SpiritIT eXSite
LACT control & management solution
Measurement made easy

SpiritIT eXSite is specifically made to automate and regulate the movement of crude oil from the production area to gathering facilities and oil terminals. Field run and LACT tickets are instantly available to the back office and automatically emailed to customers.
LACT control & management
From well to awareness

SpiritIT Flow-X LACT controller
The SpiritIT Flow-X flow computer with its many unique features and precision is the perfect LACT controller.
- ‘Best-in-the-class’ flow computer
- Automatic sampling can selection
- Sampling & pump control
- Intelligent lock on high BS&W

HMI touch screen
For easy control of the offload process each loading rack is equipped with an HMI touch screen. The truck driver logs on to the loading rack and enters all ticket data. After verification with the local ‘eXSite’ PC, the offload can start.
- Intuitive touch screen operation
- Automatic driver authorization
Local personnel at the facility can manage and operate the system from the local 'eXSite’ PC.

• Electronic report repository
• Driver database management
• Flow meter diagnostics
• Email subscription to reports

eXSite Local Edition is a special application of the Spirit eXerate metering software, developed for gathering stations.

For management of multiple LACT facilities, eXSite Corporate Edition will be the ultimate software.

• Web interface for well producers
• Remote access LACT sites
• Corporate data
• Well producer data & reporting
• Searchable database
• Full audit trail
• Remote flow meter diagnostics
• Driver database management
SpiritIT Flow-X LACT controller
For secure custody transfer with highest accuracy

The LACT Controller is based on the SpiritIT Flow-X product series and provides all benefits of a true flow computer.

SpiritIT Flow-X series
The SpiritIT Flow-X flow computer series has several different enclosures.

Flow-X/P
The Flow-X/P is a panel mounted enclosure for 1 up to 4 Flow-X/M modules.

Flow-X/K
Flow-X/K is the DIN-rail rack enclosure for 1 Flow-X/M module.

Flow-X/S
Flow-X/S is the DIN-rail mountable enclosure for 1 Flow-X/M module.

Flow-X/R
The Flow-X/R is a 19" rack enclosure for 1 up to 8 Flow-X/M modules.

Flow-X/M: the Flow-X core
The core element is the Flow-X module: Flow-X/M. One module contains everything to support one full meter run. The module needs to be placed in one of the available enclosures.

<table>
<thead>
<tr>
<th>Each module provides:</th>
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<tbody>
<tr>
<td>6 Analog Input (4-20 mA, 1 - 5/ 0 - 5 V DC)</td>
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<tr>
<td>4 HART inputs</td>
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<tr>
<td>2 PT100 temperature inputs</td>
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<tr>
<td>4 Analog outputs</td>
</tr>
<tr>
<td>16 Digital I/O (*open collector, **configurable threshold)</td>
</tr>
<tr>
<td>2 Serial input (RS-232 / RS-422 / RS-485)</td>
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<tr>
<td>2 Ethernet (RJ45 , TCP/IP)</td>
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<table>
<thead>
<tr>
<th>Each of the 16 digital I/O channels can be assigned to a:</th>
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<tbody>
<tr>
<td>Pulse input (single/dual)** max. 1 meter (dual = 2 inputs)</td>
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<tr>
<td>Time period input (density)** max. 4 signals</td>
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<tr>
<td>Prover detector input** max. 4 signals</td>
</tr>
<tr>
<td>Status input** max. 16 signals</td>
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<tr>
<td>Status output* max. 16 signals</td>
</tr>
<tr>
<td>Pulse output* max. 4 signals</td>
</tr>
<tr>
<td>Prover bus output* max. 1 signal</td>
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Features

**True flow computer**
API MPMS Chapter 11 volume conversions.
API MPMS Chapter 12 meter tickets and proving reports.
API MPMS Chapter 21 flow computations
Highest accuracy, best security and traceability.

**Electronic run tickets**
Run ticket data can be entered on the local touch screen.

**Driver authorization**
Only authorized drivers are allowed to offload.

**Water cut lock**
Provided that the rack is equipped with a water cut meter, the Flow-X LACT controller continuously monitors the measured water cut. When the water cut gets above the limit for a certain amount of time, the offload is stopped automatically. The driver can restart the offload, but if the water cut is again above the limit then the offload is aborted and the driver is locked out for offloading to any rack at the facility.

**Up to 16 sample pots**
Up to 16 sampling pots are supported per rack with separate flow weighted averages and totalizers.

**Automatic pot selection**
Pot selection is based on the transporting company.

**Aggregate batch data**
Up to 4 sets of aggregate batch data are available. Batch data may be reset every day, month or on scheduled dates.

**Split loads**
Each delivery may consist of up to 4 split loads, with each split load having its own run ticket data.

**Loading permissives**
Loading permissive may be based on:
- Truck ground detection signal
- 2 Additional hardwired signals
- Driver verification
- Meter active state
- 3 Custom permissive conditions
- BS&W lock
- Driver run ticket data valid

**Booster pump control**
Control of booster pump based on 5 analog output set-points with 4 switch points. Switching is based on either flow rate or gravity.

**Lease number verification**
The lease number by the driver is verified against a master list.

**24 additional driver entry fields**
In addition to the standard driver entries a maximum of 24 fields can be defined for driver entry.

**Pump stop on no or suspicious flow**
Configurable output signals indicating high water cut and/or meter failure alarms can be used to stop the pump.

**Alarm output signals**
Configurable output signals for high water cut and meter failure alarm.

**Transloader function**
Enables data points for buyer, seller, transloader and railcar number on displays and reports.

**Shakeout based recalculations**
Tickets can be corrected for gravity and water cut values resulting from shakeouts.

**Driver data entry validation**
Data entered by the driver are validated against configurable limits.

**Divert valve control**
Automatically diverts product into a slop tank on high water cut. There is also the possibility to divert product of separate gravity ranges into different tanks.

**Production tank level**
Monitor and report production tank levels. Start and stop gathering LACT based on tank levels.

**BOL and ticket printing**
Supports network printing to thermal and laser ticket printers.

**Standard Modbus comms**
Easily customized Modbus communications for interface with a local control system or a SCADA system.
Each facility has one eXSite local computer with a Flow-X LACT controller and HMI touch screen at each loading rack. The touch screen is the interface for the truck drivers, while local personnel at the facility can manage and operate the system from the ‘eXSite’ PC.

**Basic Functionality**
- Driver Authentication in conjunction with flow computers
- Well operator-based sampling pot selection
- Tracking the fill levels of the sampling pots
- Repository for driver load transactions (Totals and FWA)
- Automatic reporting of periodic transaction overviews
- Reporting of well operator-based period totals and FWA
- Automatic emailing of reports for the local site
- Information to assess the metering system in control
- Provide in-depth diagnostics to troubleshoot equipment

**HMI Displays**
- **Operations Overview Display**
  With this display, the actual state of the loading bays is presented. For each bay, information of the current load is displayed. This information includes the driver name, Well operator, offloaded volume, flow rate, density and BS&W, in-use sampling pot, and actual fill level of all sampling pots
- **Metering Overview Display**
  Displays the actual measurements and the state of all metering hardware such as the flow meters, the transmitters, analyzers, computer equipment. Also provides access to flow meter diagnostics and alarm history for troubleshooting purposes.
- **Reports Display**
  A display with Meter Tickets for all driver loads over the selected period, Total Loads and flow-weighted averages per Well operator for assigned periods. Searchable reports based on name, company, etc.
eXSite corporate

At the corporate level eXSite consists of an Intermediate Server communicating with eXSite local computers and a Public Server with external access for customers and transporting companies.

**Basic Functionality**
- Central data repository for the transactional and production data for all the LACT sites operated by the crude gathering station company
- Central overview of the actual state and the performance of all LACT sites
- Redundant backup facility system for all flow computer configuration files for all LACT sites
- Redundant backup system for all historical data as generated by flow computers at all LACT sites
- Maintenance of the driver databases of all well operators and distribution of this driver database to all LACT sites
- Automatic emailing of production reports to well operators
- Connection to LACT sites through web-portal for trouble-shooting at local LACT sites
- Web-portal, secure, managed and user-friendly for well operators which are able to:
  - Update their driver database
  - Retrieve their production reports
  - Query their production database

**HMI Displays**
- **Dashboard Display**
  Shows production figures and performance indicators of the individual LACT sites.
- **Web Portal**
  Provides the web based interface for well operators for maintaining the online driver database.
  The web portal can be managed to setup users and associated access and email rights.
- **LACT Detail Display**
  Provides web based displays for selected LACT sites for troubleshooting purposes.
SpiritIT eXSite supports the following custody transfer data by default:

**Truck information**
- Load number
- Number of tickets
- Truck driver number
- Truck driver name
- Trucking company
- Truck number
- Trailer number

**Run ticket data**
- Lease operator name
- Lease name
- Lease number
- Truck ticket number
- For the account of
- Driver observed volume
- Driver standard volume
- Driver net volume
- Driver BS&W
- Driver observed gravity
- Driver atmospheric pressure
- Driver observed temperature
- Range check
- Customer information
- Customer number
- Customer name
- Confirmation number

**Destination information**
- Destination ID
- Tank / Railcar ID
- Tank / Railcar Size
- Split load (yes/no)

**Transloader information**
- Transloader ID
- Transloader operator
- Ticket operator

**Sampling information**
- Sample can number

... plus 24 user-definable fields