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WELL SITE GUARDTM
SUPERIOR STUFFING BOX CONTAINMENT
U.S. PATENTED

Increasing Revenue on Rod Pump Wells And Avoiding Environmental and Financial Impact of Stuffing Box Spills

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Produced Water & Leaks



- ▶ Produced water is the largest waste stream generated by the oil and gas industry
- ▶ Anything injected into the well ends up in the produced water and part of the spill
- ▶ An average production of 12-20 pints of liquid is produced per stroke
- ▶ An average of 7 SPM totals up to 10,800 SPD
- ▶ A stuffing box replaceable packing seal, is designed to withstand repetitive rod travel and prevent major leakage
- ▶ Packing wears and must be replaced every 3-12 months depending on the oil emulsion. The potential for leaks greatly increases as the packing seal wears
- ▶ Visible well leakage means that for every ounce of oil on the surface, as much as 12 ounces of water and salts have already seeped into the ground!

Well Site Guard

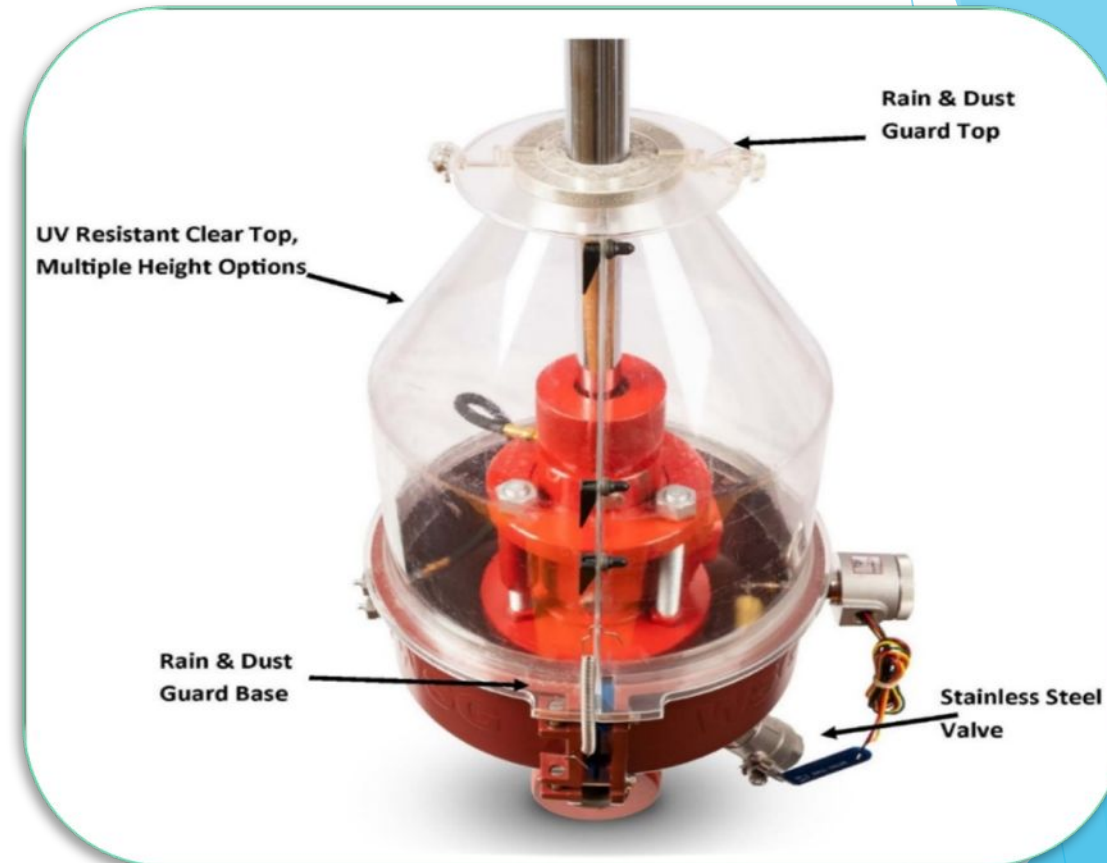


Proactive state of the art stuffing box spill prevention system

- ▶ Collects spills
- ▶ Notifies operator for action
- ▶ Shuts down the well when fluid reach level
- ▶ Impact of WellSite Guard:
 - Keep control over minor spills
 - Improve efficiency of field personnel
 - Reduce cleaning and remediation costs
 - Flexibility for stuffing box maintenance
 - Prevent contaminants from entering and damaging stuffing box
 - Avoid clean up and remediation costs

Well Site Guard Features, WSG

- ❑ Powder coated aluminum basin
- ❑ Permanently bonded urethane mounting seal
- ❑ UV resistant polycarbonate clear tops
- ❑ Stainless steel valves and fastening hardware
- ❑ Float level switch or optional Ultrasonic level switch





Other features

WSG comes equipped with a dust & rain guard

External lubrication lines, which can accommodate up to two integrated grease lines

Comes fully assembled

Can accommodate standard API flow-tee and custom fits

Longevity – built to last, units still in service today, from 2011

Easy to install with 1 field technician

Primary concern – protecting the environment

Return on Investment:

- minimizing downtime
- avoiding remediation cost
- avoiding clean up cost
- lower leak rate
- lower maintenance costs
- greater focus on optimization
- properly allocate personnel's time



Cost Savings using WSG

Working with North American producers, the total expense of cleanup and remediation costs relating to stuffing box leaks when amortized over the entire field, averages out to **\$2500 to \$4500 per well per year.**

- Operator labor per day, 35% to 80% of day spent cleaning minor leakage and issues with oil seepage.
- Reactive attitude to stuffing box leakage means shut down of well production until replacement seals can be sourced and stuffing box repaired
- Labor for site remediation, 3rd party services, steam truck, vacuum trucks, and hazardous material transportation
- Disposal fees for contaminated soil and transportation cost to nearest registered facility
- Procurement of clean soil, gravel, and labor for replacement of contaminated area
- Annual cost for disposable absorbents, absorbent wipes, onsite hazardous waste containment rental and disposal service
- Well site insurance liability expense and funding of deductible amounts in case of a spillage

Not included in the above is regulatory fines if spill exceeds reportable requirement, fines for excess spillage outside of lease site on to agricultural, wetlands or public domain.



Typical Clean-up cost rates, Etkins FSS 2004

Cost multiplier	Product	Response	Cost per gallon
Per-Gallon Oil Spill Response Costs Applied in EPA BOSCEM1	Crude Oil	Mechanical	\$199
Socioeconomic Base Per-Gallon Costs	Crude Oil	Mechanical	\$50
Environmental Base Per-Gallon Costs For Use in Basic Oils Spill Cost Estimation	Crude Oil	Mechanical	\$90
EPA BOSCEM Response Cost Modifiers for Location Medium Type Categories1	Crude Oil	Wetland modifier	\$54
EPA BOSCEM Socioeconomic & Cultural Value Rankings	Crude Oil	Moderate	\$24
Response Method and Effectiveness Adjustment Factors	Crude Oil	Mechanical	\$34
EPA BOSCEM Freshwater Vulnerability Categories	Crude Oil	Wildlife	\$58
EPA BOSCEM Habitat and Wildlife Sensitivity Categories1	Crude Oil	Agricultural	\$75
Spill Amount in Gallons	Total cost		
1 gallon	\$583		
5 gallons	\$2,915		
10 gallons	\$5,830		
25 gallons	\$14,575		
50 gallons	\$29,150		
100 gallons	\$58,300		

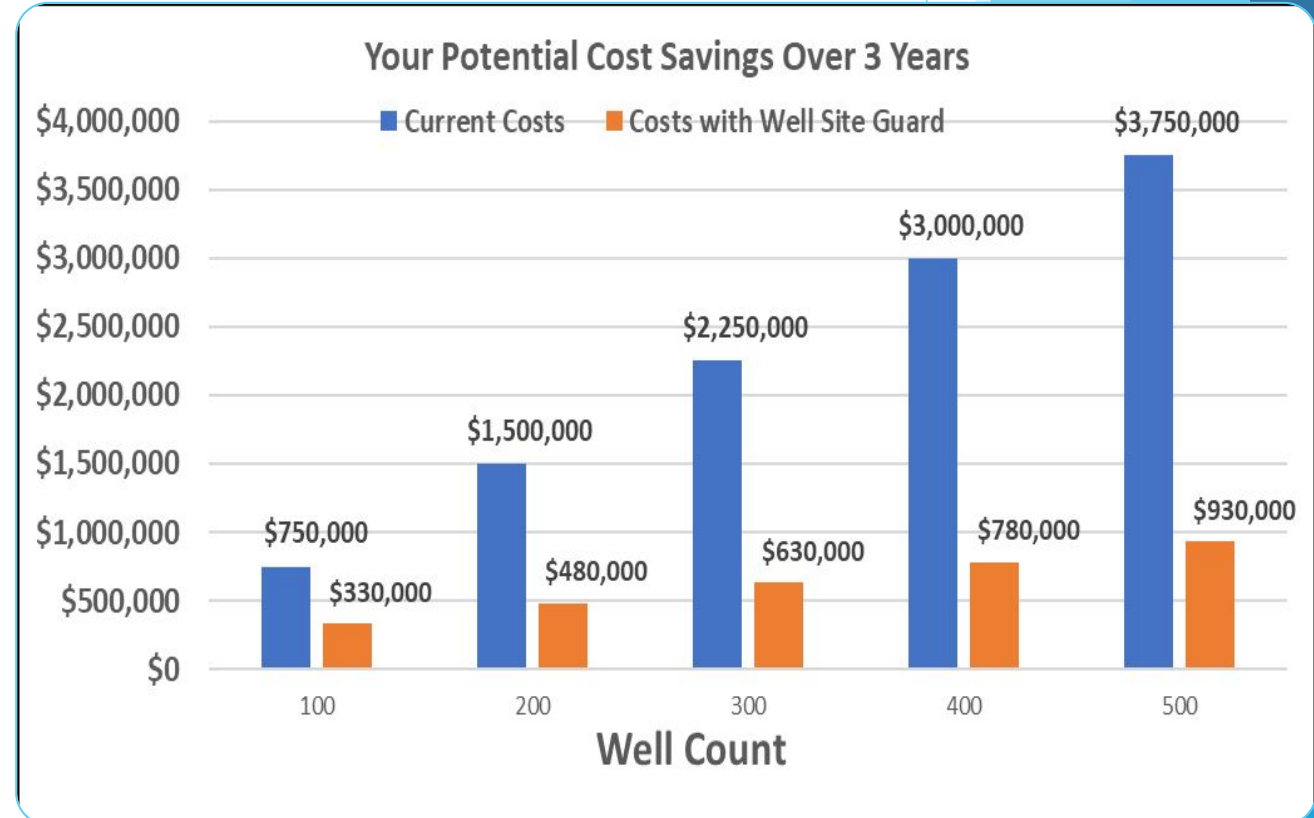


Potential Cost Savings Over 3 years

After an initial CAPEX cost of \$1800 per well, the cost savings on cleanup and remediation, is reduced by up to 80%! For example, 300 wells can mean \$1,620,000 savings in operation expenses costs every year!

Well Site Guard unit cost, includes:

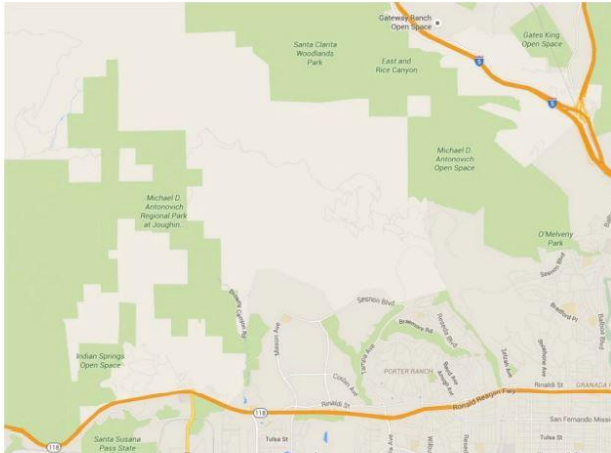
- Basic Well Site Guard unit is \$1,800 per well, which does require electrical hook up
- Installation labor one operator under 30:00 minutes per unit



Case Study – Minor Spill

LOCAL NEWS

Latest Aliso Canyon oil and gas leak due to failed rubber seal



The Aliso Canyon natural gas storage facility and oil fields are north of Porter Ranch. There have been recent leaks at both facilities. (Image via Google Maps)

By **BRENDA GAZZAR** | bgazzar@scng.com | Daily News
PUBLISHED: April 21, 2016 at 5:05 pm | UPDATED: August 28, 2017 at 6:15 am

- ▶ Failed stuffing box seal caused 84 gallons (317 L) spill of oil mixed with produced water with gas spilled or sprayed the area round the well head.
- ▶ Operator was able to stop the leak within a few hours after the notice was given
- ▶ Event was recorded in the news and social media, damaging the company's reputation
- ▶ Chief deputy director of the California Department of Conservation started an investigation with the company
- ▶ According to basic cost estimates, this spill cost the operator over \$45,000 in damages and remediation costs.
- ▶ **This could have been completely avoided with the use of Well Site Guard! WSG collects produced fluids and either shuts down the well or notifies the operator when the fluids reach critical level**



Return on Investment

Reduces Stuffing box leak failures (\$\$)

Avoid daily clean-up costs (\$\$)

Free personnel's time for optimization (\$\$\$)

Reduce remediation costs (\$\$\$)

Improve corporate image (\$\$\$\$)

Flexibility to schedule maintenance (\$)

Protect ground and surface waters

Environmental stewardship

De-risk pumping unit operation



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Thank you!

- ▶ Contact Information – email /phone
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- ▶ Linked in
- ▶ Upcoming Engagement - SWPSC



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Well Site Guard – Superior Stuffing Box Leakage Protection

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