Case Study

ESG and CO2 Emissions Reduction with SSi

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In this contemporary era, the issue of climate change looms large, compelling societies and industries to reassess their practices and embrace sustainable solutions. One significant avenue for mitigating climate change is the reduction of carbon dioxide (CO2) emissions, a major contributor to the greenhouse effect.

This case study explores the role that SSi was able to provide electrical reduction in facilitating a substantial decrease in CO2 emissions, emphasizing the interconnected relationship between energy consumption and environmental impact. The other obvious effect is the actual reduction of costs in electrical consumption for the same or increased production of barrels of oil.

There were three (3) independent studies performed by Oil Companies measuring the electrical consumption of electricity of the SSi Units compared with both ESP's as well as conventional beam pumps. As the SSi Unit uses Nitrogen as the Counterweight, the electrical power is never continuous as it is with any Conventional Beam Pump, Long Stroke Belt Units, or ESPs.

and picks up the Load to take to the top of the long stroke. The VFD and the Electrical Motor are controlled by the PLC which provides the instruction to stop during the upstroke at the correct position (based on speed and velocity) allowing a soft turnaround, the motors reverse as the unit goes into the downstroke. This is a *patented* process called **Auto Stroke Logic** and means that the electrical consumption is never continuous; the Up and Down Strokes are fully independent of each other.

The following are the results measured and published by the end user.

Study #1

Permian Basin Producer

Well	Model	Average Production	PPRL (lbs)	Electricity Consumption (KW*H/day)	Electricity Consumption (KW*H/bbl.)	CO_2 Emission (lbs/bbl.)
Well 1	**SSi 400LS**	750 BFPD	30155	975	1.30	1.196
Well 3	**ESP 1750**	800 BFPD	N. A	2410	3.01	2.769

A corresponding reduction of 430,663 lbs. (195 tonnes) of CO2 emission in one year due to less electricity usage when comparing BFPD produced and KW*H per Barrel. This is a 57% reduction for just one well. Therefore, twenty wells would provide the Oil Company with a reduction of 8,613,260 Lbs. (3,900 Tonnes) of CO2.

Source IEA: For Each KWH produced with natural gas emits 0.92 Lbs. of CO2

Oil Company in Latin America – Independent Study on Ultra Heavy Oil

- SSi Model 800-150 Production 224 BOPD = 647 KWH (0.46 C02 Tons/Day)
- The annual reduction of CO2 Emissions = 657 Tons
- ESP Production 216 BOPD = 3,182 KWH (2.26 CO2 Tons/Day)

The SSi electrical savings and C02 savings were 80% on one well.

Study #3

International Oil Company in Permian Basin Wasson Clearfork

Average 600 BOPD for C912 Beam Pump, ESP, and SSI Model 400

The Results:

SSi	= 0.70 KWH/Barrel (386.4 Lbs. CO2/Day)
C 912 Beam Pump	= 1.36 KWH/Barrel (750.7 Lbs. C02/Day)
ESP	= 4.15 KWH/Barrel (2,290.8 Lbs. C02/Day)

Over one year, on one well, the Oil Company saved 132,969 Lbs. of CO2 compared with the Beam Pump and 695,106 Lbs. of CO2 compared with the ESP for the same Production.

In conclusion, electrical reduction plays a pivotal role in the global effort to lower CO2 emissions and combat climate change but providing financial cost savings at the same time. The imperative to reduce CO2 emissions through electrical reduction is not just an environmental necessity but a

collective responsibility for current and future generations whilst reducing the operating costs, the SSi Technology provides this over Conventional Beam Pumps and ESPs.