

SCADAPack ProductionPLUS

Gas Well Production Optimization Application

Benefits:

- Pad-wide optimization solution
- Distributed intelligence at the metering point eliminating single point of failure
- Complete wireless or wired well automation solution combining EFM and Plunger Lift for 30+ wells per pad
- Well control algorithm provides three modes of control: Manual, Intermittent and Plunger Lift
- Environment-centric framework including tank level monitoring, pad-wide shutdown and well test feature to help with environmental compliance
- Extensive data logging capability allowing further data analysis and trending
- Open platform utilizing industry-standard communication protocols for ease-of-integration with third party software
- A multi-well local interface allowing operators to monitor and control all wells from one location



Overview

SCADAPack ProductionPLUS is an integrated hardware and software solution that increases safety, improves environmental compliance and extends the life cycle of the well. Designed with extensive input from end users and gas operators, SCADAPack ProductionPLUS leverages the power of Control Microsystems' 4203 Gas Flow Computer (GFC) and SCADAPack line of RTUs/controllers to offer a highly distributed and scalable well automation solution. Ideal for 1 to 30+ wells per pad, the SCADAPack ProductionPLUS Software works in conjunction with the RealFLO Multi-run GFC inside the 4203 GFC or SCADAPack controller.

Configuration Software

Traditional or legacy plunger lift systems require an operator to review the well characteristics and configure the optimum settings at that point in time. Although operator interaction is valuable, human error and unpredictable dynamic well performance drive the need for a better solution.

The SCADAPack ProductionPLUS Manager is an intuitive, windows-based PC environment that allows operators to easily configure each well head. Running on Windows XP, Vista and Windows 7 operating systems, the application is designed for pad-wide optimization and supports:

- Wireless and wired instrumentation for tubing, casing pressure, plunger arrival sensor, sales valve control, liquid production flow meter and separator temperature
- Tank level monitoring for separated water and oil/condensate
- Pad-wide shutdown, daily liquid production and well test feature
- Pulsed meter liquids measurement and daily production reports
- Braden Head monitoring and shut-in
- Dump line pressure
- High density trending with adjustable recording frequency

	Accumulate Flow on Run (MCF)	Average Flow (MCF/D)	Off Time	Plunger Arrival Time	Afterflow Time	Tubing Pressure at Open (psil)	Tubing Pressure at Close (psil)	Casing Pressure at Open (psil)	Casing Pressure at Close (psil)
Current C.	49	3256	1:05:10	0:00:00	0:00:00	0	289.3221	0	651.8903
Cycle 1	0	111	1:30:00	0:00:15	0:20:00	289	289.2458	651	651.8903
Cycle 2	9	111	1:30:00	0:00:15	0:20:00	289	289.3221	651	651.814
Cycle 3	8	112	1:30:00	0:00:15	0:20:00	290	289.8562	651	651.9686
Cycle 4	9	111	1:30:00	0:00:15	0:20:00	290	290.6132	652	652.1955

The SCADAPack ProductionPLUS Manager has three operating modes to serve the life cycle of each well:

1. Manual Mode - Basic mode for remote, manual operation of wells
2. Auto Intermittent Mode - Emulates plunger control without plunger hardware
3. Complete Plunger Lift Control

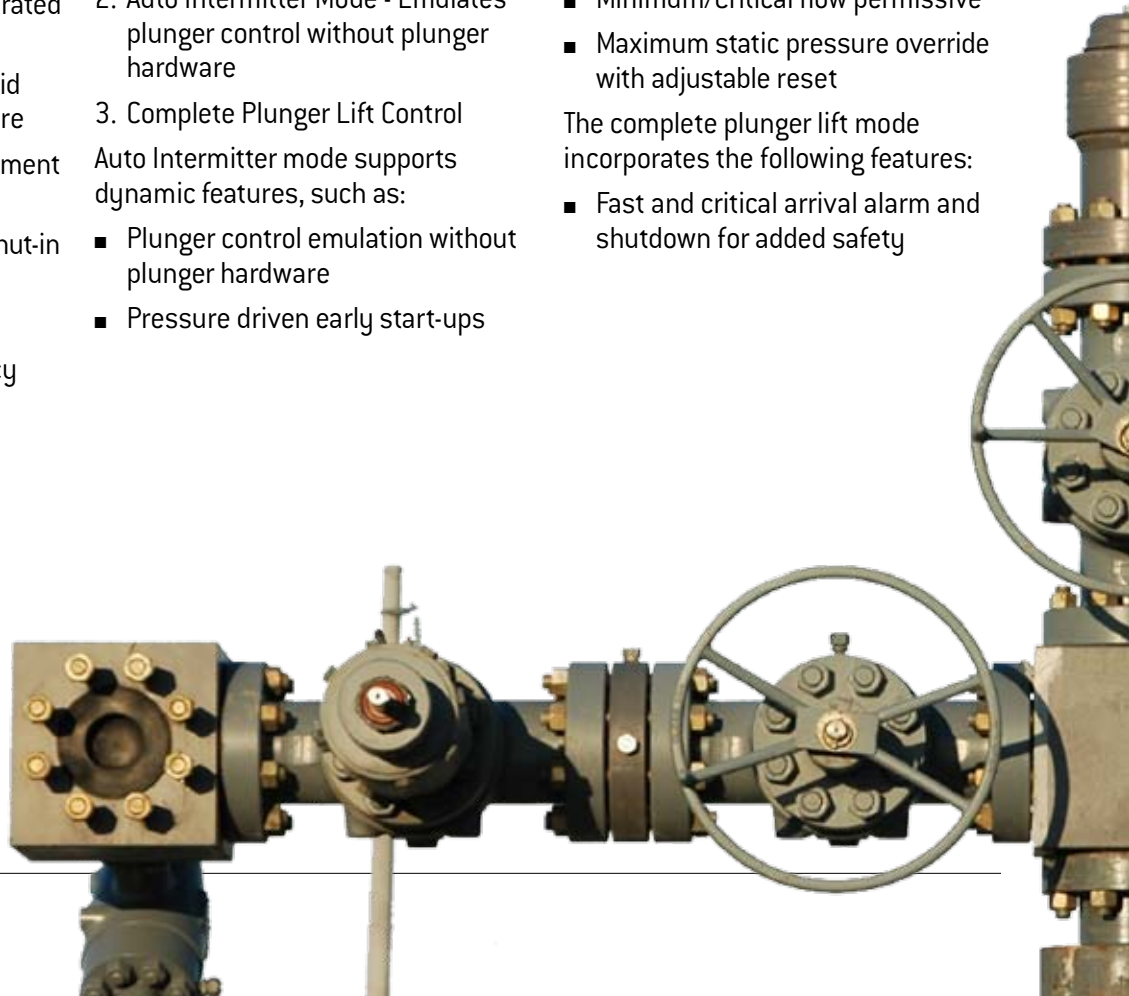
Auto Intermittent mode supports dynamic features, such as:

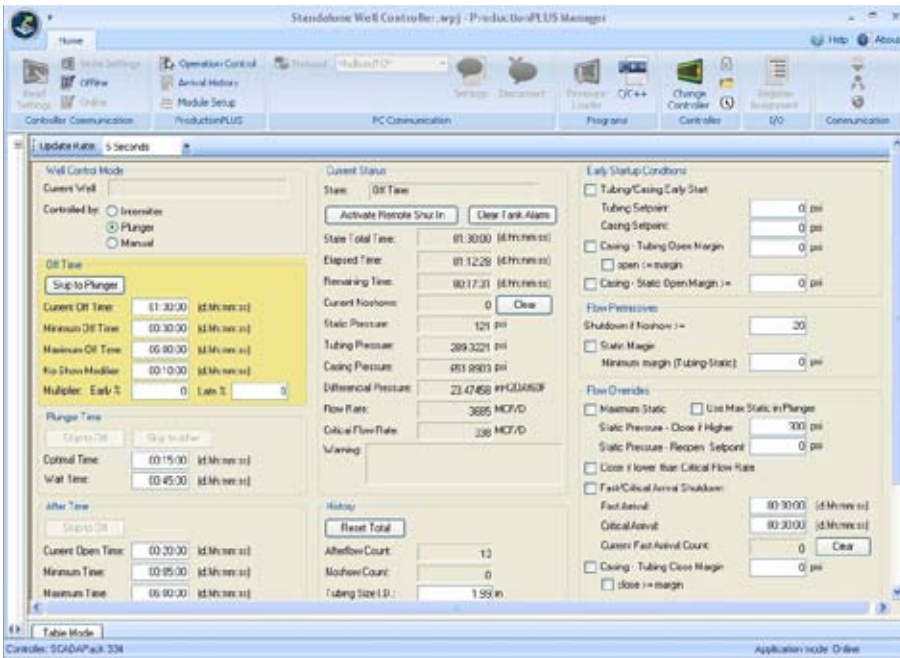
- Plunger control emulation without plunger hardware
- Pressure driven early start-ups

- Extended flow time based on calculated or fixed critical flow velocity
- Minimum tubing/static differential flow permissive
- Minimum/Critical flow permissive
- Maximum static pressure override with adjustable reset

The complete plunger lift mode incorporates the following features:

- Fast and critical arrival alarm and shutdown for added safety





- Proportional auto-adjust optimizer
- Dynamic no-show modifier
- Extended after flow
- Dynamic critical flow rate
- Static margin permissive
- Minimum flow permissive
- Static pressure override with auto reset
- Complete plunger cycle history record
- Tubing and casing early start-up
- Adjustable no-show shut-in

SCADAPack Hardware Platform

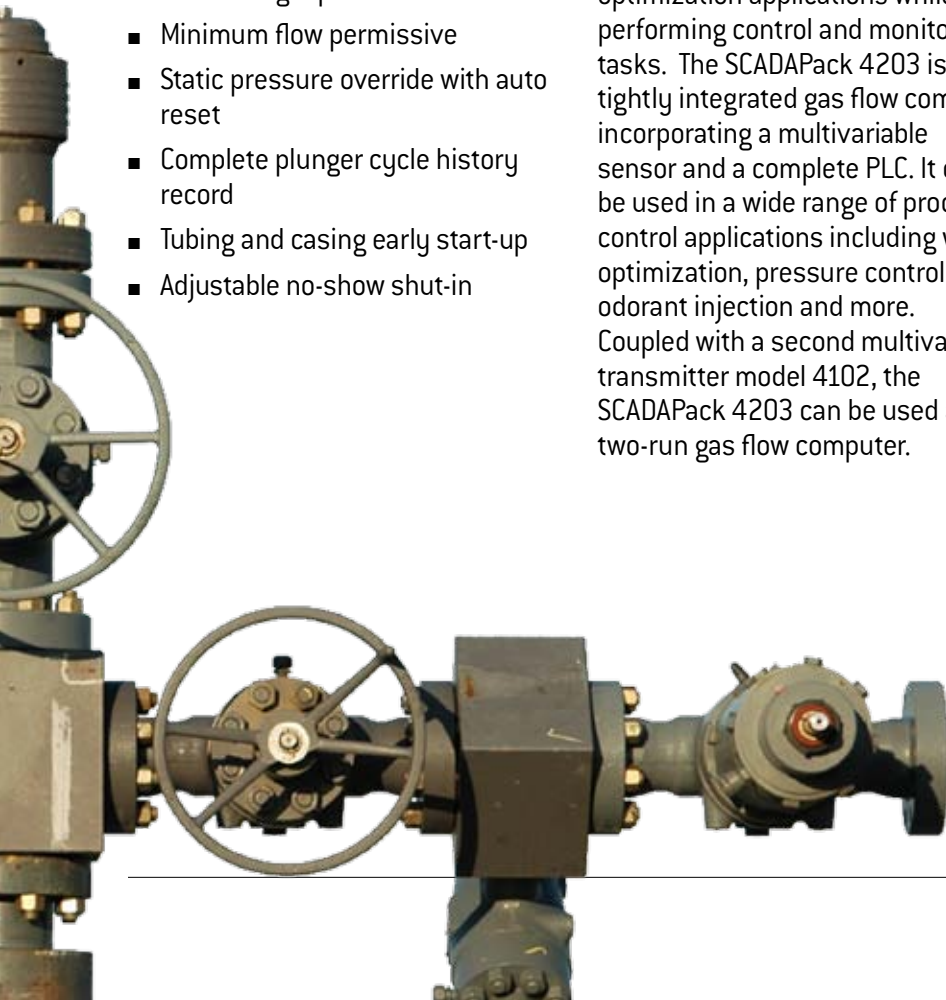
SCADAPack ProductionPLUS runs in all SCADAPack 4203 and 300-Series controllers. Each is ideally suited to support EFM and production optimization applications while performing control and monitoring tasks. The SCADAPack 4203 is a tightly integrated gas flow computer incorporating a multivariable sensor and a complete PLC. It can be used in a wide range of process control applications including well optimization, pressure control, odorant injection and more. Coupled with a second multivariable transmitter model 4102, the SCADAPack 4203 can be used as a two-run gas flow computer.

The SCADAPack 300-Series controllers offer a 32-bit CPU, 100baseT Ethernet, Modbus over USB and measure up to 4 gas flow runs. The SCADAPack 334 offers 8 analog inputs, 16 digital inputs, 10 digital outputs and two optional analog outputs in a compact package. The SCADAPack 350 offers 5 analog inputs, 8 digital inputs/outputs and two optional analog outputs.

The SCADAPack 4203 and 300-Series controllers are fully programmable using TelePACE Studio Ladder Logic, IEC 61131-5 and C/C++ for added convenience. Control applications developed in ladder logic, function block or C/C++ can run concurrently with SCADAPack RealFLO EFM and SCADAPack ProductionPLUS well optimization applications. Users can add their own code to leverage the built-in input/output points available on each platform to control and monitor auxiliary equipment such as pumps and environmental data points.

Distributed Intelligence

When the SCADAPack 4203 controller is utilized at each well head, it provides a distributed intelligence architecture that addresses the downside of having a single point of failure in traditional pad-wide optimization. The SCADAPack 4203 runs both RealFLO EFM and ProductionPLUS well optimization applications. The built-in, powerful PLC allows the generation and storage of over 4000 data records per meter run. Furthermore, the SCADAPack 4203's digital output can be used to control the sales valve locally or remotely thus providing distributed control independent from other pad wells.



To discuss how Control Microsystems can help solve your telemetry, SCADA and remote monitoring and control applications, please contact your local oil & gas sales representative or call our toll free sales number shown below.

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