

# MANAGING CHEMICAL:

## CHEMICAL INJECTION MANAGEMENT

A PRESENTATION BY  
SHAWN FRENCH

**PROFIRE**



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# SHAWN FRENCH

a brief introduction



Shawn French currently serves as the Manager of Profire's Chemical Management Division.

He oversees all product development, customer relations, as well as sales and service as it pertains to all Profire-related chemical management operations. Shawn has been involved in the oil and gas industry for well over 25 years, previously managing divisions for Hunt Oil and Harvest Energy.

Shawn's expertise regarding chemical injection is both impressive and invaluable to both Profire and Profire's customers.



# WHY CHEMICAL MANAGEMENT?

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# WHY CMS?

## Chemical Management Solutions

### **Fact:**

The oil and gas industry currently spends approximately \$9.5 billion a year on chemicals. That number is estimated to increase to \$10.5 billion by 2017 (FB Industries).

### **Problem:**

Chemical is the second highest opex cost E&P companies face at this time--first being human capital.

### **Question:**

With margins being pinched by the drop in oil prices, how can oil and gas producers continue operating and maintain profitability?

# WHY CMS?

## Chemical Management Solutions

### Overview of Case Studies:

**80+**  
*wells studied*

Three independent case studies were conducted with over 80 wells closely monitored and analyzed.

**57%**  
*over-injecting*

Of those wells, 57 percent were over-injecting. The cost of chemicals injected ranged from \$3.39/liter to \$5.54/liter.

**\$259,237**  
*per well / per year*

Wells suffering from over injection cost producers a combined \$259,237.60 per well per year.

# WHY CMS?

## Chemical Management Solutions

### **Solution:**

Chemical Injection Management Systems, specifically the Profire PC180, reduce operational and chemical costs, improve safety for the end user, increase operator user-friendly interface, and provide a more environmentally minded application. In addition, chemical management solutions:



- Reduce pump repairs
- Help achieve ideal injection rates
- Optimize chemicals used
- Adjust to changing well conditions
- Decrease operator exposure to hazardous materials
- Automatic adjustments controlled by SCADA systems

# WHY CMS?

## Chemical Management Solutions



### Profire PC180:

- No need to re-invent the pump
- Didn't want to replace existing pumps in the field
- Retro-fit on all existing pumps
- Works perfect on all new installs as well
- Pre-assembled solutions prepared for quick install and little downtime



# PC180 CMS OVERVIEW

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# PC180 CMS

## Solution Overview

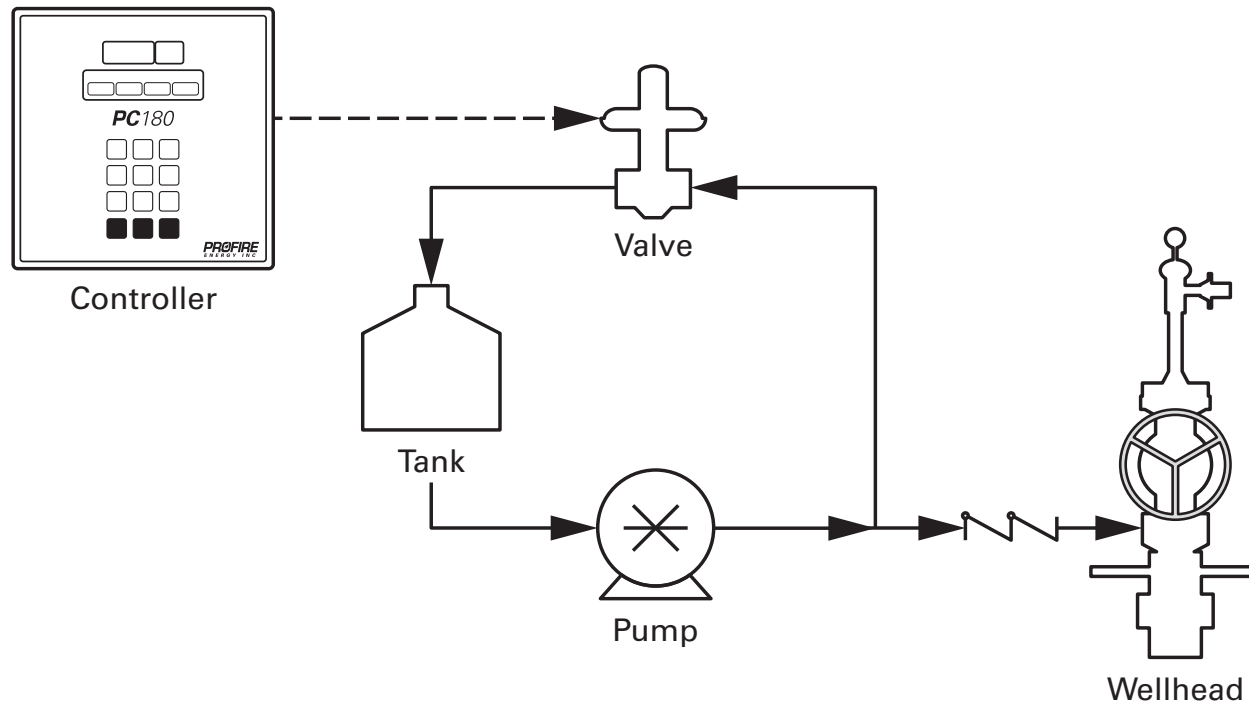
This CMS system helps reduce the amount of waste during the chemical injection process. The PC180 calculates and manages an optimal chemical injection cycle for the desired injection rate. The PC180 is ideal for applications where neither under, nor over-injection is desired

- Class 1, Division 1- Hazardous location approvals
- Simple installation, no local programming required
- Replaces the need for I2P, instrument air, and related devices
- High visibility visual position indicator



# PC180 CMS

## Standard Configuration

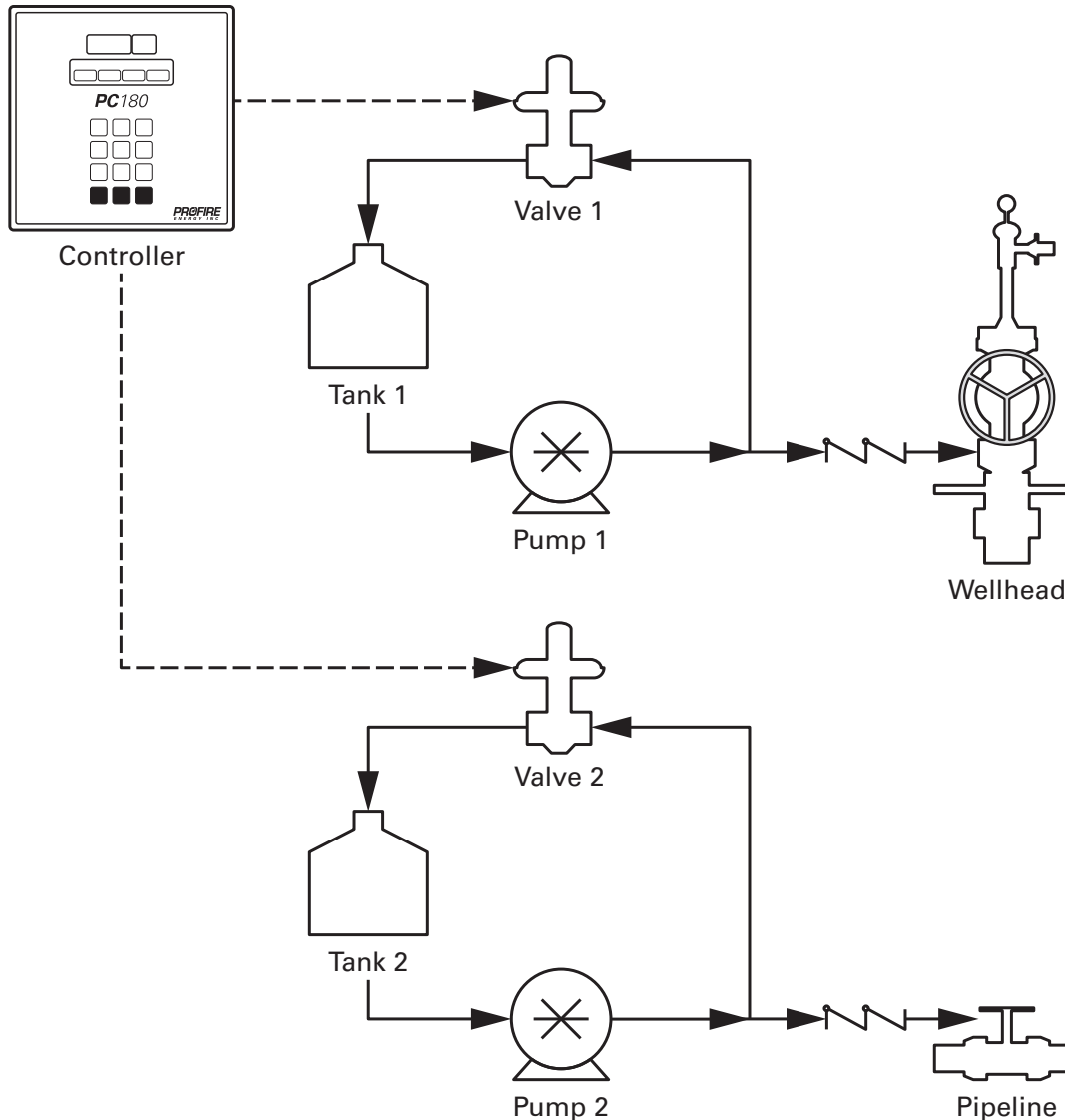


### STANDARD CONFIGURATION

- pump operates at optimal rate for reliability
- target rates down to 1/6 gallon/day (0.5 liters/day) with existing pump
- expands low end range of existing pump
- excess chemical is recycled back to the tank “rolling” the tank to keep chemical fresh
- MODBUS RS-485, remotely change or monitor your pumps through SCADA

# PC180 CMS

## Dual Pump Configuration

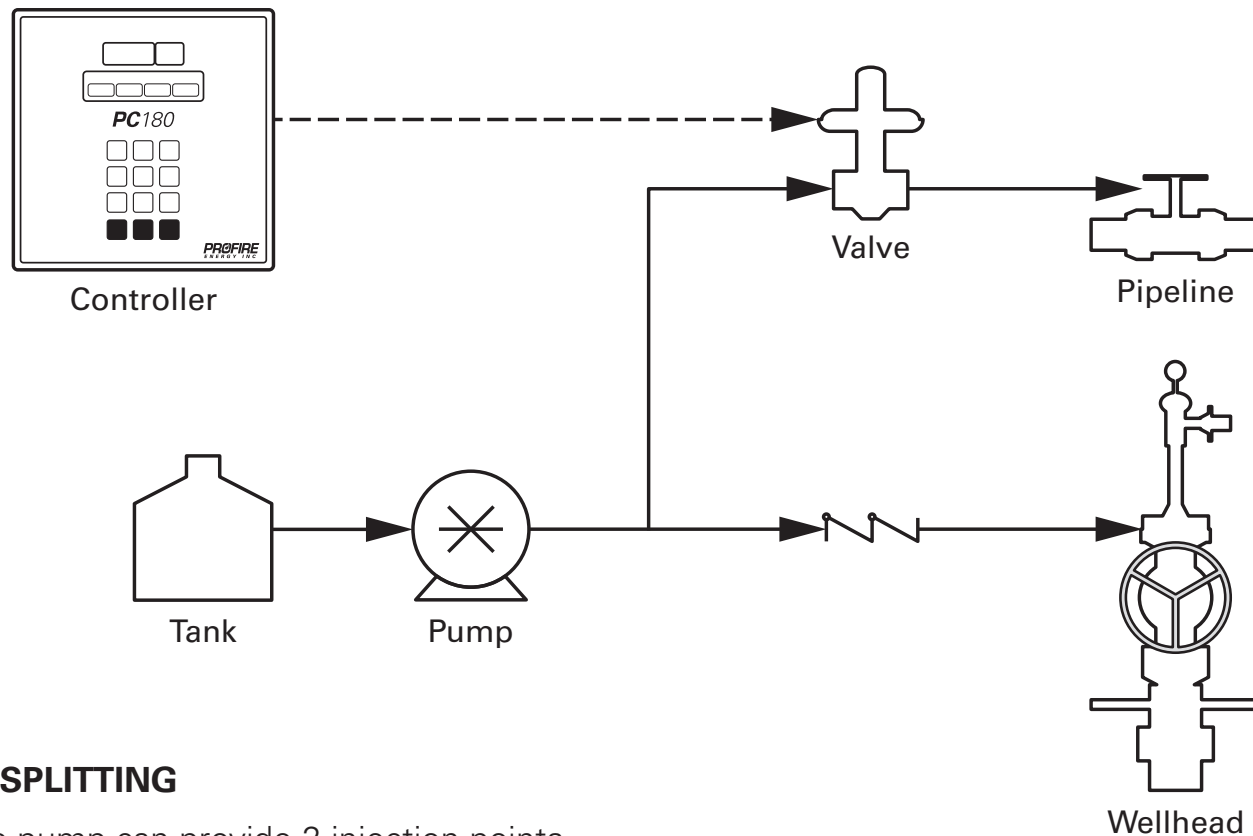


### DUAL PUMP CONFIGURATION

- control 2 injection rates with one control system
- pumps operate at optimal rate for reliability
- target rates down to 1/6 gallon/day (0.5 liters/day) with existing pump
- expands low end range of existing pump
- excess chemical is recycled back to the tank "rolling" the tank to keep chemical fresh
- MODBUS RS-485, remotely change or monitor your pumps through SCADA

# PC180 CMS

## Pump Splitting Configuration

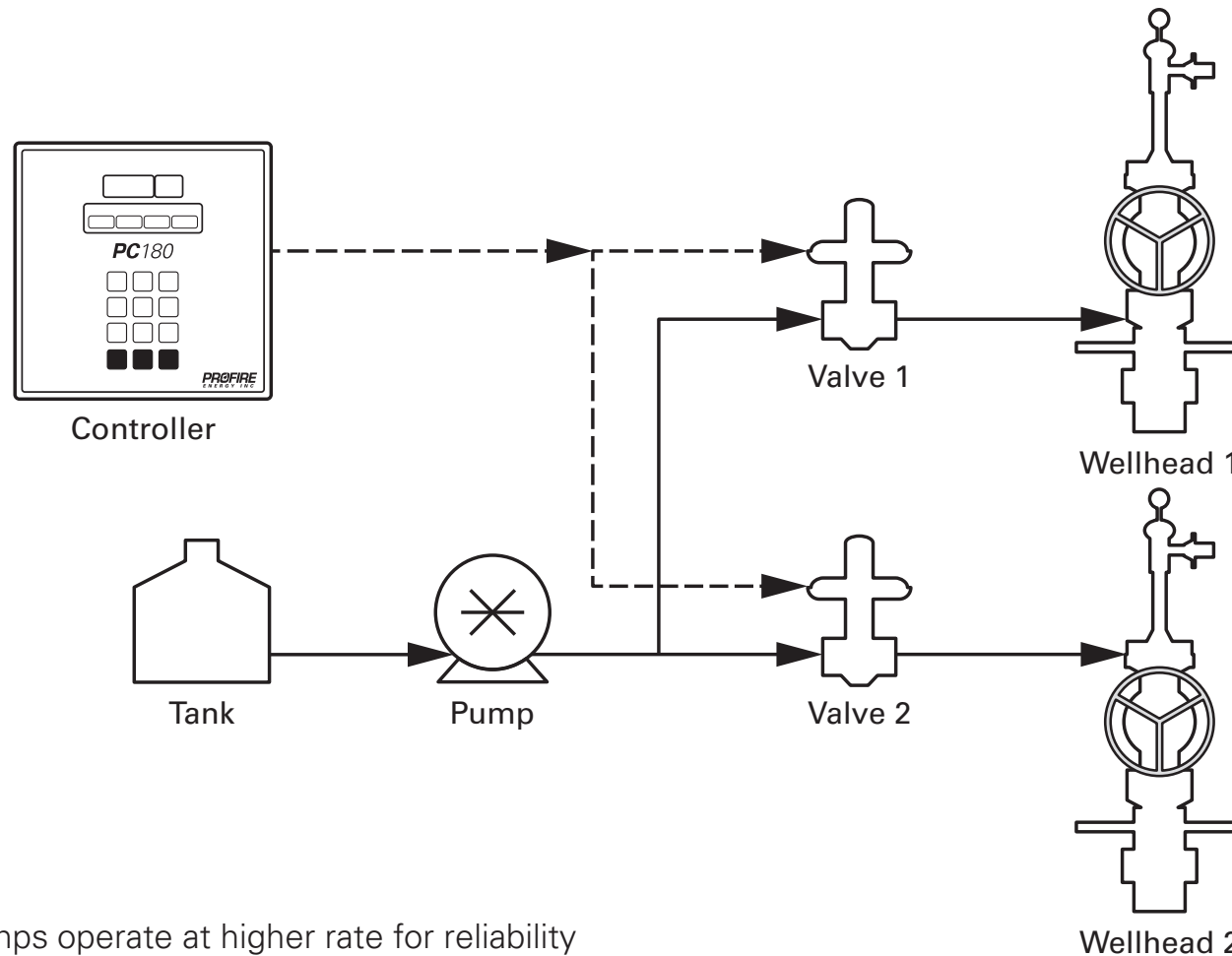


### PUMP SPLITTING

- one pump can provide 2 injection points
- eliminates the need for two pumps
- eliminates the maintenance of a second pump
- eliminates the need for power to run a second pump and possible emissions
- control 2 injection rates with one control system

# PC180 CMS

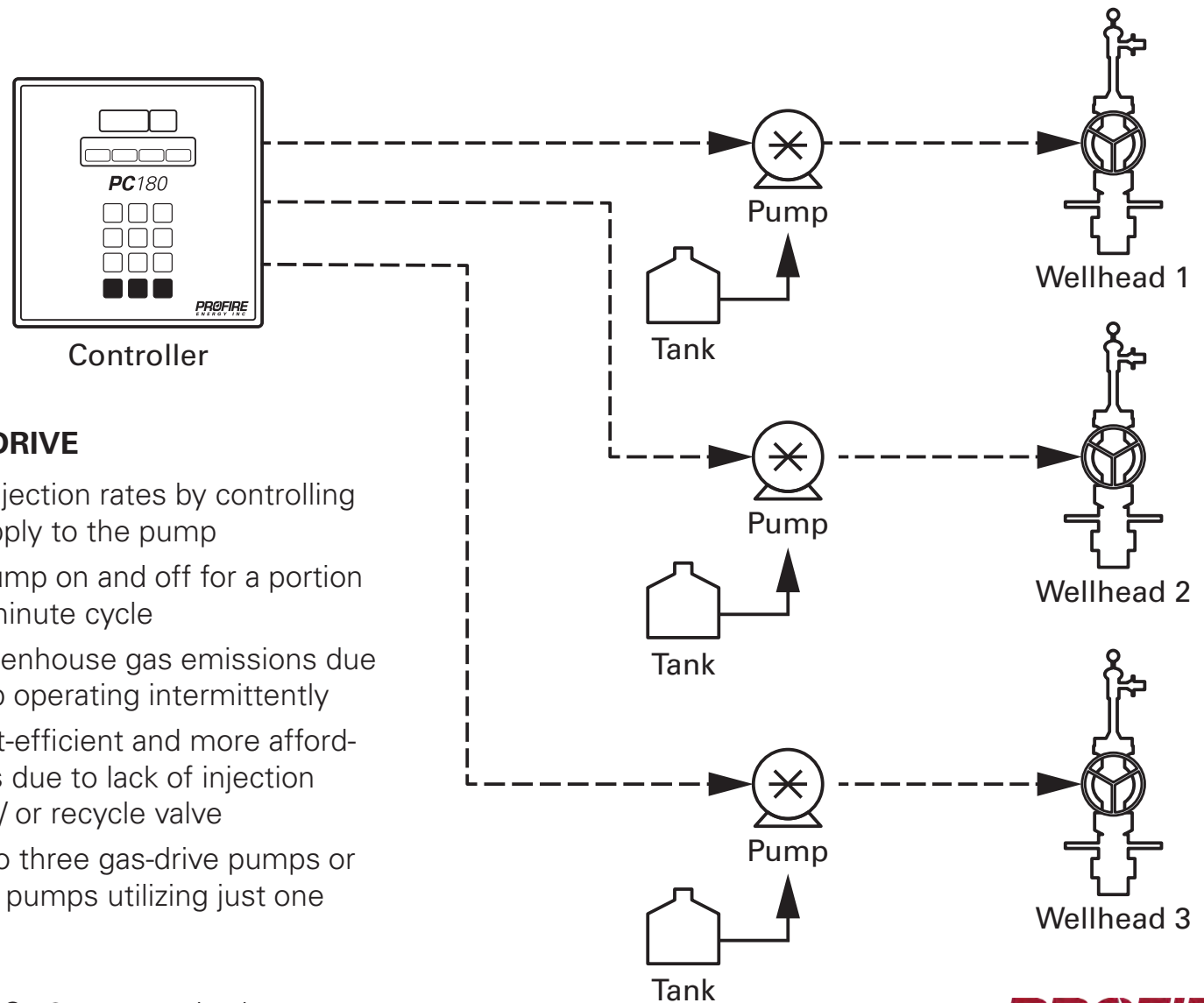
## Pump Splitting Configuration 2



- pumps operate at higher rate for reliability
- target rates down to 1/6 gallon/day (0.5 liters/day) with existing pump
- expands low end range of existing pump
- MODBUS RS-485, remotely change or monitor your pumps through SCADA

# PC180 CMS

## Legacy Gas Drive Configuration



### LEGACY GAS DRIVE

- optimizes injection rates by controlling fuel-gas supply to the pump
- turns the pump on and off for a portion of every 2 minute cycle
- reduces greenhouse gas emissions due to the pump operating intermittently
- creates cost-efficient and more affordable options due to lack of injection header and / or recycle valve
- control up to three gas-drive pumps or two electric pumps utilizing just one PC180 controller
- MODBUS RS-485, remotely change or monitor your pumps through SCADA

# PC180 CMS ADVANCED FEATURES

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# PC180 CMS

## Advanced Features

The PC180 has many capabilities as well as the ability to optimize injection rates utilizing different inputs

### Advanced Features and Inputs:

- Multi-pump Capabilities
- Temperature Optimization
- Plunger Lift / Artificial Lift Optimization
- Pump Pulse Capabilities
- Modbus Capabilities
- SCADA / Cloud-based solutions



# PC180 CMS

## Advanced Features



### SCADA & Cloud-based Solutions:

- Immediate optimization based on changing well conditions offers best results
- Automation allows for immediate optimization
- Far too expensive and unrealistic to have an operator there on site each time well conditions change

# CASE STUDIES

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# CASE STUDIES

## Harvest Energy



	<b>Without Profire</b>	<b><i>With Profire</i></b>
Chemical Pumped	Methanol	Methanol
Cost of Chemical	\$ 0.58 / liter (1/4 gal.)	\$ 0.58 / liter (1/4 gal.)
Amount Used	625 liters /day (165 gal.)	400 liters /day (105 gal.)
Daily Cost / per well	\$ 362.50	\$ 232.00

*Annual savings of **\$47,632.50**  
per station*

# CASE STUDIES

MarkWest Energy

**MARKWEST**  
Energy Partners, L.P.

	Without Profire	<i>With Profire</i>
Chemical Pumped	Methanol	Methanol
Cost of Chemical	\$ 2.85 / gallon (3.8 liter)	\$ 2.85 / gallon (3.8 liter)
Amount Used	800-1000 gal. /month (3000-3800 liters)	188 gal. / month (711 liters)
Daily Cost / per well	\$ 94.99 / day	\$ 17.86 / day

*Annual methanol costs are now*  
**82.2% LESS** *per station*

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THANK YOU

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