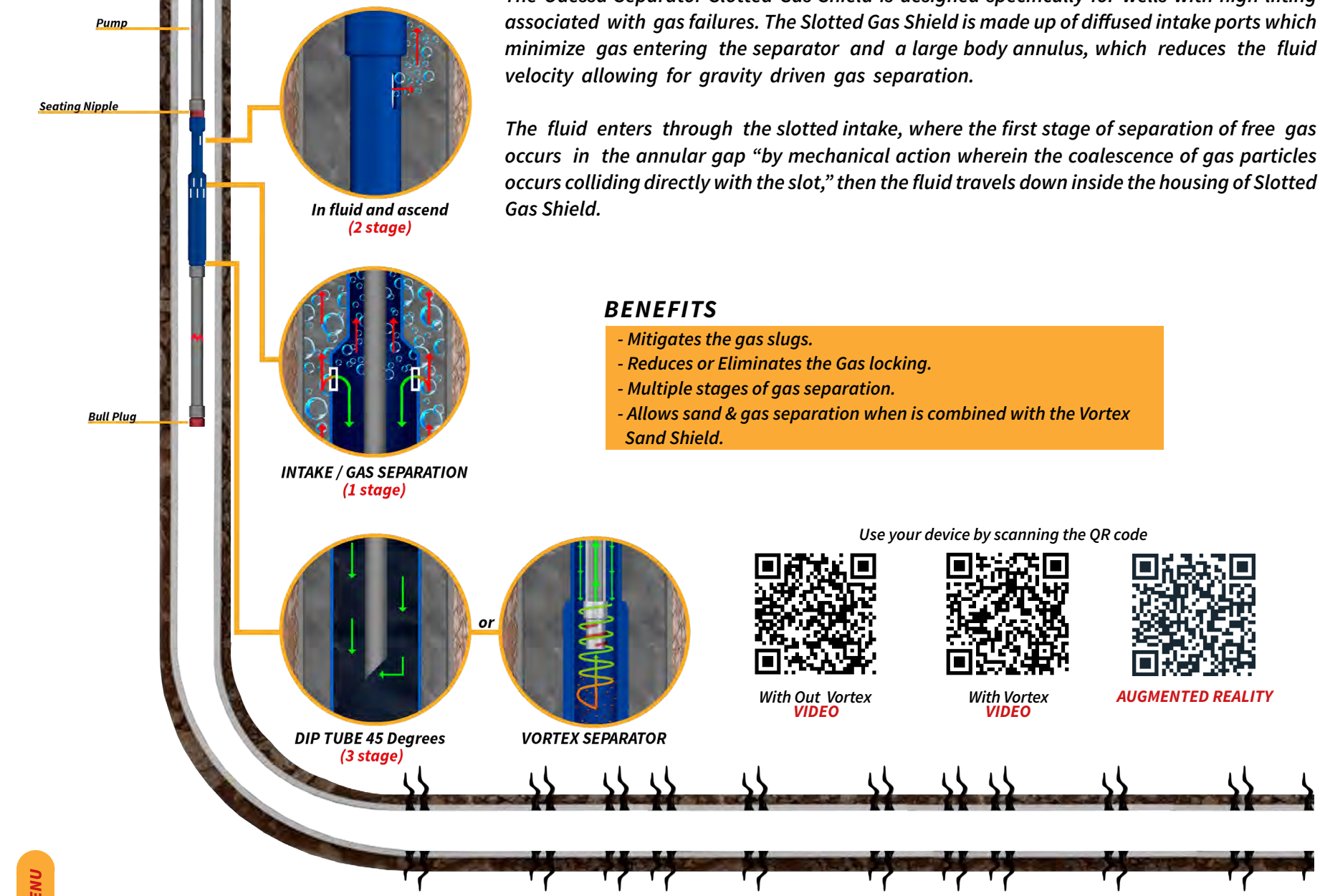
Dual Flow System



WITHOUT GAS

WITH GAS

SLOTTED GAS SHIELD™



The Odessa Separator Slotted Gas Shield is designed specifically for wells with high lifting associated with gas failures. The Slotted Gas Shield is made up of diffused intake ports which minimize gas entering the separator and a large body annulus, which reduces the fluid velocity allowing for gravity driven gas separation.

The fluid enters through the slotted intake, where the first stage of separation of free gas occurs in the annular gap "by mechanical action wherein the coalescence of gas particles occurs colliding directly with the slot," then the fluid travels down inside the housing of Slotted Gas Shield.

BENEFITS

- *Mitigates the gas slugs.*
- *Reduces or Eliminates the Gas locking.*
- *Multiple stages of gas separation.*
- *Allows sand & gas separation when is combined with the Vortex Sand Shield.*

Use your device by scanning the QR code

With Out Vortex
VIDEO

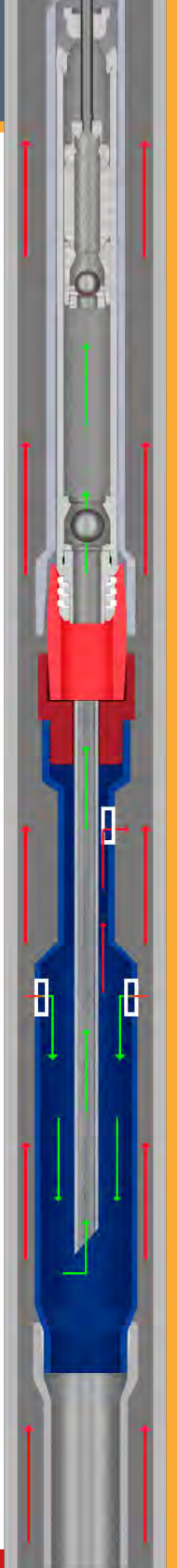
With Vortex
VIDEO

AUGMENTED REALITY

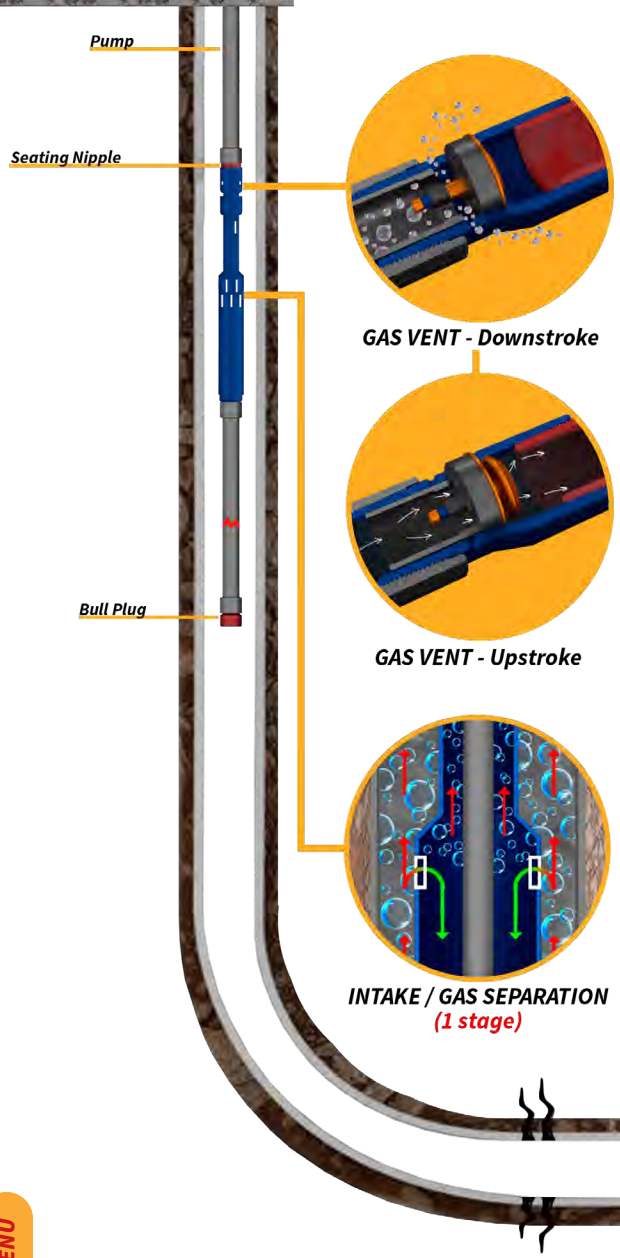
HOW IT WORKS

WITHOUT GAS

WITH GAS



GAS VENT™



GAS VENT - Downstroke

GAS VENT - Upstroke

INTAKE / GAS SEPARATION
(1 stage)

The GAS VENT is a component that is engineered to optimize gas separation. It is designed to be compatible with any manufacturers' gas separator. The Gas Vent releases free gas inside the dip tube, reducing gas interference when the capacity of the gas separator is maxed out.

The GAS VENT is attached to the top of a gas separator and works in synchronous with the pump. During the upstroke, when the standing valve is open, the Gas Vent valve is closed, keeping the gas in the top of the separator. During the downstroke, when the standing valve is closed, the Gas Vent is open allowing gas to flow upward into the annulus.

BENEFITS

- *Reduces gas interference when the gas separator capacity is maxed out.*
- *Improves pumping efficiency.*
- *Reduces the potential for gas locking.*

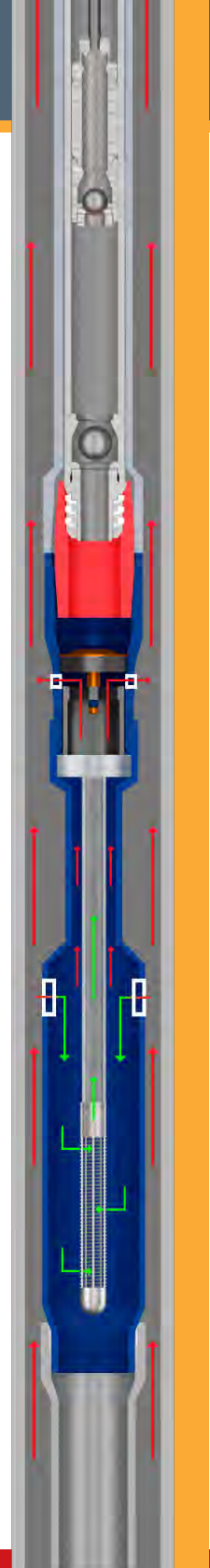
Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS

WITHOUT GAS

WITH GAS



COMBINATION TOOL™

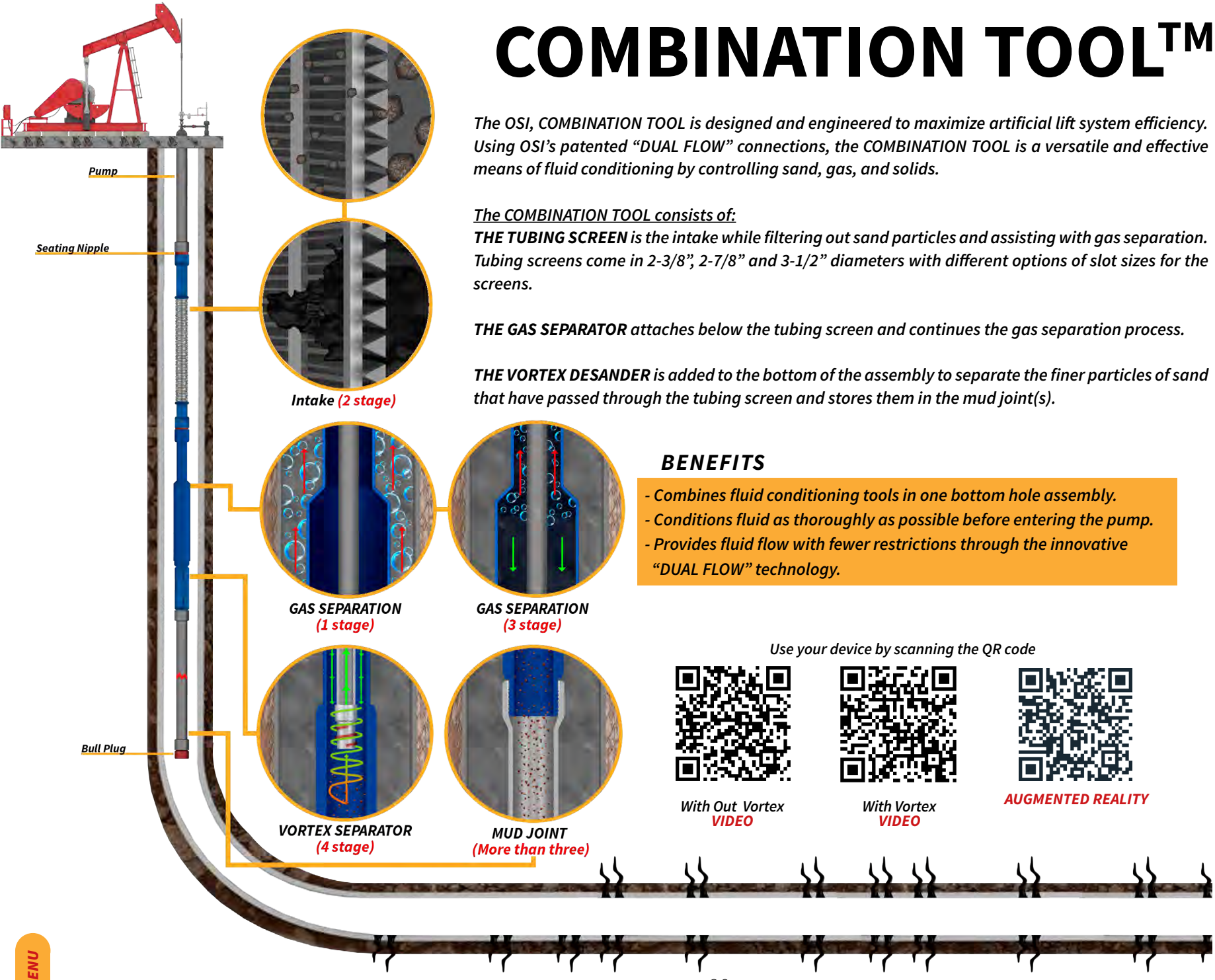
The OSI, COMBINATION TOOL is designed and engineered to maximize artificial lift system efficiency. Using OSI's patented "DUAL FLOW" connections, the COMBINATION TOOL is a versatile and effective means of fluid conditioning by controlling sand, gas, and solids.

The COMBINATION TOOL consists of:

***THE TUBING SCREEN** is the intake while filtering out sand particles and assisting with gas separation. Tubing screens come in 2-3/8", 2-7/8" and 3-1/2" diameters with different options of slot sizes for the screens.*

***THE GAS SEPARATOR** attaches below the tubing screen and continues the gas separation process.*

***THE VORTEX DESANDER** is added to the bottom of the assembly to separate the finer particles of sand that have passed through the tubing screen and stores them in the mud joint(s).*



BENEFITS

- *Combines fluid conditioning tools in one bottom hole assembly.*
- *Conditions fluid as thoroughly as possible before entering the pump.*
- *Provides fluid flow with fewer restrictions through the innovative "DUAL FLOW" technology.*

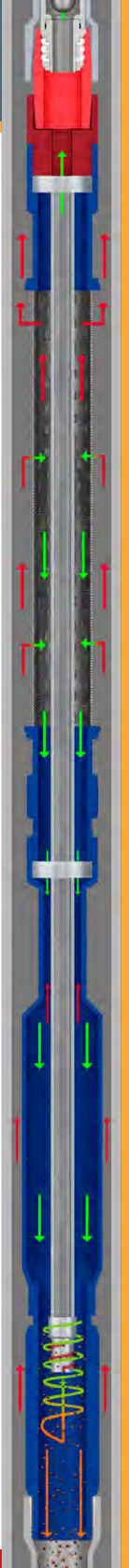
Use your device by scanning the QR code

With Out Vortex ***VIDEO***

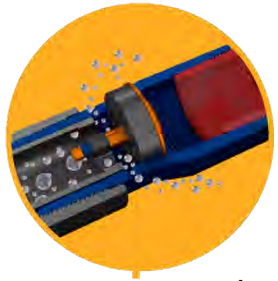
With Vortex ***VIDEO***

AUGMENTED REALITY

HOW IT WORKS

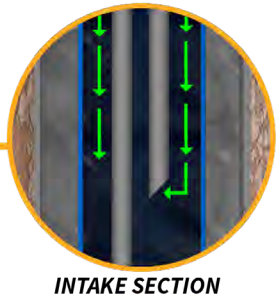


CHAMBER TYPE GAS SEPARATOR™

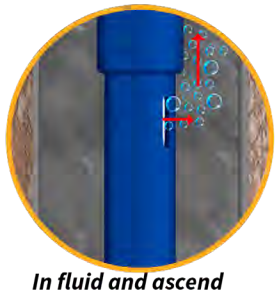


GAS VENT - Downstroke

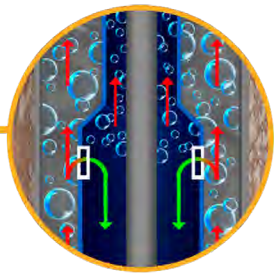
GAS VENT - Upstroke



INTAKE SECTION
(3 stage)



In fluid and ascend
(2 stage)



INTAKE / GAS SEPARATION
(1 stage)

Pump

Seating Nipple

Bull Plug

Using OSI patented technology, the CHAMBER TYPE GAS SEPARATOR provides two independent gas separation chambers in one tool.

This separator was engineered to provide high separation capacity without the necessity for a packer or packer cups, eliminating the possibility of a stuck packer downhole.

The optional OSI GAS VENT, working in synchronous with the pump, purges the dip tube of free gas, delivering gas free liquid to the pump. During the downtime, between pump cycles, the GAS VENT purges the dip tube of gas accumulation.

SIZES

2 - 7/8" x 3 - 1/2"
2 - 7/8" x 4"
2 - 7/8" x 4 - 1/2"
3 - 1/2" x 4 - 1/2"
3 - 1/2" x 5 - 1/2"

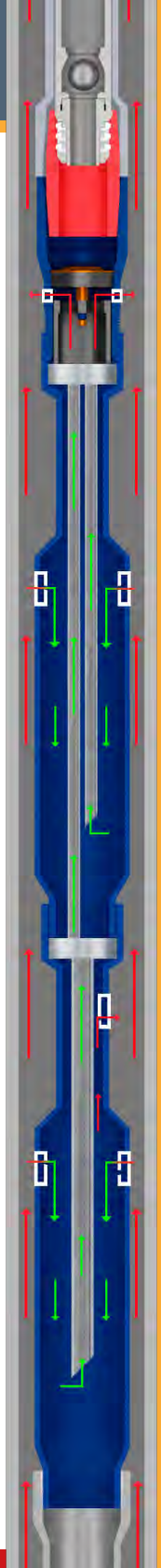
Use your device by scanning the QR code

AUGMENTED REALITY

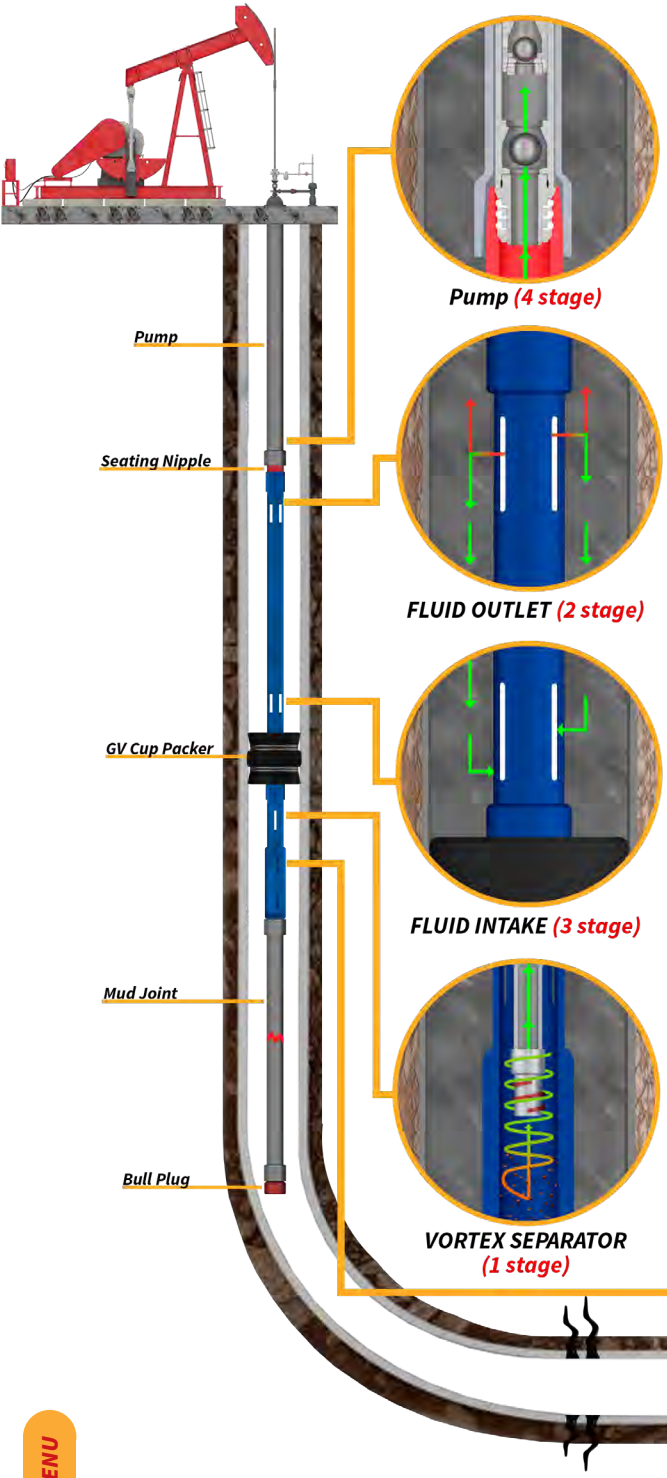
HOW IT WORKS

WITHOUT GAS

WITH GAS



PACKER TYPE GAS SEPARTOR™

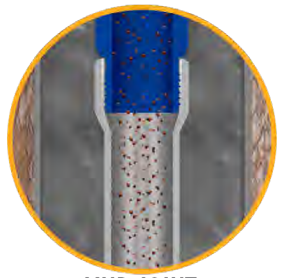


Pump *(4 stage)*

FLUID OUTLET *(2 stage)*

FLUID INTAKE *(3 stage)*

VORTEX SEPARATOR *(1 stage)*



MUD JOINT *(More than three)*

The production of wells with high GOR is a huge challenge for the pumping systems used in the oil industry. This condition can lead to find a greater volume of gas than liquid in the suction of the pump. When this happens, the volumetric efficiency of the pump is severely affected and in some cases, the downhole equipment could be damaged.

The Packer Type Gas Separator is an innovative tool that eliminates gas problems in lifting systems through the application of a separation section design according to well conditions. The best advantage of this system is the possibility of customizing the isolating section, outlet and, intake point and additionally the tool length using the concept that there is not standard tool for all the wells.

BENEFITS

- *Mitigates the gas slugs.*
- *Reduces or Eliminates the Gas locking.*
- *Multiple stages of gas separation.*
- *increases the pump efficiency by increasing the pump fillage.*
- *Reduces the shutdowns caused by gas lock.*
- *Utilizes both, the casing and tubing as gas separators.*
- *It can be used with the Vortex Desander.*

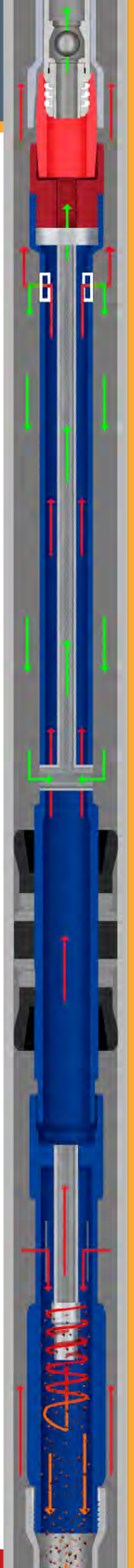
Use your device by scanning the QR code

Rotation n' Packer VIDEO

GV Cup Packer VIDEO

AUGMENTED REALITY

HOW IT WORKS



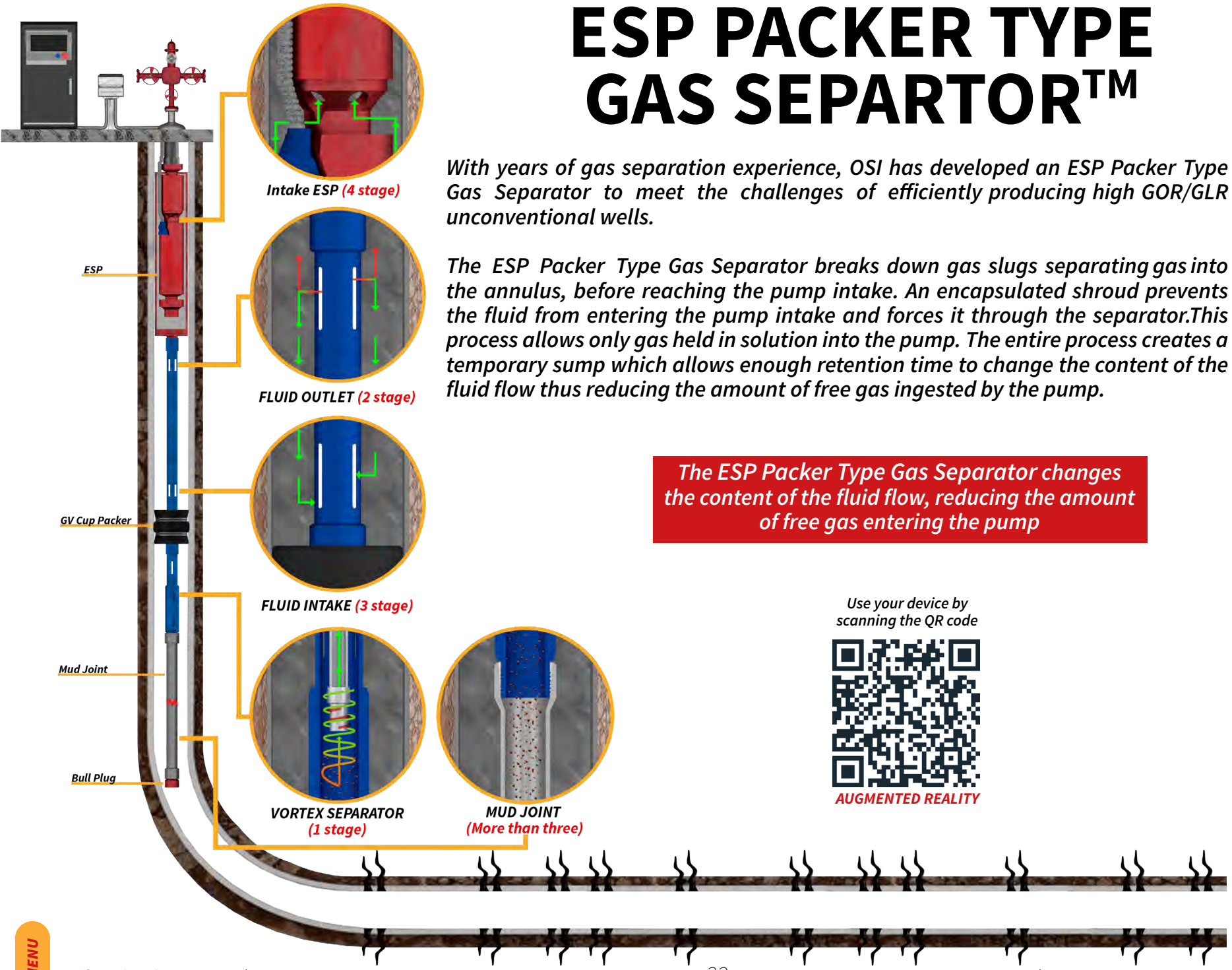
WITH GAS
SAND PARTICLES
WITHOUT GAS

ESP PACKER TYPE GAS SEPARTOR™

With years of gas separation experience, OSI has developed an ESP Packer Type Gas Separator to meet the challenges of efficiently producing high GOR/GLR unconventional wells.

The ESP Packer Type Gas Separator breaks down gas slugs separating gas into the annulus, before reaching the pump intake. An encapsulated shroud prevents the fluid from entering the pump intake and forces it through the separator.This process allows only gas held in solution into the pump. The entire process creates a temporary sump which allows enough retention time to change the content of the fluid flow thus reducing the amount of free gas ingested by the pump.

The ESP Packer Type Gas Separator changes the content of the fluid flow, reducing the amount of free gas entering the pump

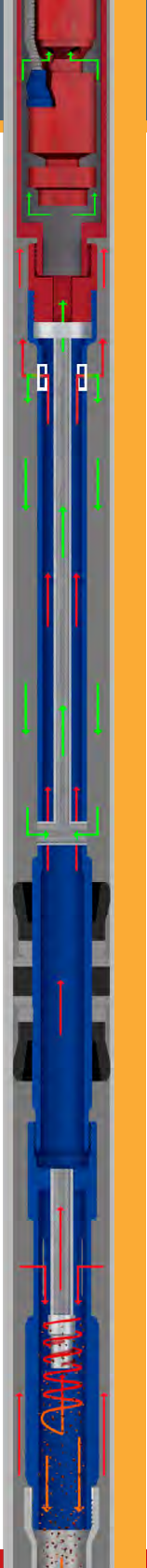


Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS

WITH GAS
WITHOUT GAS
SAND PARTICLES



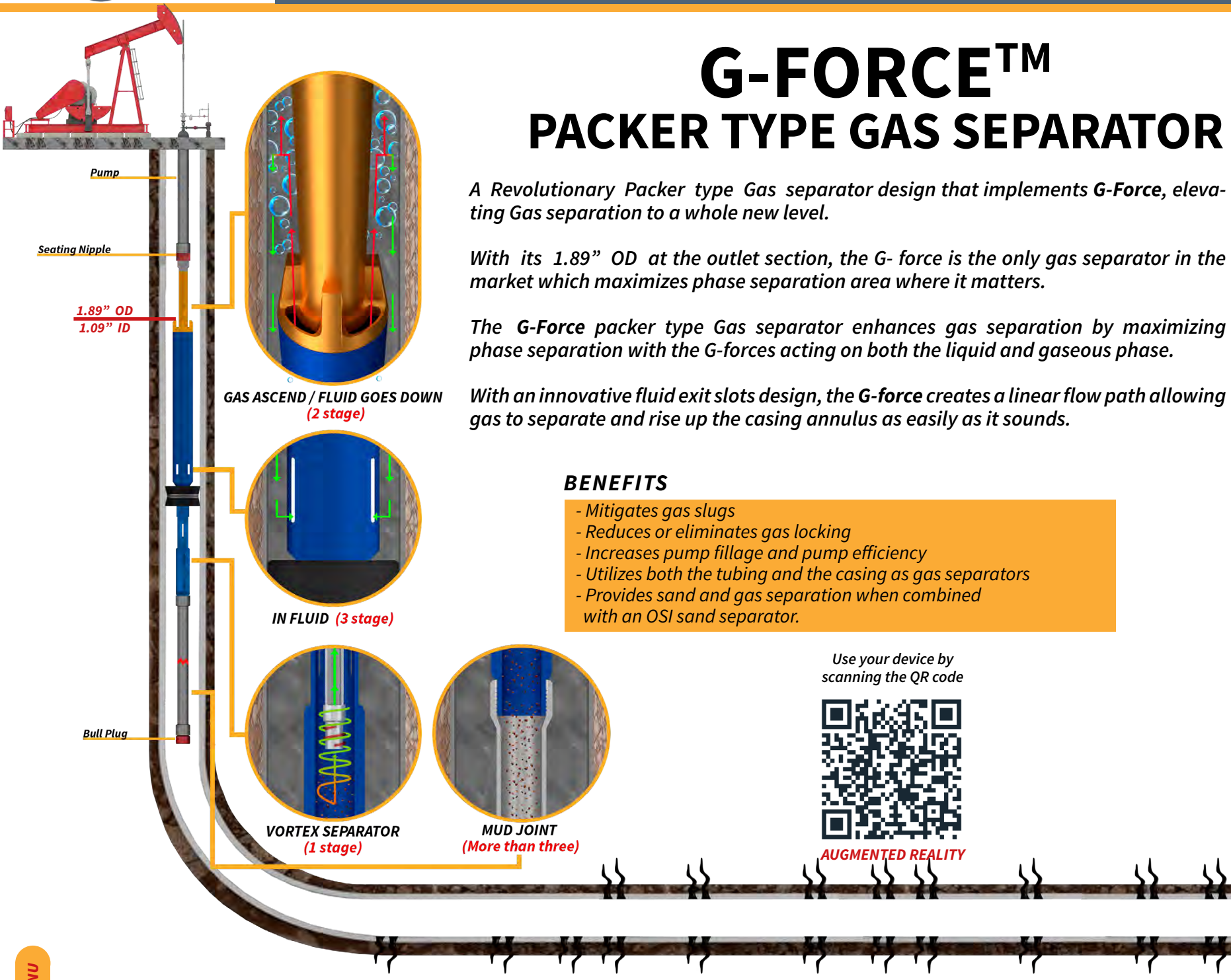
G-FORCE™
PACKER TYPE GAS SEPARATOR

*A Revolutionary Packer type Gas separator design that implements **G-Force**, elevating Gas separation to a whole new level.*

With its 1.89" OD at the outlet section, the G- force is the only gas separator in the market which maximizes phase separation area where it matters.

*The **G-Force** packer type Gas separator enhances gas separation by maximizing phase separation with the G-forces acting on both the liquid and gaseous phase.*

*With an innovative fluid exit slots design, the **G-force** creates a linear flow path allowing gas to separate and rise up the casing annulus as easily as it sounds.*



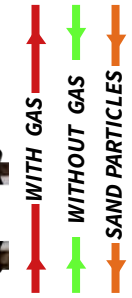
BENEFITS

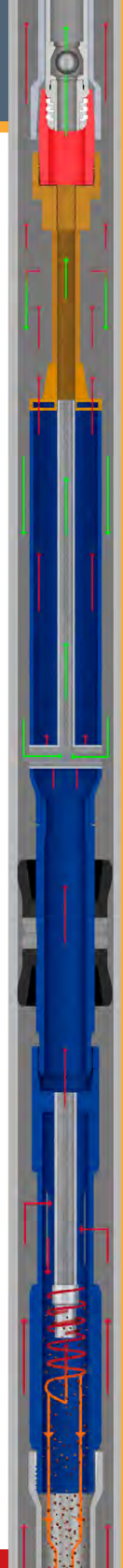
- Mitigates gas slugs
- Reduces or eliminates gas locking
- Increases pump fillage and pump efficiency
- Utilizes both the tubing and the casing as gas separators
- Provides sand and gas separation when combined with an OSI sand separator.

Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS



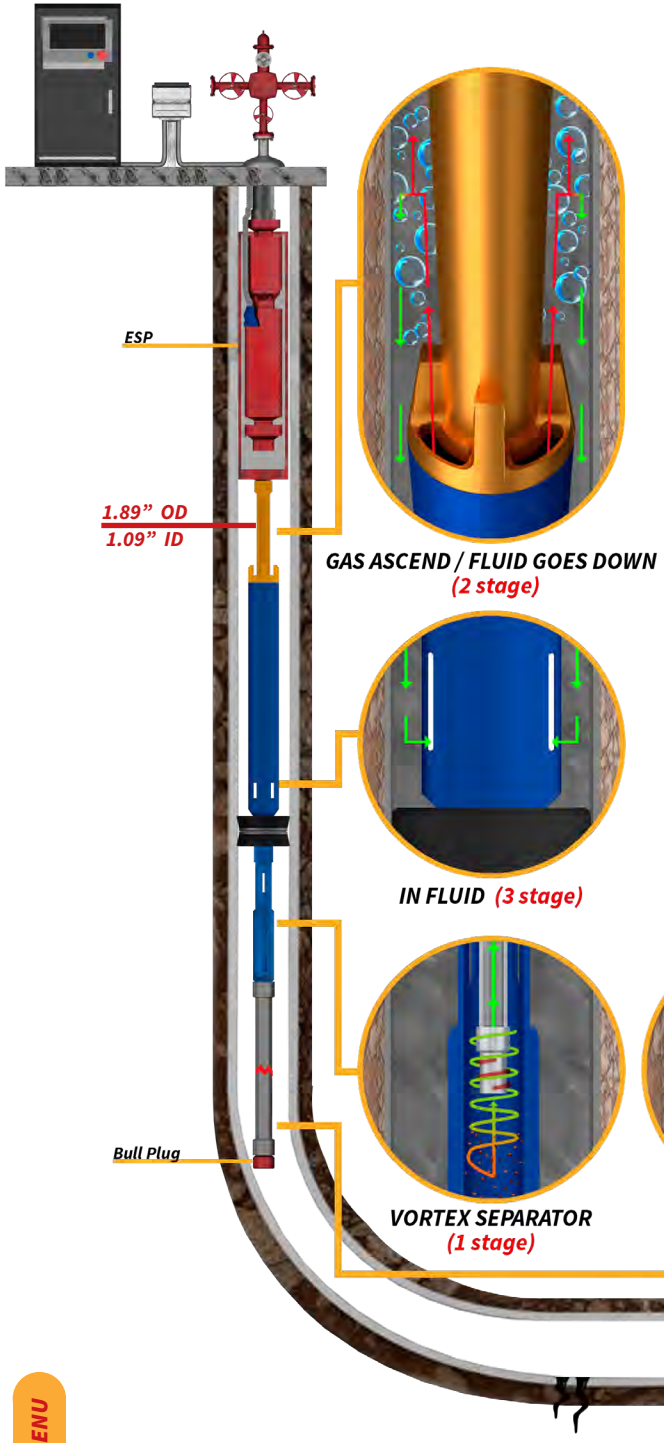


ESP G-FORCE™
PACKER TYPE GAS SEPARATOR

The solution to gas problems in ESP wells is OSI's G-FORCE, a revolutionary, new, packer-type gas separator design that is the ultimate in gas separation technology.

The G-Force exit slots are oriented upward so that the exiting gas avoids the circuitous pathway found in other gas separators allowing gas to rise unrestricted, in a more uniform, linear movement.

The upper neck of the G-Force is of a reduced diameter compared to typical gas separator body designs. This increases the available volume within the annulus between the casing and the neck of the G-Force promoting greater flow dynamics.



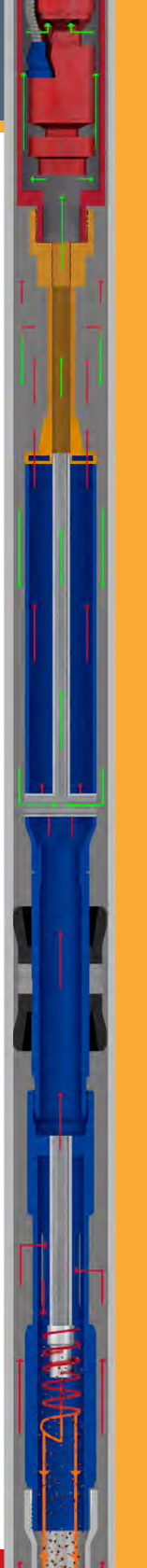
BENEFITS

- Reduces / eliminates gas interference problems
- Increases pump fillage and pump efficiency
- Reduces operating costs
- Extends ESP run times
- Provides protection against sand and solids when combined with other OSI fluid conditioning tools

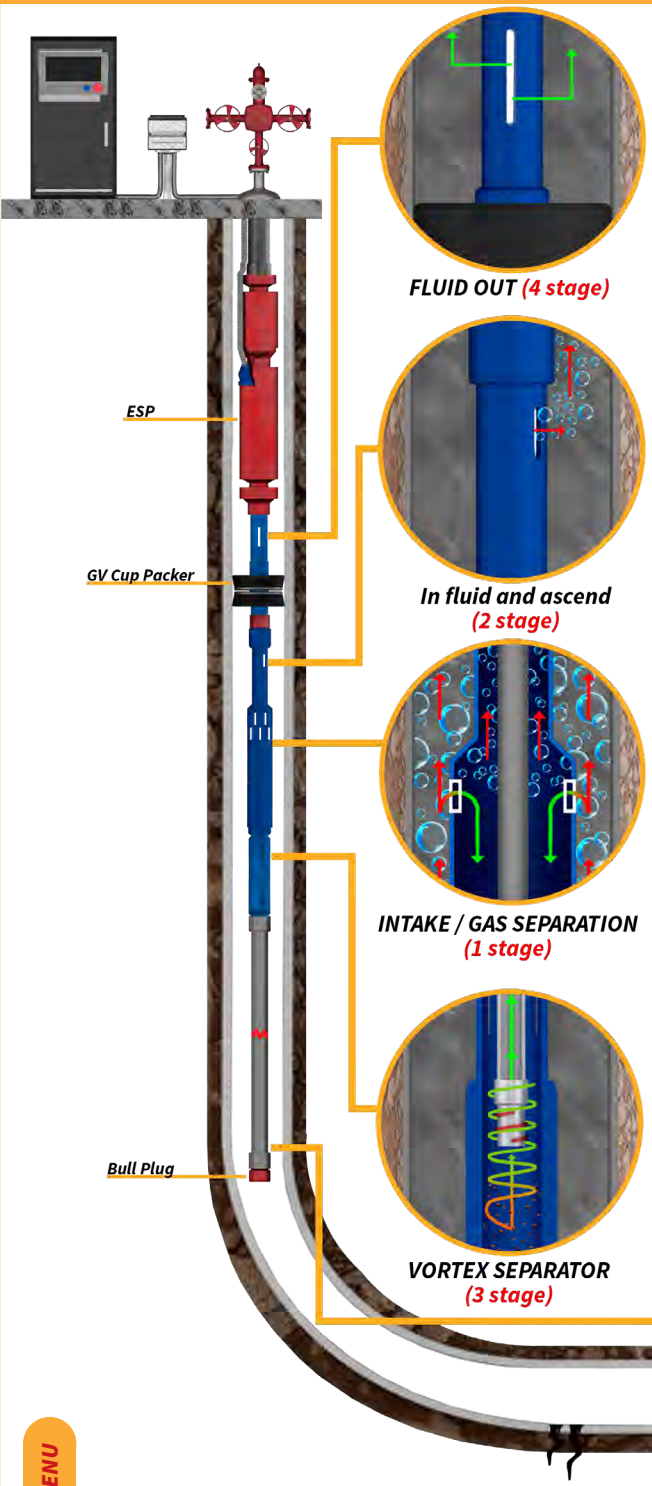
Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS



ESP VORTEX REGULATOR™



The ESP Guardian Shield significantly improves the performance of ESP's in high GOR / GLR horizontal wells. With OSI's DUAL-FLOW Completion System technology, the inadequacies of traditional "dip tube" type assemblies are eliminated while optimizing operational effectiveness.

The Guardian Shield includes an encapsulating shroud around the ESP pump motor that prevents overheating due to gas interference.

Guardian Shield provides multi-stage separation of gas and solids while ensuring uncompromised flow area versus standard dip tube tools.

BENEFITS

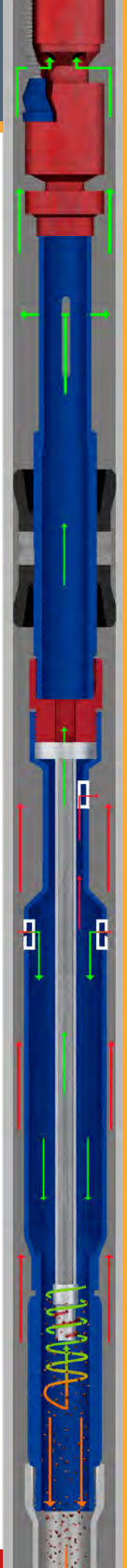
- Mitigates gas slugs
- Reduces or eliminates gas locking
- Lowers ESP motor operating temperature
- Prevents random shutdowns

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS

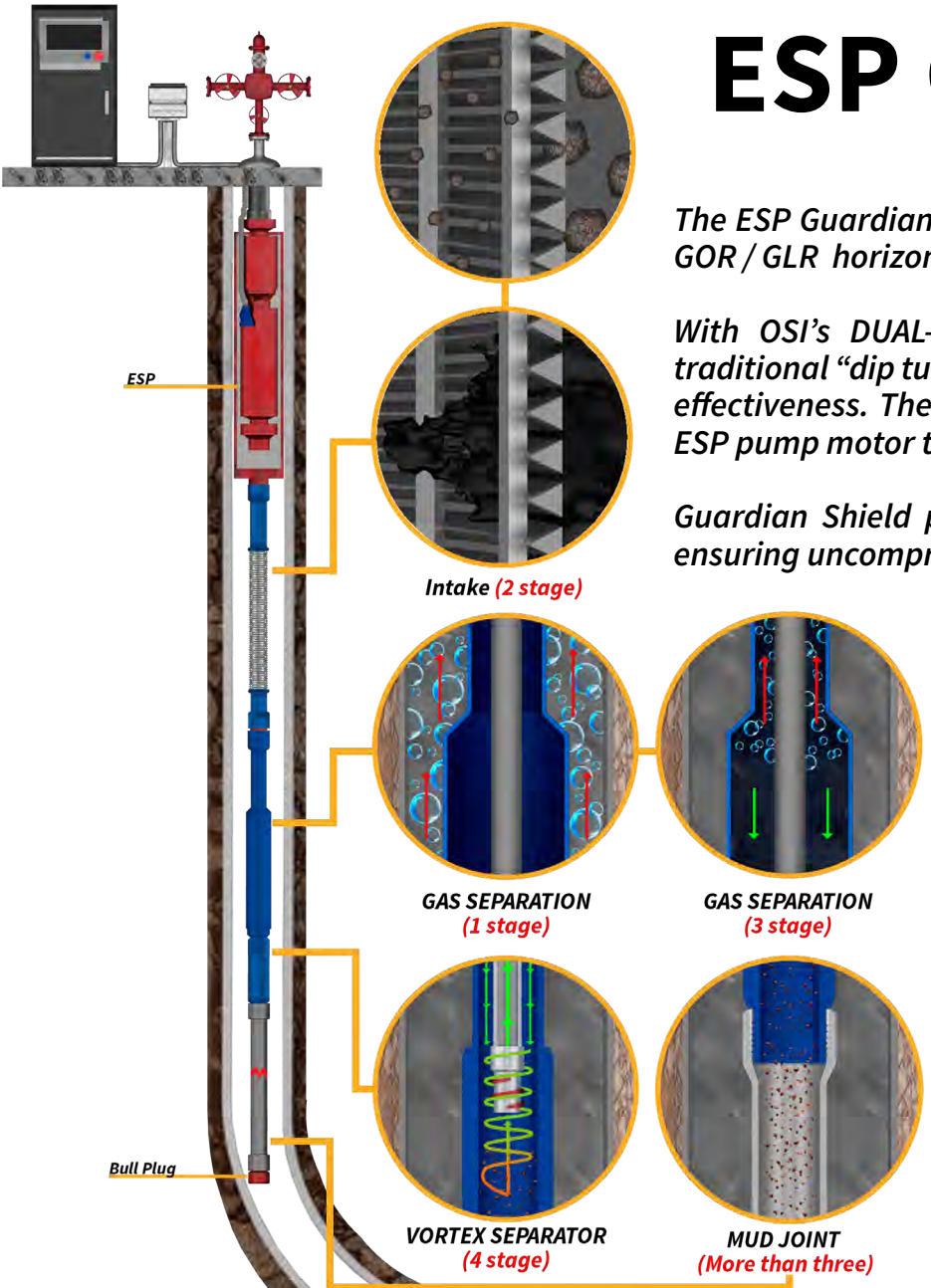


ESP GUARDIAN SHIELD™

The ESP Guardian Shield significantly improves the performance of ESP's in high GOR / GLR horizontal wells.

With OSI's DUAL-FLOW Completion System technology, the inadequacies of traditional "dip tube" type assemblies are eliminated while optimizing operational effectiveness. The Guardian Shield includes an encapsulating shroud around the ESP pump motor that prevents overheating due to gas interference.

Guardian Shield provides multi-stage separation of gas and solids while ensuring uncompromised flow area versus standard dip tube tools.



BENEFITS

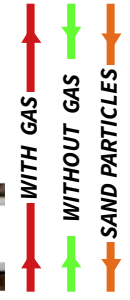
- Mitigates gas slugs
- Reduces or eliminates gas locking
- Lowers ESP motor operating temperature
- Prevents random shutdowns

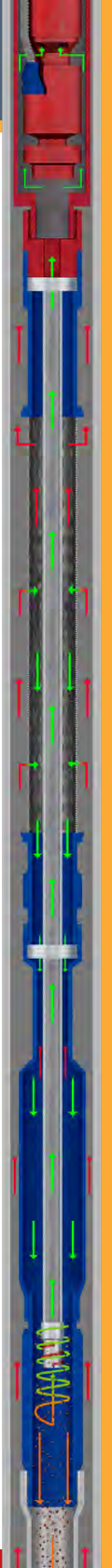
Use your device by scanning the QR code

VIDEO

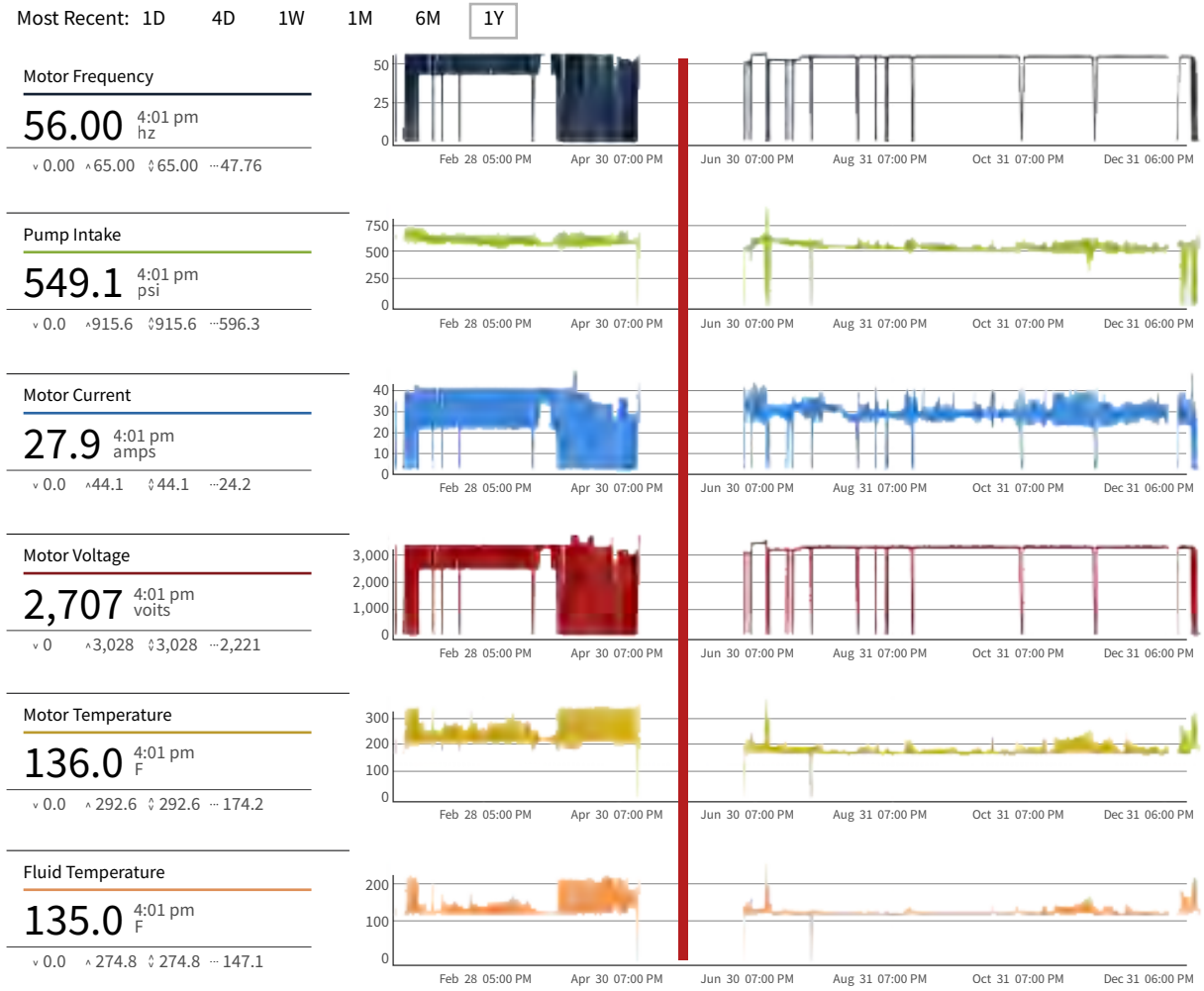
AUGMENTED REALITY

HOW IT WORKS





WELL PERFORMANCE BEFORE & AFTER OSI'S BHA INSTALLATION



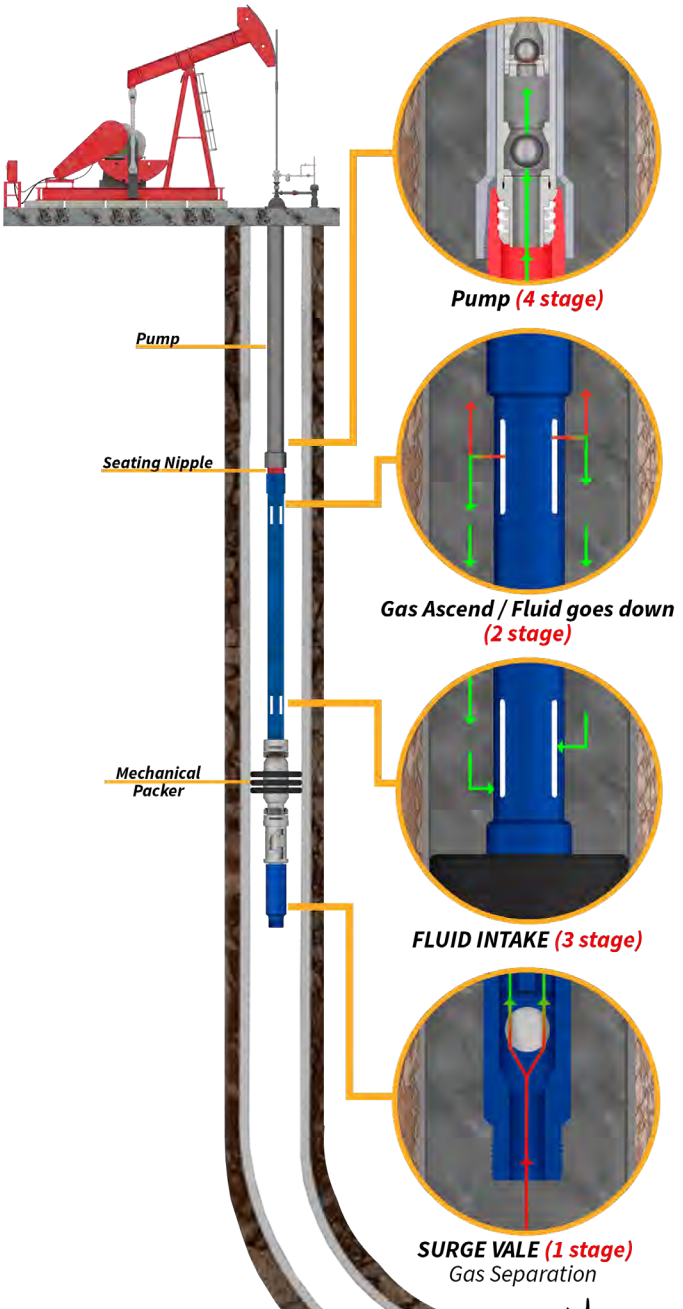
- Average motor temperature and Fluid temperature almost dropped by 100° F. Average motor temperature dropped from 182.3° F to 139.3° F after OSI's tool installation

- The difference between motor temperature and fluid temperature is 2° F indicating high gas separation efficiency with negligible free gas presence

- Along with that, the fluctuations in the temperature has reduced and become constant which hadn't been observed before

- Motor frequency remained stable which prevented ESP shutdowns, increasing the pump efficiency

SURGE VALVE™



The OSI SURGE VALVE is installed below a mechanical packer and designed to eliminate surging in wells.

It prevents surging by holding the fluid in the vertical section thus avoiding backflow when the gas slug leaves liquids behind.

An additional channel is provided in the tool to allow chemical injection below the packer.

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

BENEFITS

- Helps prevent gas interference.
- Reduces pump shutdowns.
- Breaks gas slugs and prevents surge production.

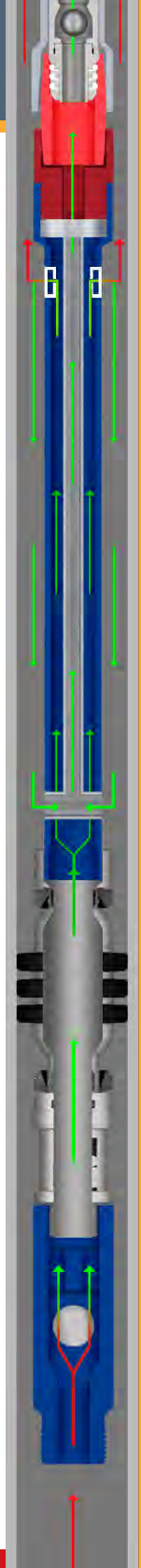
ADVANTAGES

- Allows chemical injection below the pump.
- Allows for hot oil treating above the packer.
- Allows testing the packer to assure that it is properly set.

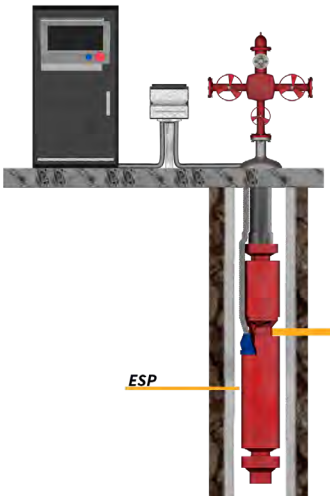
Technical Specifications

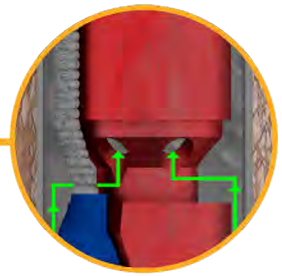
Sizes	Collar (in) OD	Length (in)
2-7/8"	3.668	23.000
3-1/2"	4.500	23.000

HOW IT WORKS

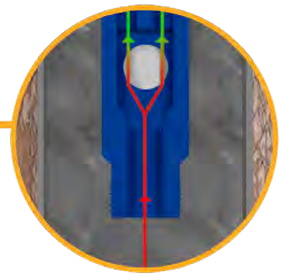


ESP SURGE VALVE™





Intake ESP (2 stage)



SURGE VALE (1 stage)
Gas Separation

The OSI SURGE VALVE is installed below a mechanical packer and designed to eliminate surging in wells.

It prevents surging by holding the fluid in the vertical section thus avoiding backflow when the gas slug leaves liquids behind.

An additional channel is provided in the tool to allow chemical injection below the packer.

BENEFITS

- Helps prevent gas interference.
- Reduces pump shutdowns.
- Breaks gas slugs and prevents surge production.

ADVANTAGES

- Allows chemical injection below the pump.
- Allows for hot oil treating above the packer.
- Allows testing the packer to assure that it is properly set.

Use your device by scanning the QR code

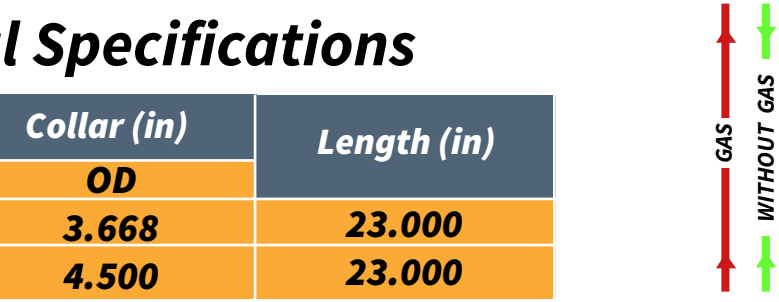
VIDEO

AUGMENTED REALITY

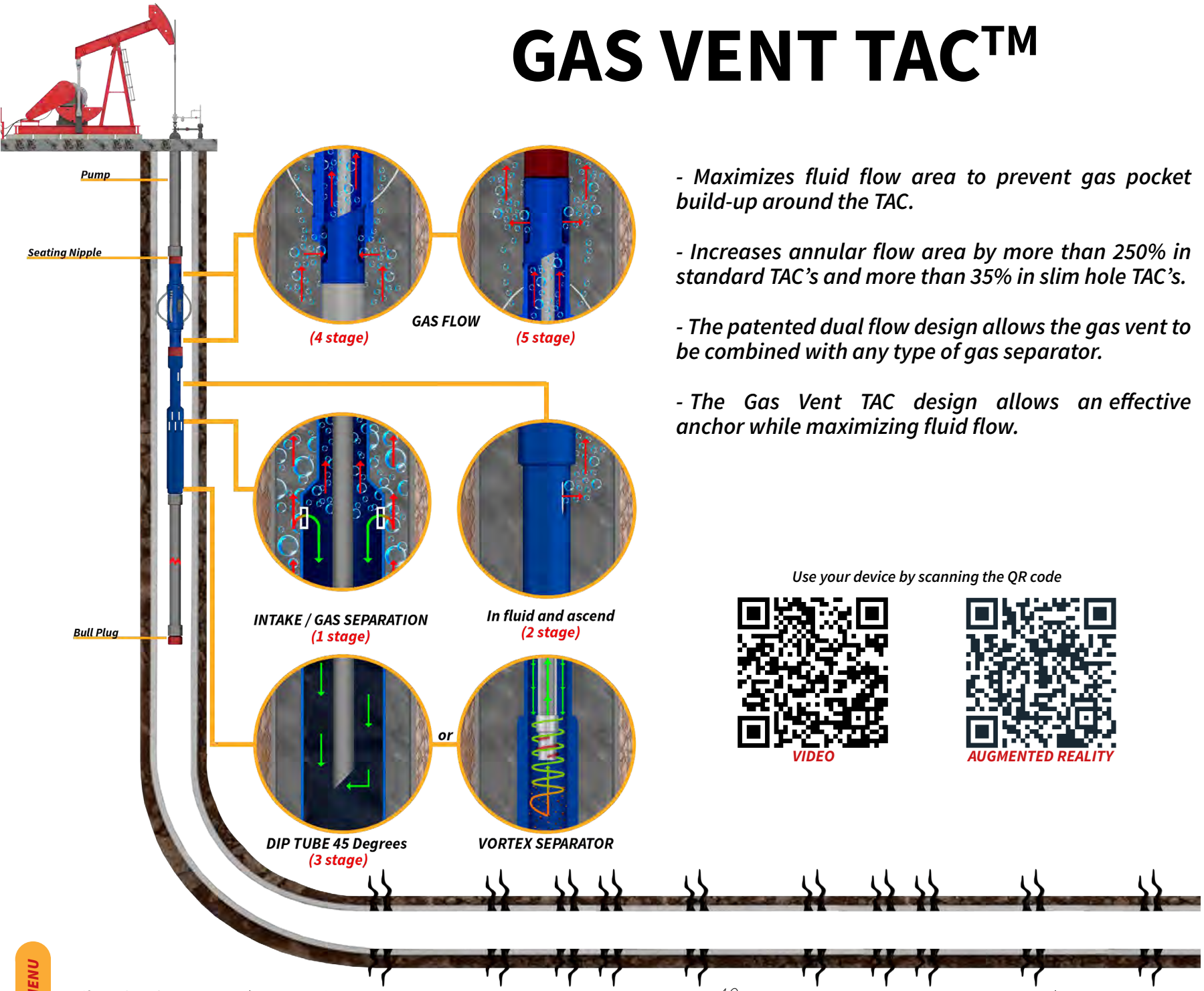
Technical Specifications

Sizes	Collar (in) OD	Length (in)
2-7/8"	3.668	23.000
3-1/2"	4.500	23.000

HOW IT WORKS



GAS VENT TAC™



- Maximizes fluid flow area to prevent gas pocket build-up around the TAC.

- Increases annular flow area by more than 250% in standard TAC's and more than 35% in slim hole TAC's.

- The patented dual flow design allows the gas vent to be combined with any type of gas separator.

- The Gas Vent TAC design allows an effective anchor while maximizing fluid flow.

Use your device by scanning the QR code

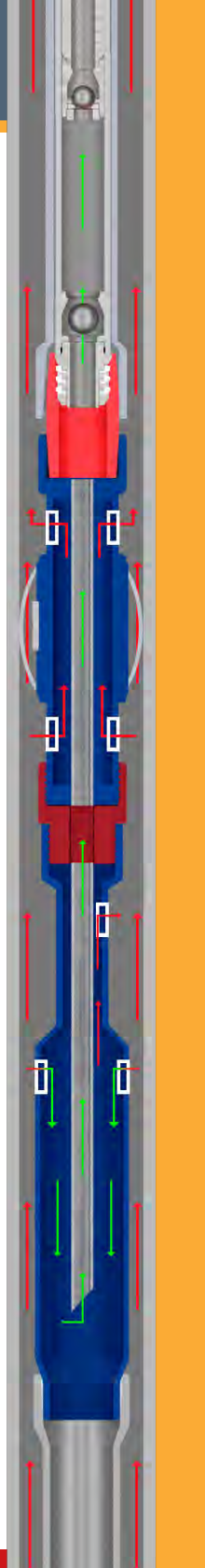
VIDEO

AUGMENTED REALITY

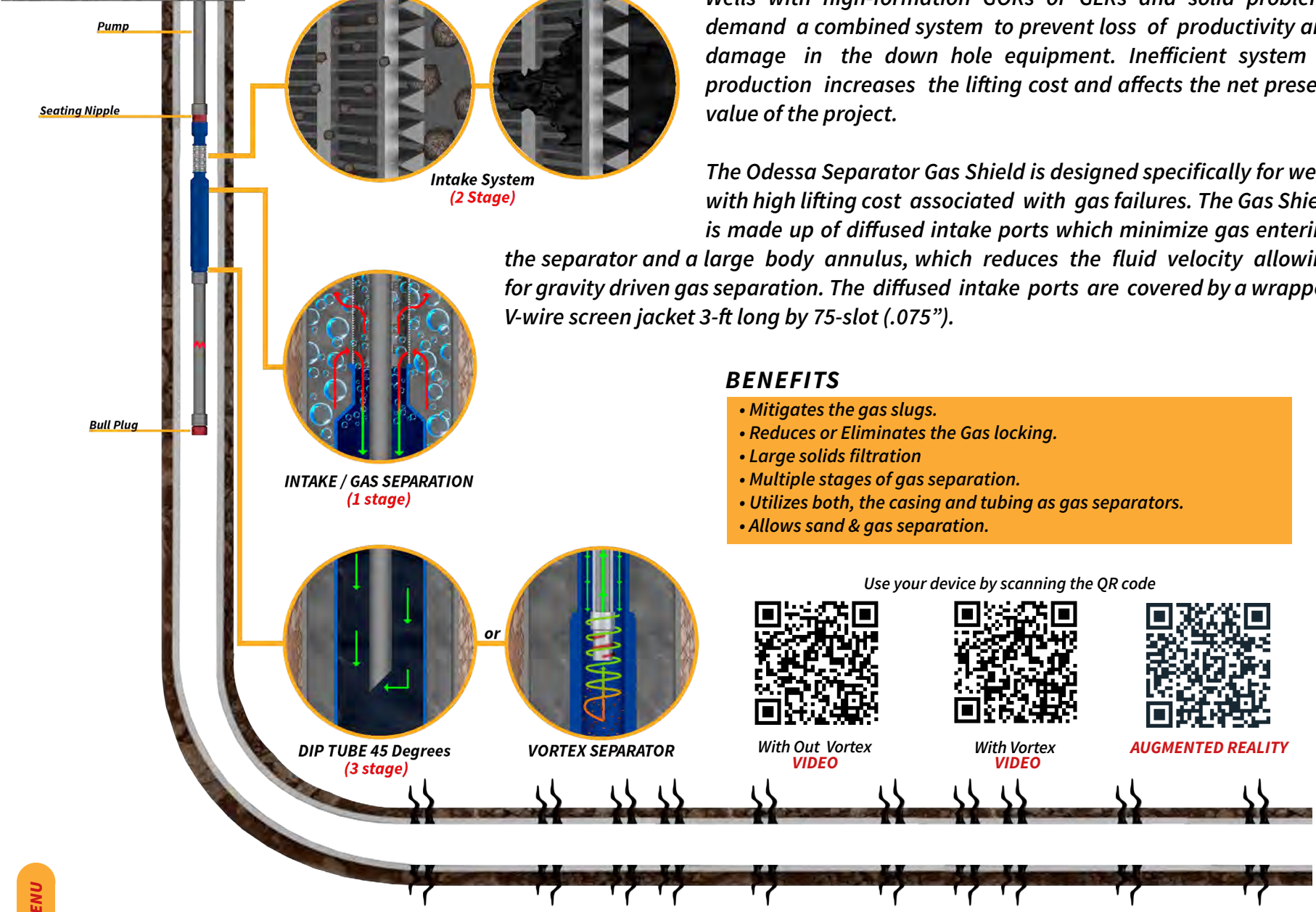
HOW IT WORKS

WITH GAS

WITHOUT GAS



GAS SHIELD™



Wells with high-formation GORs or GLRs and solid problems demand a combined system to prevent loss of productivity and damage in the down hole equipment. Inefficient system of production increases the lifting cost and affects the net present value of the project.

The Odessa Separator Gas Shield is designed specifically for wells with high lifting cost associated with gas failures. The Gas Shield is made up of diffused intake ports which minimize gas entering the separator and a large body annulus, which reduces the fluid velocity allowing for gravity driven gas separation. The diffused intake ports are covered by a wrapped V-wire screen jacket 3-ft long by 75-slot (.075").

BENEFITS

- *Mitigates the gas slugs.*
- *Reduces or Eliminates the Gas locking.*
- *Large solids filtration*
- *Multiple stages of gas separation.*
- *Utilizes both, the casing and tubing as gas separators.*
- *Allows sand & gas separation.*

Use your device by scanning the QR code

With Out Vortex
VIDEO

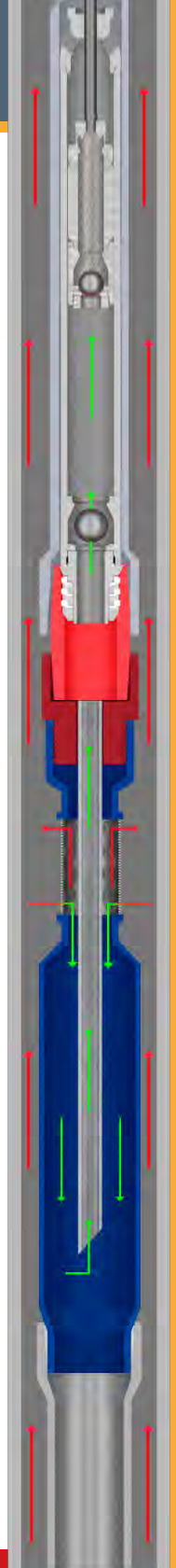
With Vortex
VIDEO

AUGMENTED REALITY

HOW IT WORKS

WITHOUT GAS

WITH GAS



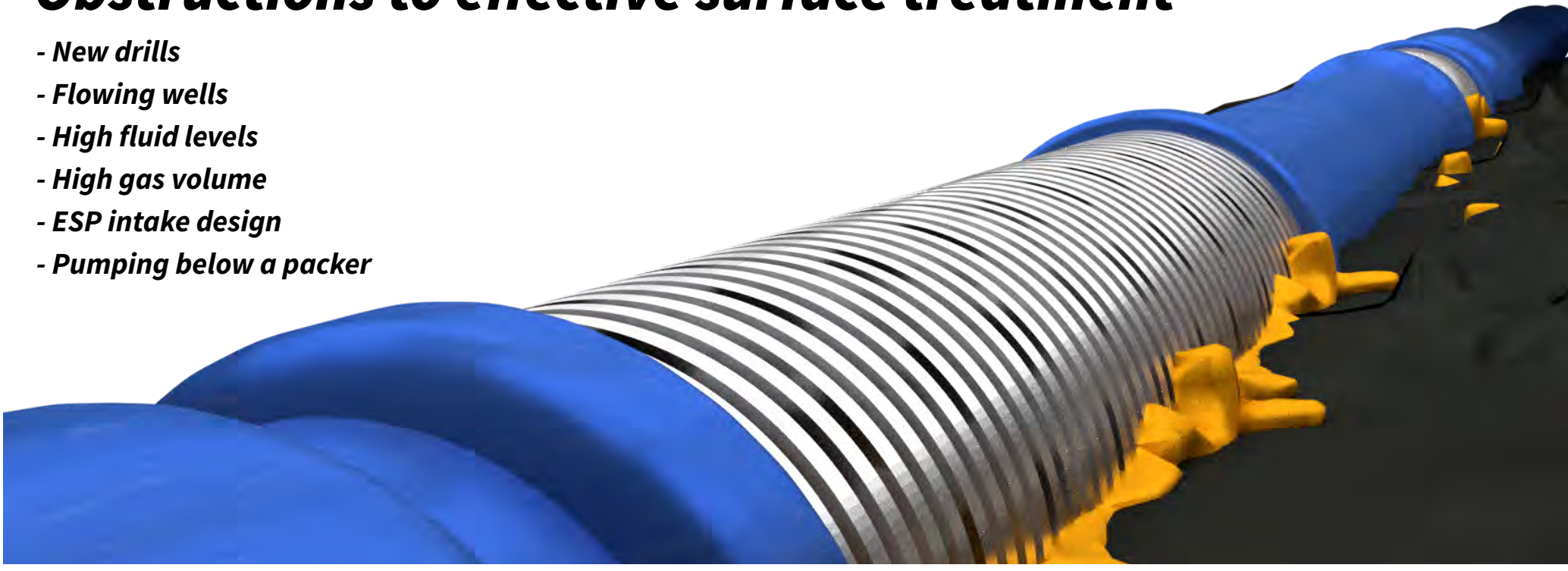
Oilfield Challenges CHEMICAL

Operators use downhole hardware to filter, condition, manipulate, and redirect harmful solids & gas in oil & gas wells. However, other agents of destruction downhole must be confronted with chemicals.

Common surface chemical treatments are expensive and chemicals are difficult to apply effectively. Placing chemical where it is needed and retention have proven difficult. OSI's proprietary systems offer a solution.

Obstructions to effective surface treatment

- ***New drills***
- ***Flowing wells***
- ***High fluid levels***
- ***High gas volume***
- ***ESP intake design***
- ***Pumping below a packer***



OSI understands the lack of effective chemical treatment programs hinder efficient pumping operations.

OSI APPROACH

Using a variety of laboratory testing capabilities and working with producer partners, OSI achieves effective and ongoing real time solutions long after the tool is installed.

Our field personnel carry out residual tests using procedures based on A.S.T.M, N.A.C.E, & A.W.W.A. published test methods.

Chemical formulations

- Paraffin, Asphaltene, Resins	- Silver Bullet
- Inhibitor	- Biocide Applications
- Acid Surfactant	- Super Scavenger
- Defoamer	- THPS

CHEM STICKS™

Designed for wells looking to inject a quick and easy chemical shock, OSI ChemSticks™ are dropped directly into the well from the surface. Corrosion, scale, paraffin, or other destructive downhole agents are now easier than ever to combat.

Based on OSI's patented micro-encapsulation technology, the ChemSticks™ are simple supplements to enhance chemical treatment, requiring no additional costly resources.

ChemSticks™ are ordered with general or well-specific formulas for any flowing well or any artificial lift well: SRP, ESP, PCP, gas lift, plunger lift, and jet pump.

BENEFITS

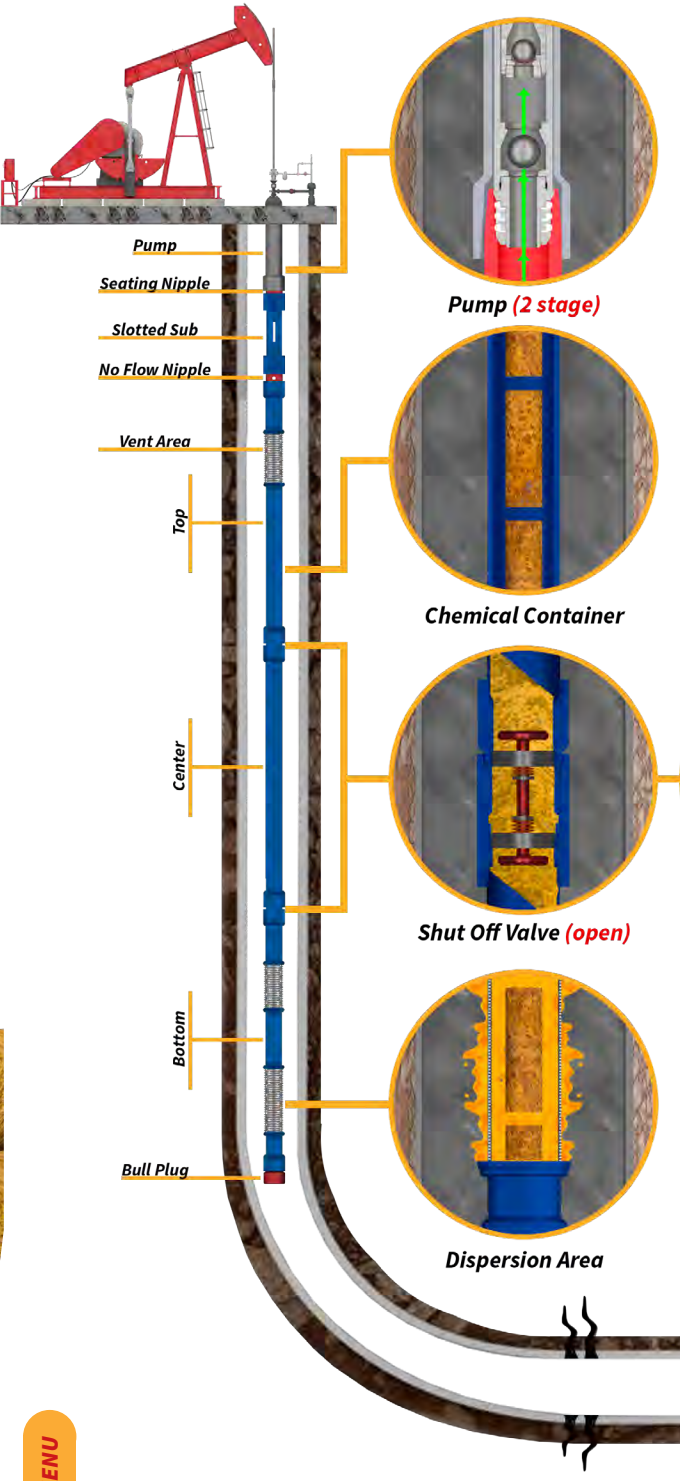
- *Well-specific prescriptions are based upon water & oil analysis.*
- *All corrosion sticks have quat + scavenger include for combatting H2S.*

Use your device by scanning the QR code

AUGMENTED REALITY

Each ChemStick™ pack has 4 sticks of well specific or general formulas comprised of inhibitors addressing corrosion, scale, paraffin, asphaltenes, foaming, & combo formulas

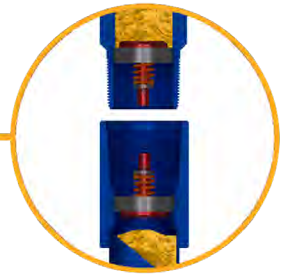
CHEM SCREEN™
WITH SHUT OFF VALVE



Pump *(2 stage)*

Chemical Container

Shut Off Valve *(open)*



Shut Off Valve *(close)*
No Spillage

Dispersion Area

Chem Screen™ is a new technology that challenges the traditional concept of downhole chemical treatment.
Through the micro-encapsulation technology, all the active components of the most effective liquid chemical treatments in the oil industry are processed in a solid stick that is then installed before the pump intake.

The installation of the Chem Screen™ downhole allows the activation and dispersion of the chemical problems to be treated and inhibited faster and more effectively, thus preventing harmful effects on downhole equipment. There is a Shut Off Valve in each side of the Top and center sections and One Valve at the top of the Bottom, to prevent slippage in the surface.

BENEFITS

- Reduces paraffin, scale and corrosion failures.
- Treats from the bottom up.
- Refillable tool design.
- Slow, self-released.
- Chemical treatment below the packer.

Use your device by scanning the QR code

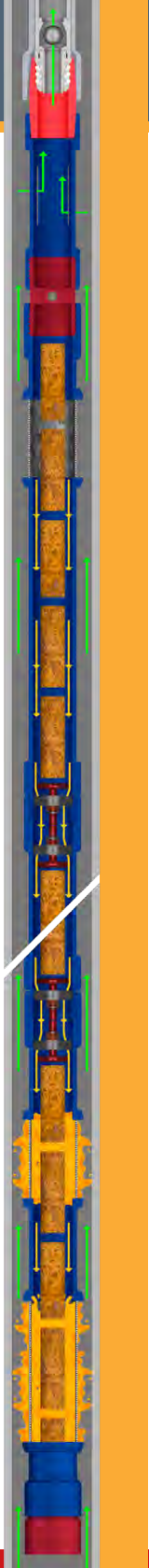
With out Shut Off Valve
VIDEO

With Shut Off Valve
VIDEO

AUGMENTED REALITY

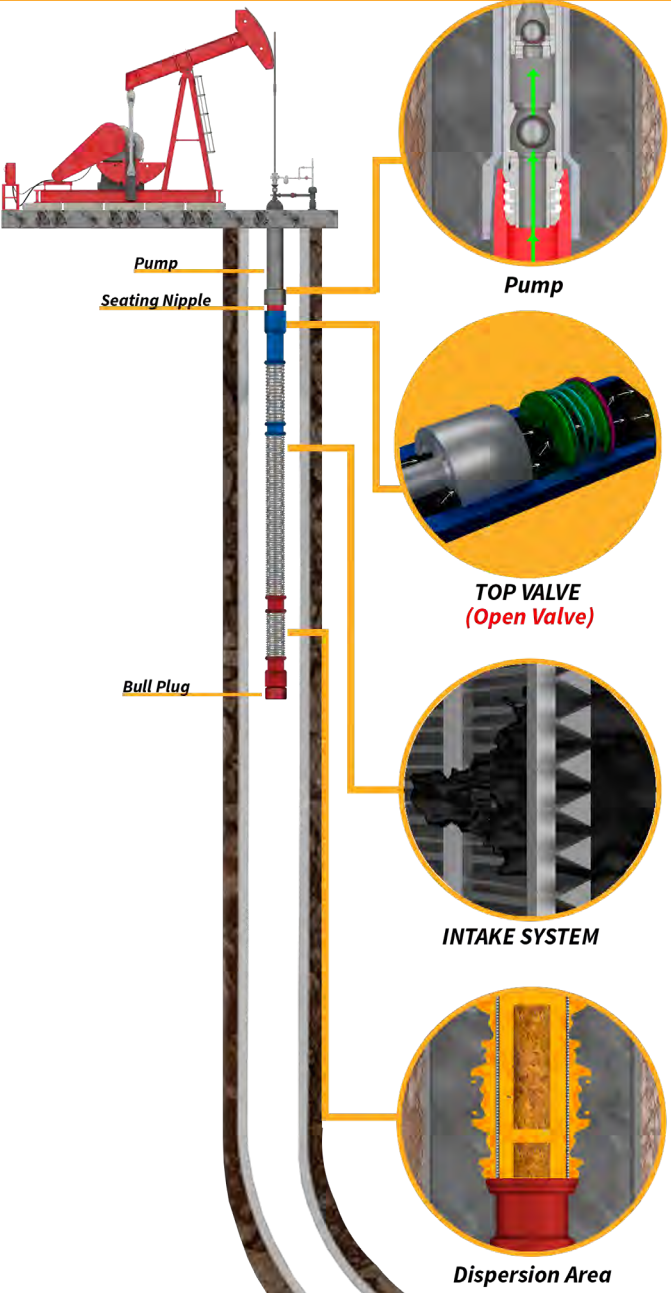
HOW IT WORKS

CHEMICAL
FLUID



CHEM FILTER TOOL™

3 in 1



1- Chemical Screen:

- Well specific chemical treatment from the bottom up.

- Cost-effective, consistent alternative chemical treating.

2- Tubing Screen:

- Homogenizes sand slugs, extending the run life of subsurface equipment while reducing downtime for workovers.

3- Top Bypass Valve:

- Allows an un-interrupted fluid flow to the pump if the intake is plugged with sand, scale or paraffin.

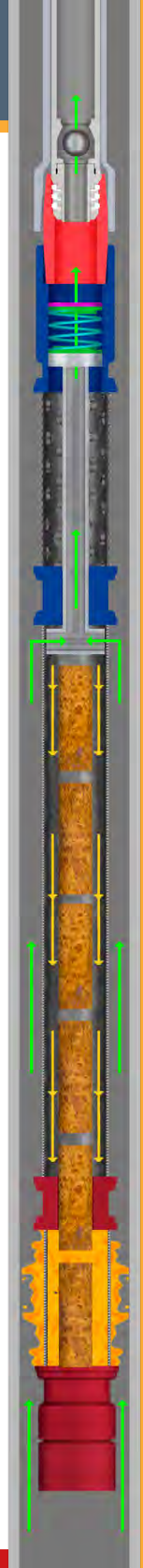
Use your device by scanning the QR code

AUGMENTED REALITY

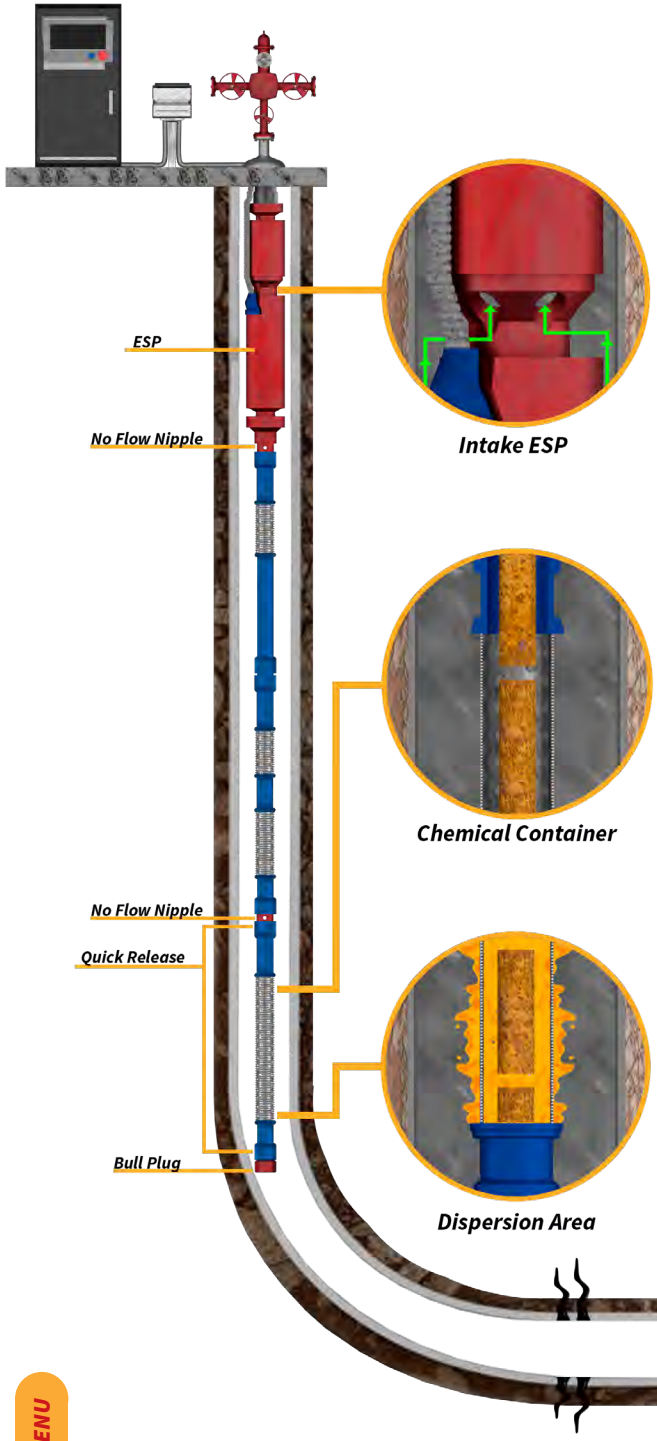
Downhole chemical treatment
Sand sand filtration at once

Chemical treatment and
sand control in a single tool!

HOW IT WORKS



QUICK RELEASE™



Quick Release™ is a chemical shock treatment for wells with severe chemical problems. Its main advantage is that it treats the well from the bottom with a high concentration of chemical treatment to balance the downhole conditions of the system.

Quick Release™ is perfectly compatible with the Chem Screen™, offering a total solution to provide a strong initial treatment.

BENEFITS

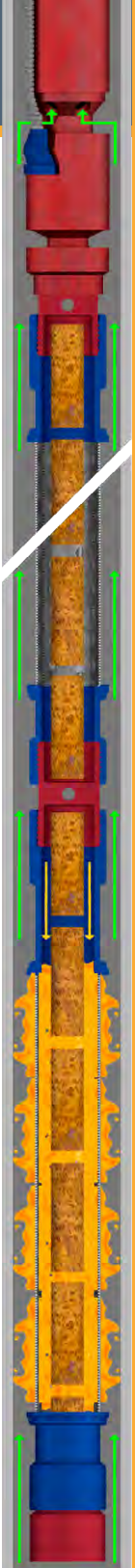
- *High concentration treatment.*
- *Reduces paraffin, scale and corrosion failures.*
- *Treats from the bottom up.*
- *Refillable tool design.*
- *Fast, self release for a shock treatment.*
- *Chemical treatment below the packer.*

Use your device by scanning the QR code

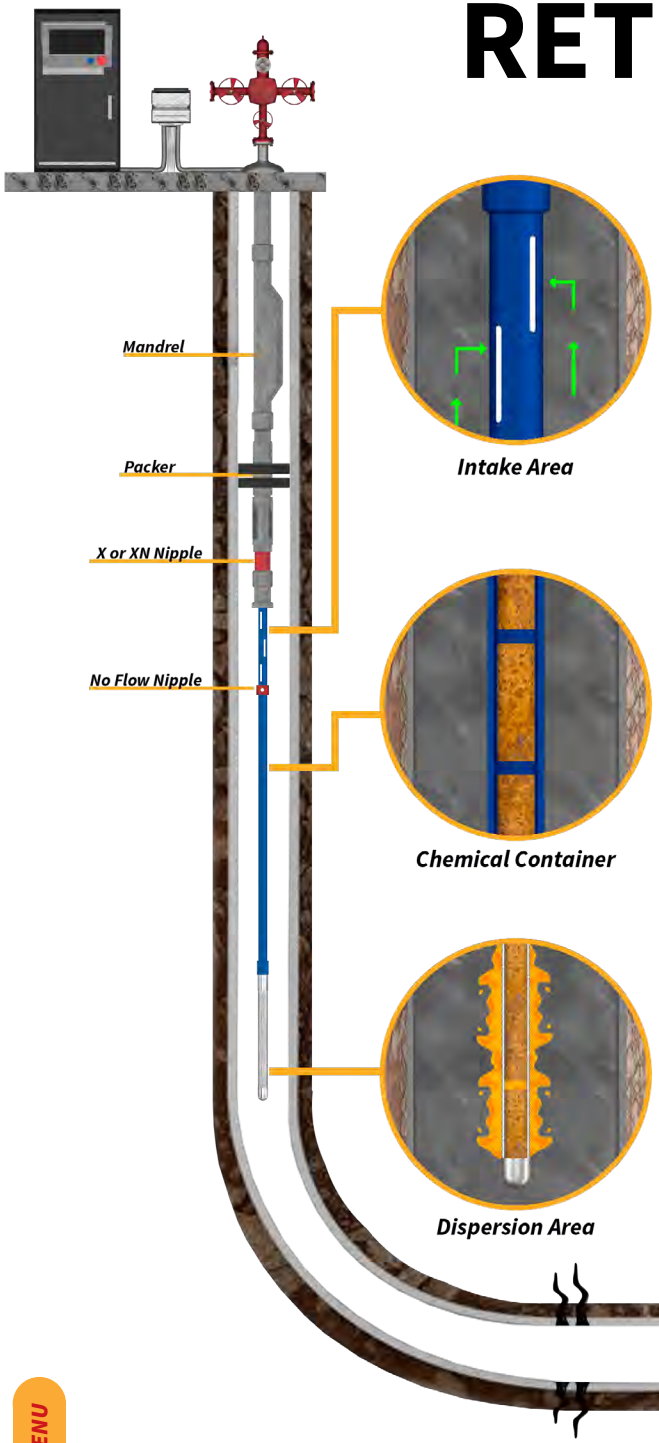
VIDEO

AUGMENTED REALITY

HOW IT WORKS



RETRIEVABLE CHEM TOOL™



The Retrievable Chem Tool™ is designed specifically for wells with high lifting cost that have chemical issues downhole, such as corrosion, scale, paraffin, asphaltenes, etc. The tool provides an even distribution of well-specific chemicals while offering an easy installation.

In Gas Lift or Plunger Lift applications, the tool is installed via slickline, sitting inside the X or XN Nipple, and is held in place with a standard lock mandrel.
After installation, the tool comes in contact with wellbore fluid, releasing the chemical through the screen at the bottom of the well. It offers a controlled dispersion from the bottom up, which protects the artificial lift system.

BENEFITS

- *Slow, self release of chemical(s).*
- *Up to 6 months of chemical treatment.*
- *Reduces paraffin, scale, and corrosion failures.*
- *Variety of well specific recipes (paraffin, asphaltenes, corrosion, scale).*
- *Can be easily installed, set, & retrieved with wireline or slickline.*
- *Low installation costs.*

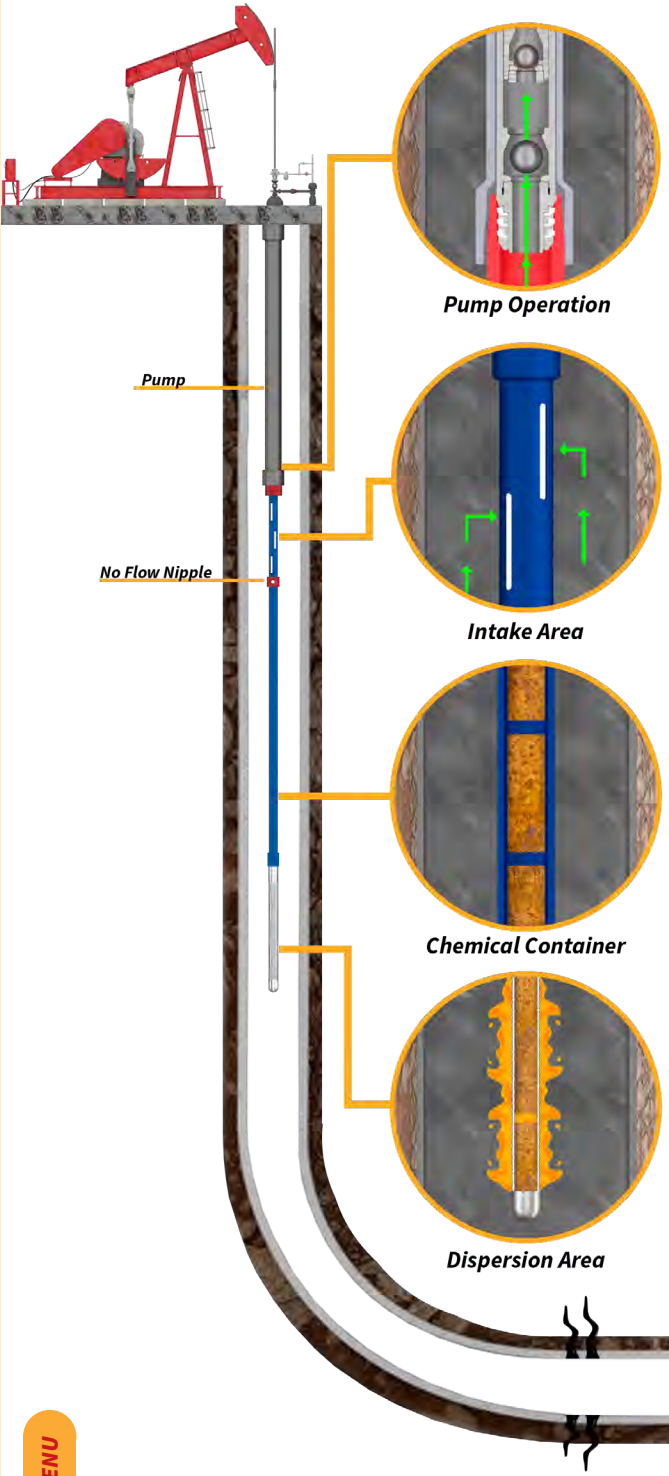
Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS

SRP RETRIEVABLE CHEM TOOL™



The SRP Retrievable Chem Tool™ is designed specifically for wells with high lifting cost that have chemical issues downhole, such as corrosion, scale, paraffin, asphaltenes, etc. The tool provides an even distribution of well-specific chemicals while offering an easy installation.

The SRP Retrievable Chem Tool™ is easily installed below the coupling of the insert rod pump, which translates into lower operating costs since it is not necessary to pull out the production tubing. This features makes it the best alternative to condition the fluid from the bottom of the well, improving the life of the sucker rod pumps and well production. After installation, the tool comes in contact with wellbore fluid, releasing the chemical product through the screen at the bottom of the well. It offers a controlled dispersion, from the bottom up, which protects the artificial lift system.

BENEFITS

- *Designed insert Sucker Rod Pump*
- *Slow, self release of chemical(s)*
- *Up to 6 months of chemical treatment*
- *Reduces paraffin, scale, and corrosion failures*
- *Variety of well specific recipes (paraffin, asphaltenes, corrosion, scale)*
- *Low installation costs.*

Use your device by scanning the QR code

VIDEO

AUGMENTED REALITY

HOW IT WORKS


Super Lube Tubing Tool


Super Lube Gas Anchor

SUPER LUBE™

Odessa Separator has a simple and affordable solution to the many sticking issues encountered in conventional rod lift or PCP oil and gas production. The OSI SUPER LUBE is a highly concentrated, ultra-slick lubricant in stick form.

The sticks are deployed downhole in a Gas Anchor type tool in place of the conventional gas anchor or in a TUBING TOOL for a greater volume of lubricant.

SIZES	
2 - 3 / 8" x 8'	2 - 3 / 8" x 24'
2 - 7 / 8" x 8'	2 - 7 / 8" x 24'
3 - 1 / 2" x 8'	3 - 1 / 2" x 24'
Super Lube Tubing Tool	

SIZES
1" x 24'
1 - 1 / 4" x 24'
1 - 1 / 2" x 24'
Super Lube Gas Anchor

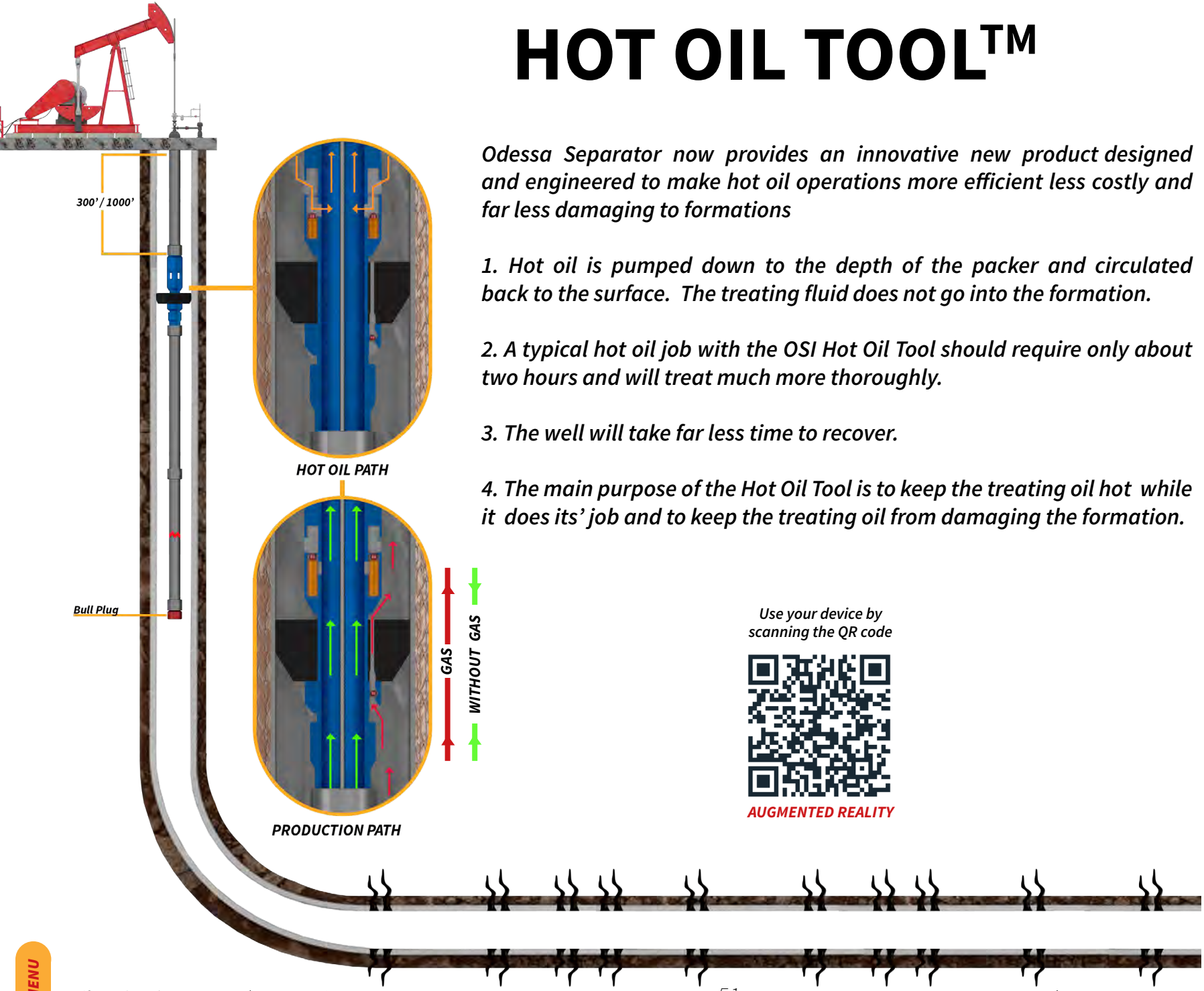
Use your device by scanning the QR code

AUGMENTED REALITY
Super Lube Tubing Tool

AUGMENTED REALITY
Super Lube Gas Anchor

HIGH WATER CUT WELLS
– HIGH GOR –
SAND STICKING PROBLEMS

HOT OIL TOOL™



Odessa Separator now provides an innovative new product designed and engineered to make hot oil operations more efficient less costly and far less damaging to formations

1. Hot oil is pumped down to the depth of the packer and circulated back to the surface. The treating fluid does not go into the formation.

2. A typical hot oil job with the OSI Hot Oil Tool should require only about two hours and will treat much more thoroughly.

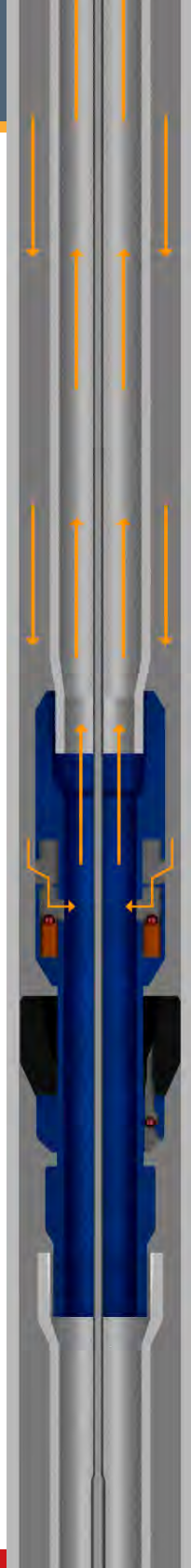
3. The well will take far less time to recover.

4. The main purpose of the Hot Oil Tool is to keep the treating oil hot while it does its' job and to keep the treating oil from damaging the formation.

Use your device by scanning the QR code

AUGMENTED REALITY

HOW IT WORKS



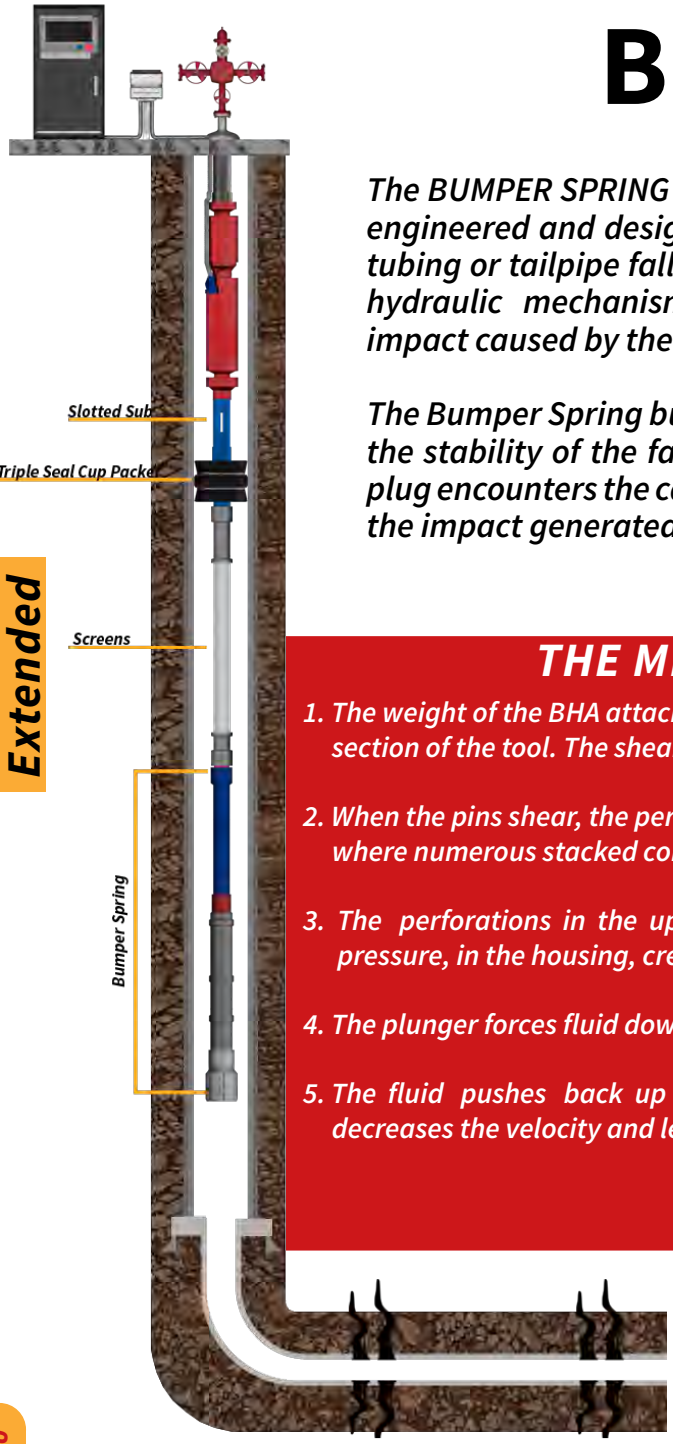
BUMPER SPRING™

The BUMPER SPRING is a new tool from Odessa Separator that is specially engineered and designed to protect the integrity of the well when parted tubing or tailpipe falls to the bottom. Using a combination of friction and hydraulic mechanisms, the BUMPER SPRING absorbs and mitigates the impact caused by the weight of the assembly above it.

The Bumper Spring bull plug design uses fluid flow to center and maintains the stability of the falling BHA to prevent casing damage. When the bull plug encounters the casing liner, the Bumper Spring compresses, absorbing the impact generated by the weight and velocity of the falling equipment.

Use your device by scanning the QR code

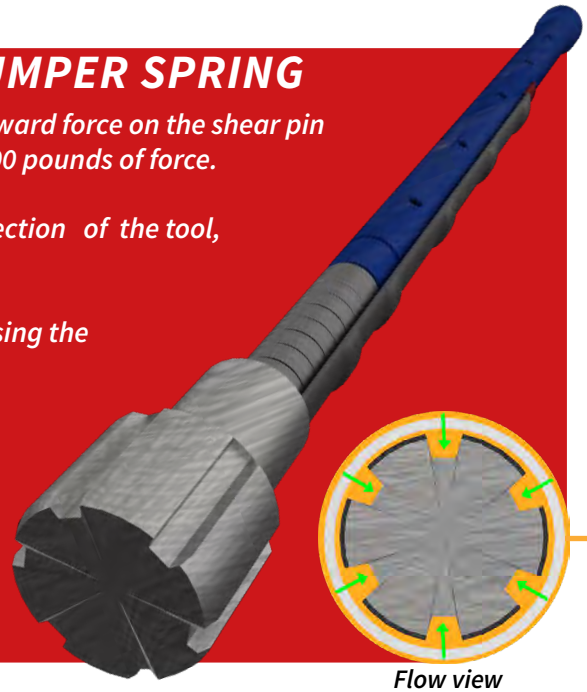
AUGMENTED REALITY



Extended

THE MECHANICS OF THE OSI BUMPER SPRING

1. *The weight of the BHA attached above the Bumper Spring creates downward force on the shear pin section of the tool. The shear pin section has three pins that shear at 9700 pounds of force.*
2. *When the pins shear, the perforated upper section falls into the lower section of the tool, where numerous stacked compression disks absorb the impact.*
3. *The perforations in the upper section allow fluid to flow out releasing the pressure, in the housing, created by fluid accumulation.*
4. *The plunger forces fluid downward into the center tube.*
5. *The fluid pushes back up creating a hydraulic force which decreases the velocity and lessens the impact.*



Flow view

Compressed

The Bumper Spring is designed for wells with 7" casing (26 lbs./ft. or lighter) and a 5-1/2" or 4-1/2" liner.

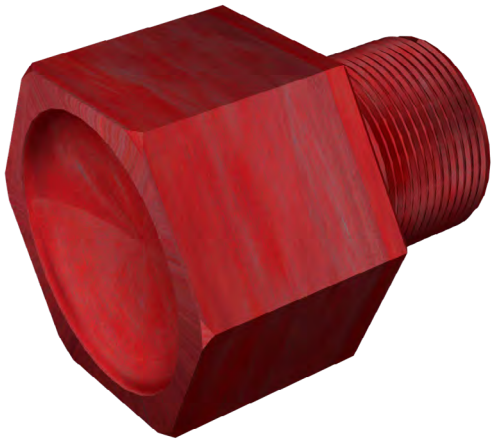
HEX BULL PLUG™

- *In the event of parted tubing, the OSI Hex Bull Plug saves operators significant pulling and fishing costs.*
- *The over-sized design stops falling equipment before it enters the lateral.*
- *Service personnel know precisely where to fish.*
- *The Hex Bull Plug is low-cost insurance for horizontal well investments.*

Use your device by scanning the QR code

AUGMENTED REALITY

The Hex Bull Plug greatly reduces the problems and complications associated with pulling horizontal wells



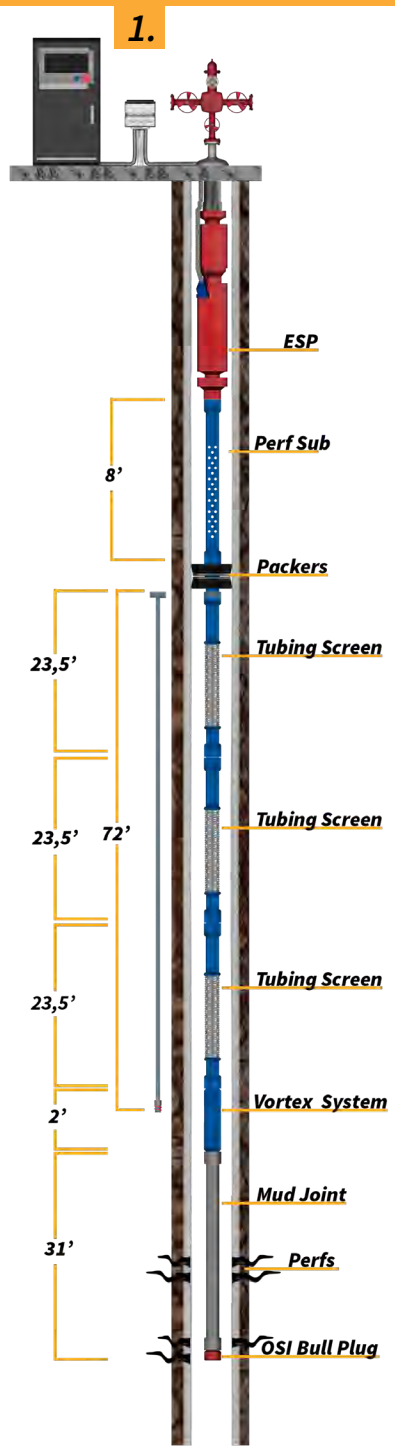
SAVES OPERATORS SIGNIFICANT PULLING AND FISHING COSTS!

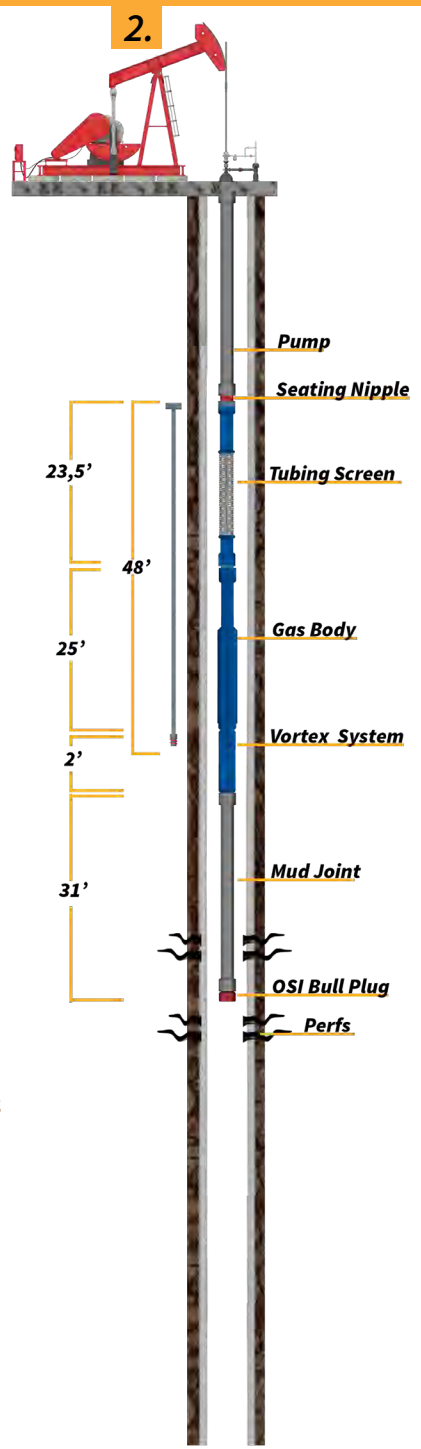
WELLBORE APPLICATIONS

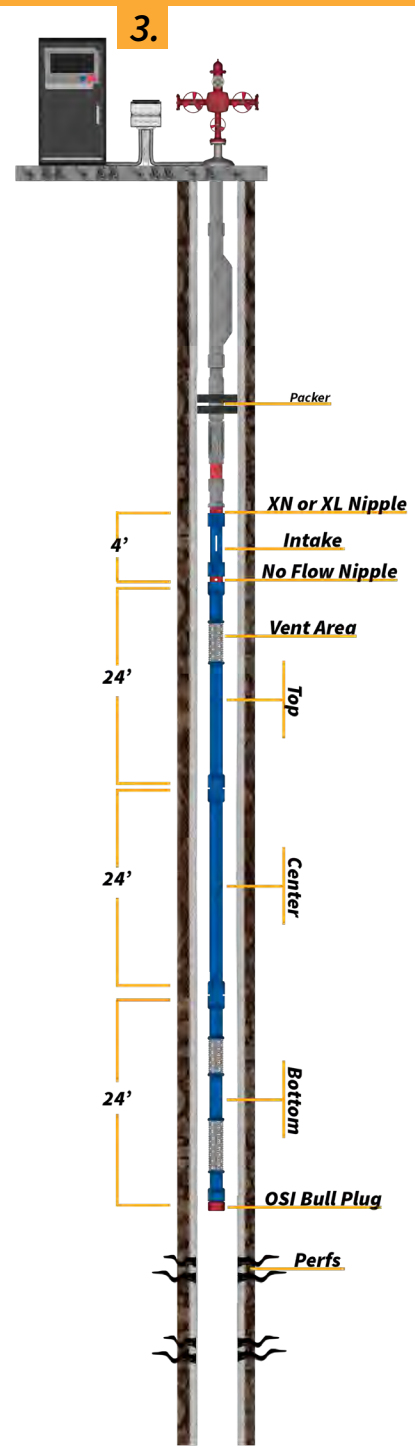
1. *ESP configuration, using Perf Sub, Packer - Tubing Screen with 72' Dip Tube, Vortex Sand Shield and Mud joint.*

2. *Beam pump configuration, Combination Tool with 48' Dip Tube (Sand and Gas Separator).*

3. *Gas Lift Configuration, Tubing Mandrel, Packer, XN or XL Nipple, Intake 4' (slotted sub), Chem Screen 72'.*







TECHNICAL SPECIFICATION

Filtration / Sand Control

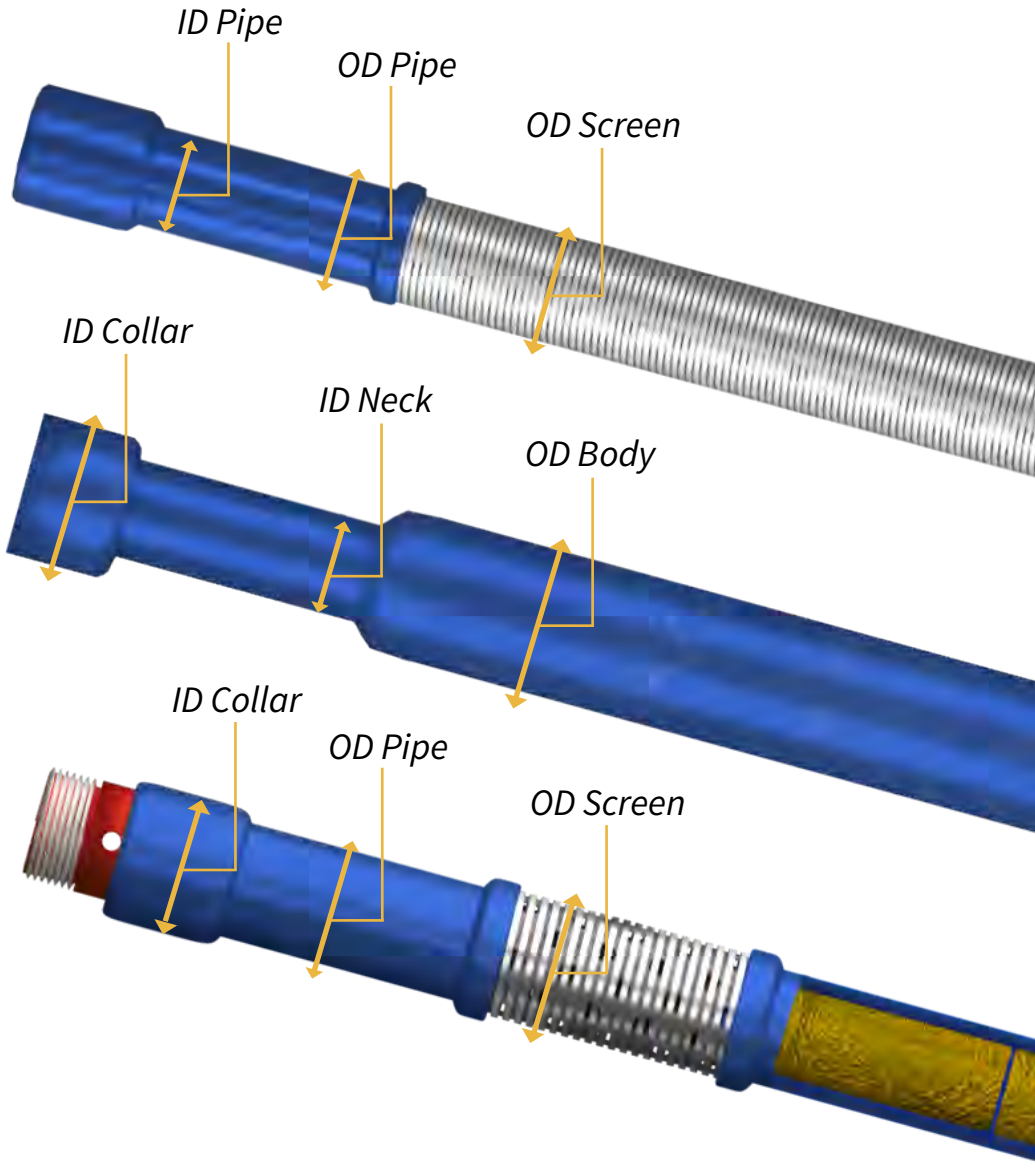
Sizes	Pipe (in)		Screen (in)	Collar (in)	
	OD	ID	OD	OD	ID
2 - 3 / 8"	2.375	1.941	2.870	3.063	2.375
2 - 7 / 8 "	2.875	2.441	3.370	3.668	2.875
3 - 1 / 2"	3.500	3.066	3.940	4.500	3.500

Gas separation

Sizes	Neck (in)		Body (in)		Collar (in)	
	OD	ID	OD	ID	OD	ID
2 - 3 / 8" x 3"	2.375	1.941	3.000	2.500	3.063	2.375
2 - 7 / 8 " x 3 - 1 / 2 "	2.875	2.441	3.500	3.000	3.668	2.875
2 - 7 / 8 " x 4"	2.875	2.441	4.000	3.500	3.668	2.875
2 - 7 / 8 " x 4 - 1 / 2"	2.875	2.441	4.500	4.000	3.668	2.875
3 - 1 / 2" x 4 - 1 / 2 "	3.500	3.066	4.500	4.000	4.500	3.500
3 - 1 / 2" x 5 - 1 / 2"	3.500	3.066	5.500	5.000	4.500	3.500

Chemical Treatment

Sizes	Pipe (in)		Screen (in)	Collar (in)	
	OD	ID	OD	OD	ID
2 - 3 / 8"	2.375	1.941	2.870	3.063	2.375
2 - 7 / 8 "	2.875	2.441	3.370	3.668	2.875
3 - 1 / 2"	3.500	3.066	3.940	4.500	3.500



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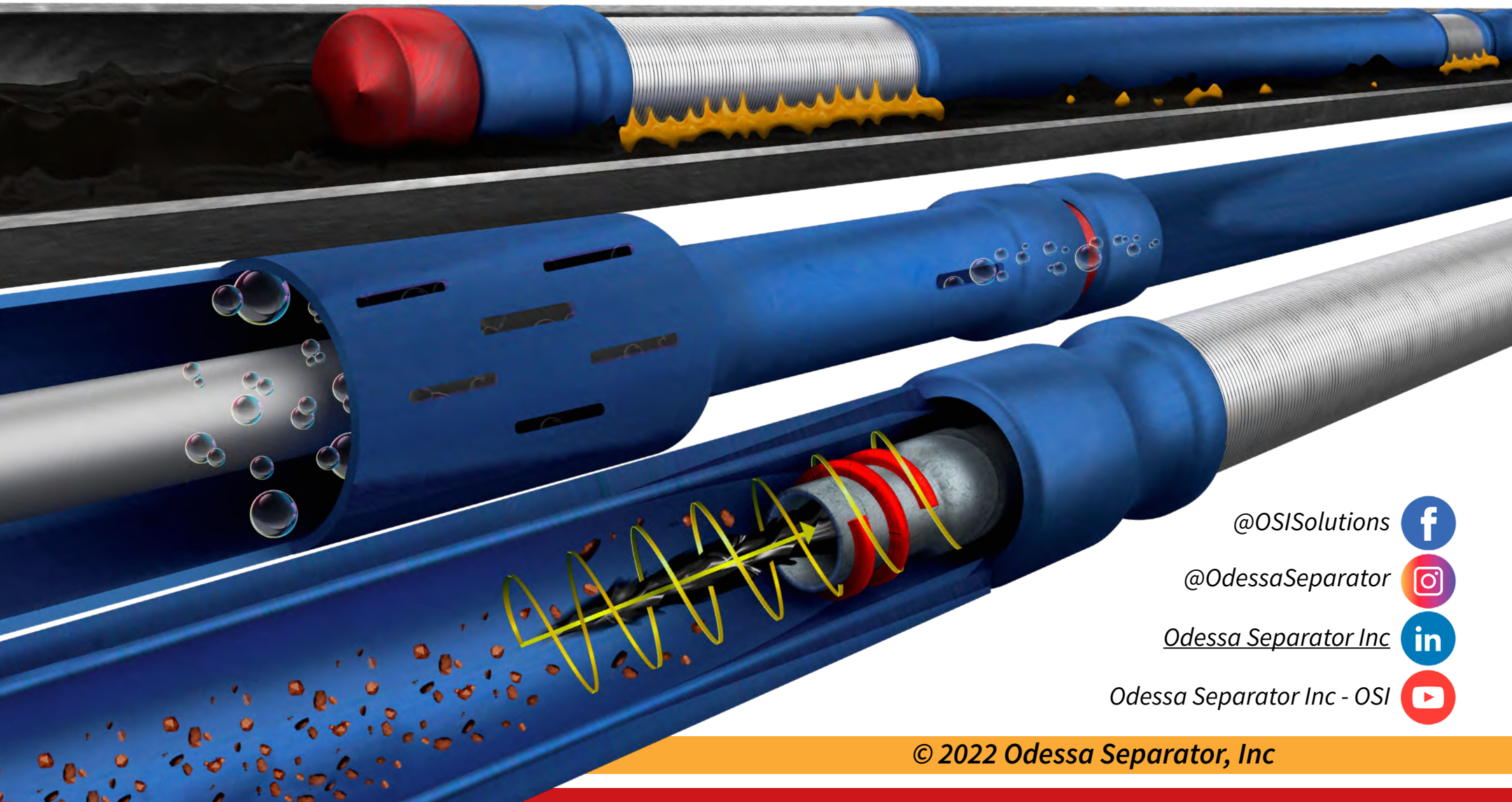

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