



Oil & Gas

Solids Control &

Waste Management

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Our Company

Fluid Systems

For over 30 years, we have been leading the oil & gas industry with new & innovative ideas. We are comprised of engineers, designers, rig personnel and sales members who, along with our CEO Ben Hiltl, have been here from the start since 1980.

Fluid Systems is a manufacturer of solids control, screening and process technology to the Oil & Gas, Industrial, and Mining Industries. We specialize in Customized Systems to meet our customers needs and application. We also design and manufacture screen panels for FSI equipment along with other OEM replacement screen panels.



Timeline



- Introduced the first desanding mud cleaner
- Introduced first sealed vibrator motor
- Introduced layered mesh on pretensioned screen panels

1983-1985

- Designed our first vibrating spinning dryer
- Developed our line of hydraulic shakers
- Development of the 8" Hydrocyclone

2000-2004

- Market Hi-E Shaker and Hi-E Kits (Patent applied for)
- Market BARKEEPER™ (Patented)
- Market 3XF Enduraflex Screens
- Enduraflex FatBoy replacement screen for NOV Venom® shaker

2019

1982

- Established
- Introduced first linear motion shakers in Oil & Gas
- Introduced pre-tensioned screen panels
- Introduced the Wedgelok "Screen Wedge"

1990-1999

- Introduced the first cascade system
- Developed our double deck shaker
- Developed the Replace-A-Bed

2005-2018

- Developed the ProdiG shaker (R&D)
- Developed the Hi-E technology
- Developed the Barkeeper technology
- Developed a "Plug and Play" shaker dryer system

Future

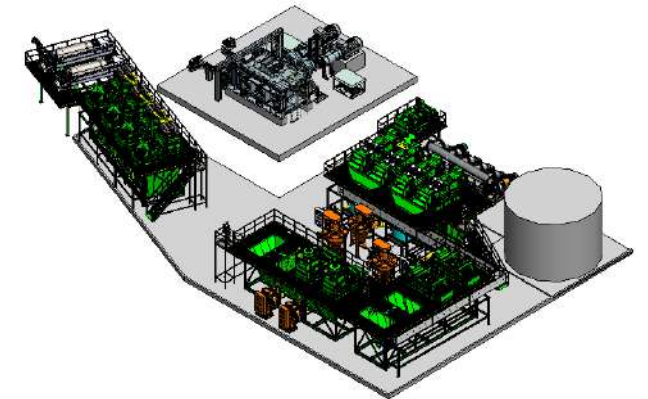
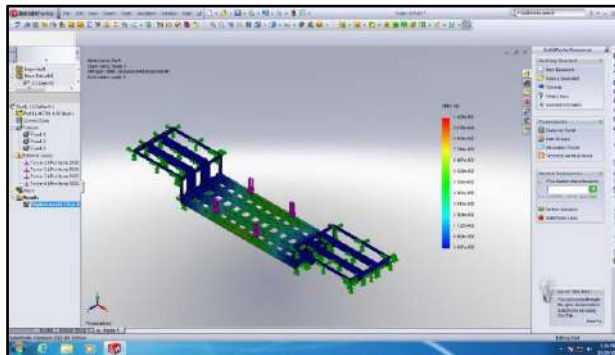
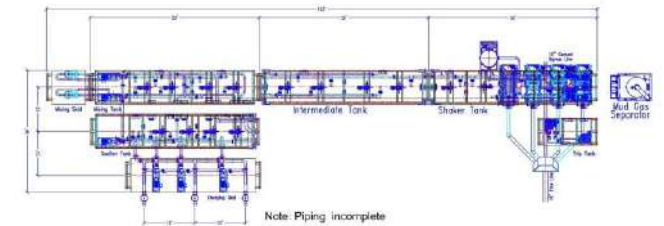
- Innovation
- Continued Product Improvement
- Continued Quality and improvements

Engineering & Design

FSI offers engineering solutions to meet complex challenges. We collaborate with client counterparts to develop comprehensive services that may include design, engineering, procurement, fabrication and project management.

CAPABILITIES

- Process Flow Diagram (PFD)
- Piping & Instrumentation Diagram (P&ID)
- Mechanical Engineering
- Piping Layout
- Structural Engineering
- 3D Modeling
- Finite Element Analysis (FEA)
- Experience: 72,000+ Engineering drawings....



FSI Shakers

Fluid Systems shakers have combined the dual-motion technology, linear and balanced elliptical motion, to adjust as drilling conditions change.

Model*	Screen Panels	Screening Area	G-Force	RPM
20L	2	17 ft ²	7 G's	1500/1800
511	3	25 ft ²	7.5 G's	1500/1800
5111	4	34 ft ²	7.5 G's	1500/1800
5111/5111	8	68 ft ²	7.5 G's	1500/1800
4224	6	42 ft ²	7.5 G's	1500/1800

*Other models available upon request



511 BLE Linear /
Elliptical Shaker



Cascade
5111/5111 Linear /
Elliptical Shaker



5111 BLE Low
Profile Shaker



4224 B4X
Double Deck
Shaker

Hi-E Shakers Technology

Fluid Systems Hi-E shakers provide High G-Forces to increase processing capacity, boost separation efficiency, and eliminate screen blinding.

E5111BLE-18X Hi-E*

- High G-Forces (15+ G's)
- Linear / Balanced Elliptical Motion
- 34 ft² [3.14 m²] screening area
- 0° to +5° adjustable deck
- Four(4) pretensioned screen panels
- Quick change of screen panels
- Low noise level < 80 dB
- Explosion Proof electrical system
Class I Div. 1



E5111BLE-18X Hi-E Drying Shaker

* Other models available upon request

Hi-E Shaker Kit

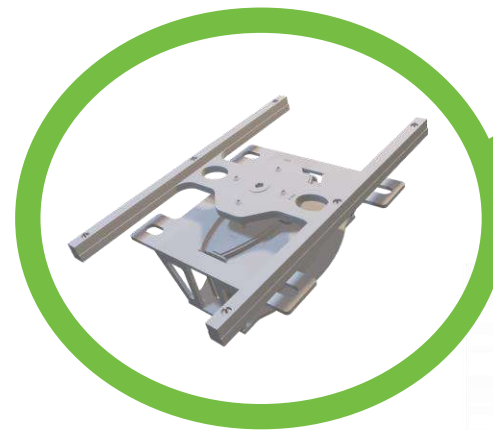
The FSI Hi-E technology surpasses conventional shakers by creating higher G-forces. The energy generated on the Hi-E exciters is transferred to the screen panels, applying the High Energy to the cuttings as they are transported across the mesh screen.

This technology works on the principle of resonance. It incorporates the use of exciters located underneath the screen panels to amplify the G-force generated by the basket and to convert single-frequency oscillations into multi frequency vibration.

The Hi-E Kit Technology is now available on all FSI shakers. Older FSI shaker models can be converted to install the Hi-E Kits.

Patents:

(US): Patent applied for



E511BLE-18X Hi-E

G-Force Meter

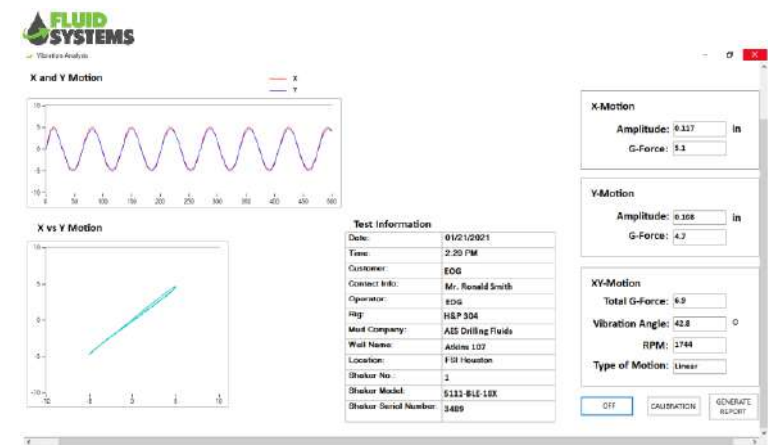
The G-Force meter evaluates the performance of any shale shaker in the field. The proprietary software performs a complete vibration analysis, records the G-Force, RPM, motion, vibration angle and amplitude of the shaker.



FSI G-Force Meter



Shaker under Vibration Analysis



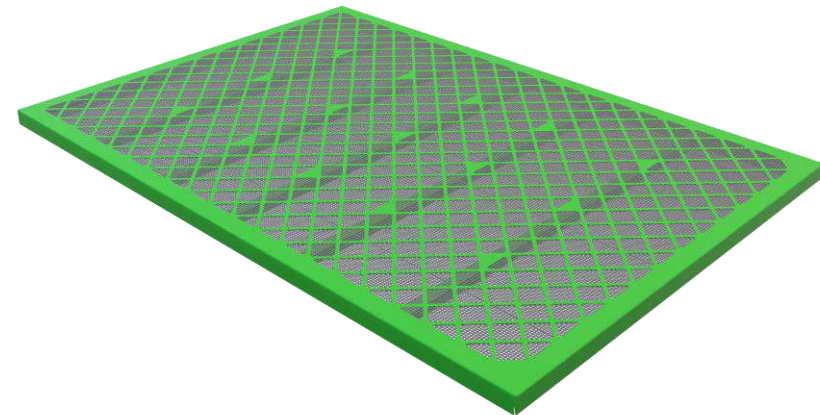
Vibration Analysis Report

FSI Screen Panels

Fluid Systems, Inc. has manufactured its own line of screen panels in the US for more than 30 years. We have an unmatched selection of OEM and after-market replacement screen panels in stock and ready for fast delivery.

FEATURES & BENEFITS

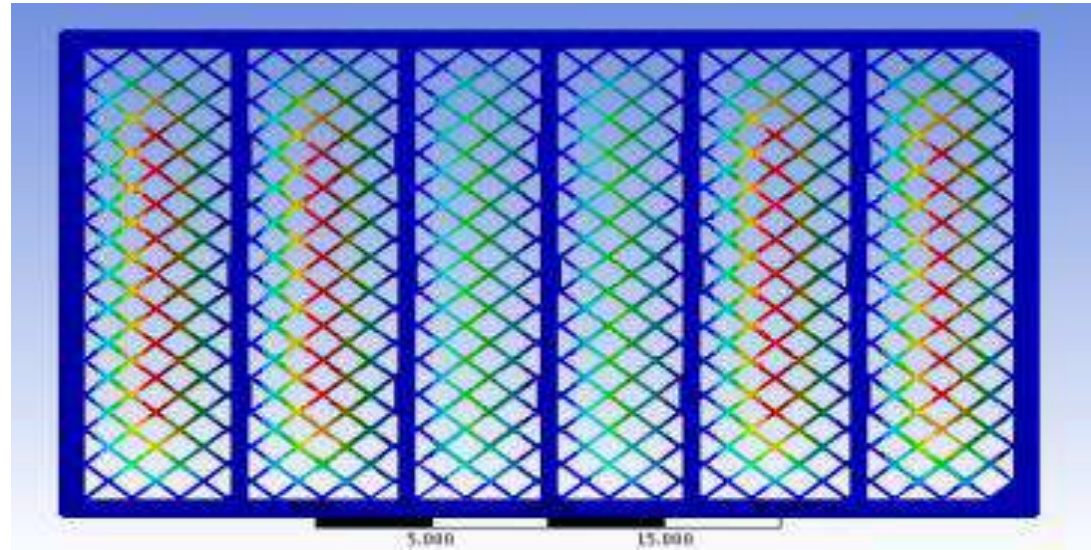
- Manufactured using structural grade high yield strength steel
- Our 3XF technology eliminates plate-frame separation
- Increased support reduces flexing, increases screen life and maximizes the G-force at the screen surface
- Light frame design
- Fluid Systems screen panels meet the API RP 13C (ISO 13501) standard



FSI 3XF - Enduraflex Screen Technology

Our 3XF - Enduraflex unibody lightweight frame technology provides better stability during operation and eliminates premature plate-frame separation.

All FSI screen panel are manufactured using structural grade high yield strength steel, reducing screen flexing and increasing screen life substantially.



We conduct static and dynamic Finite Element Analysis (FEA) on our screen panels design

Replacement Screens for Non-FSI Shakers

FSI manufactures replacement screens for different makes and models*:



FSI Series 42X29



**NOV Venom®
49x25V**



**M-I Swaco Meerkat®
/Mongoose® 46X23**



**Derrick Series 48X30
Derrick Series 500**

* Other replacement screens are available upon request.

➤ Mud Cleaners

Fluid Systems has designed mud cleaners with desanders and desilters, which process up to 1500 GPM and perform a separation between 15 and 25 microns.



FSI Dual-Header Mud Cleaner



FSI Single-Header Mud Cleaner

Desanders & Desilters

Fluid Systems desanders and desilters have an innovative geometrical design, and materials of construction suitable for abrasive solids and high-temperature fluids.

Model	Diameter	Capacity	D50 Cut Point (microns)	MOC*
FSI 2	2"	25 GPM	10 – 15	Urethane
FSI 4	4"	100 GPM	15 – 25	Urethane
FSI 10	10"	500 GPM	40 – 100	Urethane

* MOC: Material of construction



FSI 2



FSI 4



FSI 10

Desanders & Desilters

Fluid Systems has re-designed hydrocyclones technology. The new geometrical design of the FSI High-Performance (HP) 8" hydrocyclone increases separation efficiency by minimizing turbulence and maximizing residence time.

HP 8" HYDROCYCLONE

- Technology available only from Fluid Systems
- 8" Diameter
- 375 GPM Nominal Capacity @ 70' of Head
- D50 separation between 15 and 25 microns
- Manufactured in urethane



FSI HP 8 Hydrocyclone

Complete Mud Systems

Fluid Systems offers complete mud systems “Ready to drill” based on customer’s drilling parameters. Packages include tanks, solids control equipment, piping & fittings, electrical system, mud/gas separator, vacuum degasser, agitators, pumps, and mixing equipment.



1,000 Bbl Mud System



2,000 Bbl Mud System



4,000 Bbl Mud System

Customized Systems

Fluid Systems offers cuttings drying systems, dewatering systems, fluid clarification trailers, mixing tanks, and complete mud systems. These systems can be designed according to customer's specific requirements.



E70BBL
70 Bbl Dewatering Trailer



E50BBL
50 Bbl Drying Shaker Skid



E80BBL
80 Bbl Mud System

BARKEEPER™

The BARKEEPER™ is a centrifugal separator designed to recover barite in weighted drilling fluids. The barite or high-gravity solids (HGS) are returned to the active mud system, while decanting centrifuges can be used to discard the low gravity drill solids (LGS).

The BARKEEPER™ is a replacement for the barite recovery centrifuge.

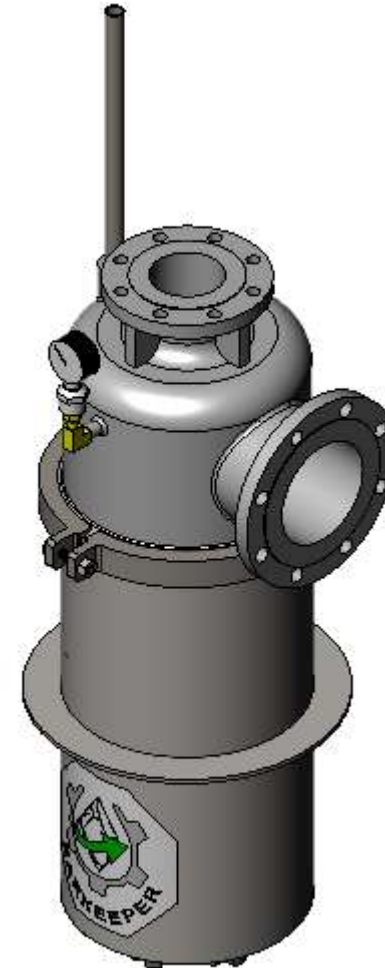
The BARKEEPER™ can be used in combination of 250 GPM modules to achieve economical separation of the mud into low density and high-density streams with superior rheological properties as compared to centrifuges.

Patents:

(US): 10012043

(US): 10557322

(CA): Patent Pending



BARKEEPER™

Decanter Centrifuges

Fluid Systems offers a full line of high performance, variable speed decanting centrifuges that are specially designed for heavy-duty operations and top-quality solids control. Fluid Systems centrifuges are also capable of handling large amounts of feed solids, achieve extraordinary separation performance, and features advanced wear protection against abrasive and coarse particles.

FORCE 40*

- 19" Bowl Diameter x 80" Long
- 125 HP Main Drive
- 20 HP Back Drive
- 440 GPM Hydraulic Capacity
- VFD Control Panel
- Explosion Proof Electrical System
Class I Div. 1



Force 40 Centrifuge

* Other models available upon request

Mud/Gas Separators

The Fluid Systems Mud Gas Separator has been designed to capture and separate large volume of free gases within the drilling fluid. Designed for high pressure wells, this unit controls the circulated gas to the surface separating the gas from the mud and vent it.

4X18* MUD/GAS SEPARATOR

- 1500 GPM Liquid Capacity
- 17.5 MMscf/d Gas Processing Capacity
- 125 psig Pressure
- Removal of H₂S
- Internal baffles
- Oilfield skid
- ASME, NACE Certification



4x18 Mud/Gas Separator

* Other models available upon request

➤ Degassers

Our vacuum degasser operates on “ultra-thin” film principle. The drill mud enters the tank, forces it to flow and is then distributed to a layer of internal baffles made of fiberglass material engineered to allow the liquid inside the vacuum degasser to flow as thin film and exposed to the vacuum within the vessel. This layer of mud allows the gas to escape or break out of the mud.

VAC1200* VACUUM DEGASSER

- Up to 1200 GPM processing capacity
- Tank with baffles
- 3-Way Valve
- 7.5 HP Compressor
- Oilfield Skid
- Explosion Proof Electrical System
Class I Div. 1



VAC1200 Degasser

* Other models available upon request

Mud Agitators

Fluid Systems agitators were designed to suspend the solids using both axial and radial flows, and by utilizing low shear mixing, to mix mud additives.

MUD AGITATORS*

- Horizontal / Vertical Configuration
- Direct coupling system
- Canted-blade impeller
- Axial flow
- Available sizes: 5 HP – 30 HP
- Explosion Proof Electrical System
Class I Div. 1



EMA25 Mud Agitator

* Other models available upon request

➤ Mixing Hoppers

Fluid Systems high shear low pressure mud hopper includes a venturi, funnel, sack table, and butterfly valve. This hopper can handle 800 - 900 pounds of barite per minute.

MIXING HOPPER*

- 6" Valve
- 2" Nozzle
- Venturi pipe
- 3" NPT Pipe
- 1300 – 1650 GPM Processing Capacity



E6VMHR

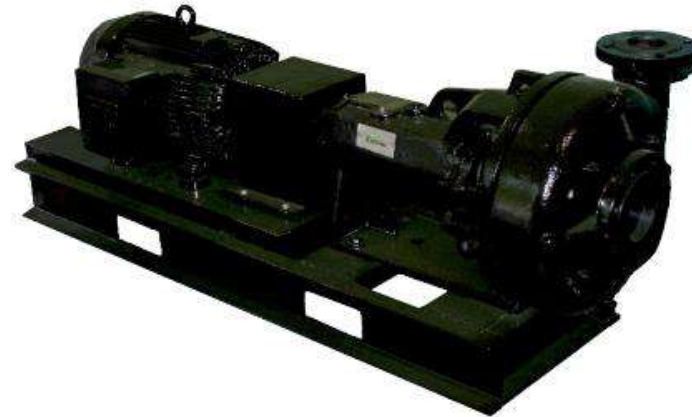
* Other models available upon request

Centrifugal Pumps

Fluid Systems centrifugal pumps have high reinforced housing and heavy-duty impellers for long, trouble-free life. It is designed to feed desanders, desilters, vacuum degasser, mud mixing operations and water transfer.

CENTRIFUGAL PUMPS*

- Horizontal/Vertical Configuration
- Direct coupling system or belt driven
- Mechanical Seal
- Available sizes: 3x2, 4x3, 5x6, 6x5, 8x6
- DOL Starter or VFD
- Explosion Proof Electrical System
Class I Div. 1



E8x6x14 Centrifugal Pump

* Other models available upon request

➤ Screw Conveyors

Fluid Systems offers cuttings screw conveyor systems to transport cuttings in a zero-discharge environment, both on land and offshore. Each screw conveyor is made up of 6' or 12' lengths that can be bolted together and sized to fit your application.

SCREW CONVEYORS*

- Available sizes from 12" up to 24" diameter
- Lengths available in 12, 24, 36 ft or custom
- Bi-directional
- DOL starter or VFD
- Explosion Proof Electrical System Class I Div. 1



ESC18X36 Screw Conveyor

* Other models available upon request

➤ Mud Guns

For many years, mud guns have been used as the sole means of agitation. These devices usually carry mud from a downstream compartment and spray it into an upstream compartment to keep solids suspended.

MUD GUNS*

- Available in 2" and 3" nozzles with 1/2", 5/8", 3/4" and 1" openings
- 360° Pivot System
- Coupling system with flange or NPT
- Customized length depending on tank size



FSI3STMG Mud Gun

* Other models available upon request



**WE LOOK FOWARD
TO WORKING TOGETHER**