PEAR
PEAK ENERGY AGRICULTURE REWARDS

LODESTAR PUMP CONTROL SYSTEM

REMOTELY MONITOR

& CONTROL

YOUR PUMPS

HIGHLIGHTS

Field tested, grower proven

Turn your pumps off and on remotely from:
- Secure Internet Web Site
- Smart Phone – Mobile Web Site
- Any Telephone – Toll Free Number

Web-based monitoring and control:
- Current Pump On/Off Status
- Number of Pump Starts
- Run Time
- Flow Rate, Current and Totals

Receive notifications when your pump starts, stops or loses power:
- Voice message
- Text message
- E-mail

A CONTROL UNIT DESIGNED FOR AG OPERATIONS

The Lodestar is an intelligent, remotely controlled power switch designed to monitor and control irrigation pumps
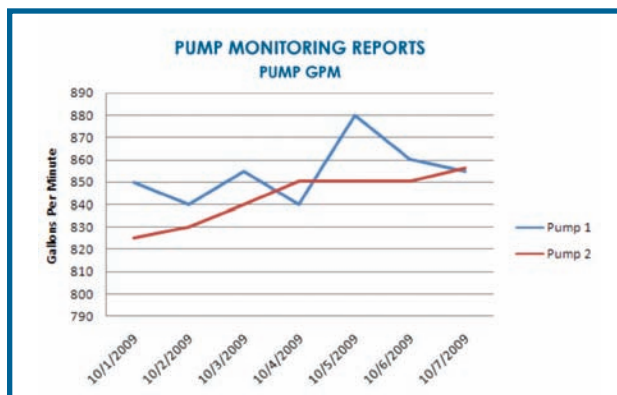
- Flexible remote control on/off schedules can be set from the web site
- High voltage operation including 120, 240, and 480 VAC, without external transformers
- Direct measurement of connected voltages
- AC power outage and restoration reporting

Real time wireless reports from the Lodestar field unit to the Lodestar Operations Center (LOC) are sent for three reasons:

1. Equipment status change such as a pump start or stop
2. A time scheduled status report is due
3. A command or report request is received from the web site

On/off status of the connected equipment is reported along with system configuration information. Status reports can be requested at any time.

All reports include the current pump on/off status. Optional information includes the current flow rate. Time scheduled reports include accumulated information such as the number of pump starts and the total run time and can optionally include the minimum and maximum measured flow rates.

THE LODESTAR OPERATIONS CENTER

The LODESTAR Operations Center (LOC) is the heart and brain of the Lodestar system, and provides many important functions:

- Maintains complete on-line information for every site, and organizes the sites and equipment into logical groups
- Maintains a secure connection to your pumps through cellular or satellite communication
- Provides secure, web-based access to farm managers and other personnel
- Sends control and configuration commands to the field units
- Turns on or off any or all of your pumps
- Maintains a complete history log of all events

On-line Site Information Database

The secure, web-based LOC stores all site information and provides appropriate levels of access to your operations team including:

- Farm name, location and contact information
- GPS-based equipment locations and interface to Google Earth maps
- Equipment descriptions including inspection records and digital photos
- KW and horsepower of pumps
- Crop type

A variety of reports are available to facilitate system maintenance:

- Equipment inventory
- Measurement and verification data (M&V)
- Non-responsive pumps
- Equipment status change history logs
- Voice and email notification logs
- Usage history logs

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Multi-Level Accounts & Grouping

The field units can be organized into logical groups based on location, crop type, control schemes, etc. Commands can be sent to any individual Lodestar or to any predefined group of units. The equipment owner has access to all units and customer records under a user name and password. Individual employees have their own user names and password to securely access specific information.

CONTROL COMMANDS
Select Command(s)

REQUEST REPORTS	☐ Status Report ☐ Counter/Timer 1-2 Report	
CONTROL COMMANDS	☐ Set Pump Control to	Off ▾ On Off
TIMED CONTROL COMMANDS	☐ Set Pump Control to	Off ▾
	◉ Hours:Minutes	[ ] : [ ] (0-160) (0-59)
	○ Seconds	[ ] (1-59)

Show Advanced Options

SEND COMMAND   SCHEDULE COMMAND

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Secure web based access

Access to the Lodestar field units is through the secure Lodestar web site at www.pearcalifornia.com

After entering your unique user name and password, users can:
- View both current and historical data for all units
- Customize displays with informative labels and units
- Define data exporting options
- Create and maintain remote control commands, reporting options, and user notification messages
- Define time scheduled reports and commands
- Request current status reports

In addition to the primary Internet site, there are two other ways to control your equipment.
1. Accessing the Lodestar Mobile web site on an intelligent cell phone display provides the same information and control capabilities, in a convenient mobile format.

2.Dialing the automated Lodestar LOC toll-free number provides a spoken status report of all monitored equipment and facilities from any telephone. Remote control commands can also be entered directly from the telephone.

Send control and configuration commands to the individual field units

Configuration and control commands can be sent from the web server to the field units at any time.These commands can be one time ("send now") or can be time scheduled. Scheduled commands can be configured in a variety of useful ways.

Event notifications

The LOC includes a voice-based notification system that can simultaneously call many phone numbers and speak a customized text message. It can then ask for and listen for an acknowledgement that the message was received and understood.

Each customer can create and edit their own list of people to be called or e-mailed as well as the current phone numbers and e-mail address for each person. Each list can contain up to 10 different phone numbers or e-mail addresses.

After a voice message is spoken, the system will ask the customer to acknowledge the message by pressing the * key on the telephone. If they do not, the next person on their list will be called.

The equipment owner can define and edit notification rules at any time, so that they are notified when an equipment status change is reported. For example, a notification might be set up to call the "West Farm Manager" list with a message such as "West Farm Pump Power Failure" if the unit reports a loss of AC power.

History Logs

A detailed history log is maintained for each unit including all equipment status changes, commands sent, user notifications, and acknowledgements.

The log includes the time and date of each event plus all details of the event. In the case of control commands and acknowledgements, the username of the operator is also saved. It also maintains a detailed record of all utility load control events and any customer opt-out actions.