EMC - SSi™

ARTIFICIAL LIFT SOLUTIONS
Information Sheet
EMC was established in 1997 to fulfill market demands for: Specialized maintenance, Construction, Modifications, Asset Integrity, Engineering Service, Special Services, Consultancy, Manpower and Artificial Lift Services. EMC serves the oil and gas, petrochemical, transportation, power and industrial sectors.

SSi Artificial Lift Systems (SSi) manufactures, sells, and services surface-mounted artificial lift systems used to optimize production in oil and gas wells in onshore applications. The SSi design maximizes well production while reducing operating and maintenance costs, providing clients with low acquisition and installation costs on +1,300 units to-date.

THE EMC - SSi EXPERIENCE

The EMC - SSi partnership delivers value and brings with it 250 years of management team industry experience.

THANK YOU FOR CONSIDERING EMC - SSi
EMC MAINTENANCE

WORKSHOPS

EMC's Maintenance Workshops and facilities have been built according to highest engineering standards in order to include specialized activities in addition to conventional maintenance and machining facilities.

The EMC Fabrication Workshop has a long history of fabrications and general engineering performed with certified ASME Certificates.

WORKSHOPS
Mechanical, Electrical, Lifting & Marine

Certified ASME Certificates
(U, S, Pb, R), Fire Rated
Certificates A 60,
ISO 9001:2008, ISO
14001:2004, OHSAS
18001:2007

MAINTENANCE WORKSHOP CAPABILITIES

MECHANICAL ELECTRICAL & INSTRUMENTATION TURBINES

ROVING TEAM, 24/7 SERVICES VEHICLE REPAIR & MAINTENANCE

PLATE WORK

STEEL WORK

PIPING

VERTICAL TANKS

SHELTERS

- Pressure Vessel Tanks
- Standard Section Built Up Section
- Piping Skid Piping Spools
- V. Tank Up to 1000 bbl
- Offshore Shelters Port Cabinet Enclosures

www.emceg.com www.SSiLift.com
ARTIFICIAL LIFT
INTEGRATED SOLUTIONS

SYSTEM OVERVIEW
EMC - SSi Artificial Lift System is a surface-mounted artificial lift system that is used to extract fluids from both shallow and deep wells to produce crude oil or dewatering for natural gas production. SSi Artificial Lift provides complete system components (surface and downhole). The SSi Artificial Lift pump is comprised of two main components: the pumping unit and power unit.

SSi SYSTEM OVERVIEW
Flexibility of control

SSi is a computer-controlled, hydraulically driven, long-stroke, high capacity pumping unit comprised of the pumping and the power units.

Deliver full optimization control through the use of intelligence built into the system. Pumping speeds and stroke lengths can be changed instantaneously without any shutdown of production. Production can be maximized by matching well productivity with pumping capacity.

<table>
<thead>
<tr>
<th>Unit Model</th>
<th>Stroke Length</th>
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<tbody>
<tr>
<td>150</td>
<td>168”</td>
</tr>
<tr>
<td>250</td>
<td>240”</td>
</tr>
<tr>
<td>350</td>
<td>372”</td>
</tr>
<tr>
<td>400</td>
<td>288”</td>
</tr>
<tr>
<td>400LS</td>
<td>336”</td>
</tr>
<tr>
<td>600</td>
<td>336”</td>
</tr>
<tr>
<td>800</td>
<td>360”</td>
</tr>
</tbody>
</table>

POWER & CONTROL UNIT
- Provides driving force and control for the pumping unit
- Integrated Pump off Control
- Determines maximum speed that the pumping unit can operate
- 9 models: 15 HP to 200 HP

PUMPING UNIT
- Provides lift capacity: 15,000 lbs to 80,000 lbs
- Determines stroke length based on model: Max stroke lengths from 168” to 372”
- 7 models to choose from

SSI INTELLIGENT GAS DRIVE
In remote areas where electricity is not readily available, SSi offers an Intelligent Gas Drive system that can run off wellhead gas, natural gas or Propane for the SSi Rod Lift Technology. The unit has the same PLC offering the same functionality as the electrical power and control unit, with the addition of alarms and warnings for the gas engine.
EMC - SSi Artificial Lift Pumping System has been designed to increase the overall production efficiency of a well by incorporating several beneficial features:

**INTEGRATED PUMP-OFF CONTROL**

- Increased MTBF and reduce well intervention
  The longer the stroke of the down-hole pump, the higher the fluid flow from the well. For a given pump size and fluid production rate, the slower number of strokes per minute means fewer rod direction reversals which reduces the rate of fatigue in the rod string, thus increasing rod life, reducing the frequency of well work overs, and increasing uptime and production.

- Increased high polished rod load capacity
  With higher lift capacities and lower accelerations, the SSI Lift System can take advantage of using larger bottom hole pumps, thereby optimizing production.

- Long stroke
  Overall superior system efficiency due to the unit’s long slow stroke
  The factors described above, combined with a counterweight design that incorporates virtually no inertia, permits the SSI Artificial Lift System to use significantly smaller horsepower drive units for the same or greater lifting load capability.

- Variable speed up/down
  Instantly control stroke length variable speeds
  The SSI Artificial Lift System incorporates eight independent speeds for up and down stroking. Acceleration and deceleration transitions are independently controlled during rod reversal, which substantially reduces rod stresses. Slower down stroking reduces the compressive load, which can cause buckling of the rods, leading to fewer rod and tubing failures.

- High efficiency
  Overall superior system efficiency due to the unit’s long slow stroke
  The factors described above, combined with a counterweight design that incorporates virtually no inertia, permits the SSI Artificial Lift System to use significantly smaller horsepower drive units for the same or greater lifting load capability.

**ARTIFICIAL LIFT SYSTEMS FEATURES AND CHARACTERISTICS**

**INCREASED WELLSITE INTELLIGENCE**

The SSI Artificial Lift System takes full advantage of diagnostic feedback to provide a fully self-monitored system, including detection of surface equipment malfunctions and down-hole related problems such as stuck pumps and parted rods.

**AVOID UNSCHEDULED DOWN-TIME**

The SSI pumping units are designed to give maximum up time while in service. A report is available for every unit that is on the SCADA system. At present the SSI units are averaging 98.2% uptime with 1.8% downtime due to internal faults.

**INTEGRATED PUMP-OFF CONTROL**

Integrated pump-off control without the need for additional panels or control systems at the wellhead.

**WELL WORK OVER SERVICE**

- Reduce well work-over costs
  The Pumping Unit has a small footprint V-Base mounted on rails. The well can easily be prepared for well service by releasing the load from the carrier bar and tracking the system back using a standard pickup truck or hand-operated winch.

- Avoid unscheduled down-time
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**RELIABILITY**

The Skid Mounted units are designed for ease of balancing the well, changing SPM and/or lengths based on the changing well conditions, and this is easily achieved without ever shutting down the well.

**DECREASE DOWNTIME**

- Increase wellsite intelligence
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**ROCKET SCREW PUMP**

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INTEGRATED SUCKER ROD SYSTEM

TOTAL SOLUTION PROVIDER

SSI features enables production optimization by:

- Tailoring pumping equipment for each well's desired production requirements and depth
- Enabling fast speed UP, thereby minimizing fluid leakage losses
- Enabling slow speed DOWN, allowing complete fillage of the down-hole pump
- Reducing rod stretch, and increasing bottom hole efficiency
- Enabling accurate and efficient turnaround accelerations and decelerations, thereby maximizing stroke speed while minimizing dynamic loads, minimizing stresses and wear, and maximizing up time
- Detecting pump-off conditions and enabling continuous slow-speed operation instead of stop-and-go, thereby reducing sand build-up, dynamic loads, excessive stresses and wear, and maintenance downtime and cost
- Enabling instantaneous stroke change, speed change, acceleration and deceleration changes, to meet varying well conditions while avoiding downtime
- Protecting the SSI Artificial Lift System from damage in the event of a catastrophic bottom hole equipment failure, including a rod part failure
- Protecting the bottom hole equipment from damage in the case of a binding bottom hole pump or rod string

- Installation, Repair and Maintenance
- SSI Units and API Beam units
- Downhole pumps
- Tubing anchors
- Downhole well Services for well problems solutions (sand, gas, corrosion, etc)
- Rental Service
- Well optimization and Troubleshooting
- Artificial lift Training

- Preventing a well blowout in the event of pressure buildup in the flow lines
- Providing real-time production data, including surface dynamometer cards, enabling immediate control adjustments to adapt to well conditions
- Providing comprehensive training programs to teach the skills necessary to Design, Select and Optimize reciprocating rod pumping systems, including rod pumping fundamentals, design and optimization