WHITE KNIGHT® CLOSED-LOOP SYSTEMS

Laminar Flow. No Metals. Stable Temperatures.

Automatically maintain flow or pressure with metal-free closed-loop systems capable of high temperatures, dead-head and suction lift! Get complete control of your ultra-pure chemical processes and delivery systems. Simplify automation. Save time and resources. Improve yields. Eliminate expensive pressure systems.

https://wkfluidhandling.com/closed-loop

Ultra-Pure Pump with Dampener

CPC-1

BEST OF WEST
2013 FINALIST
Presented by SOLID STATE TECHNOLOGY® and SEMI®

Overview

White Knight's closed-loop systems feature a CPC-1 controller, pump and pulse dampener. The systems automatically compensate for variables, such as chamber valve operations or filter loading, to maintain flow or pressure set points.

Features & Benefits

Ultra-pure closed-loop systems capable of 210°C, dead-head and suction lift!

- Continuous laminar flow rates
- Maintain steady fluid pressures
- Ensure stable temperatures
- Operate to 210°C (410°F)
- Flow rates to 140 lpm (36 gpm)
- Pressures to 7 bar (100 psi)
- Reliable metal-free pumps
- No metals or elastomer O-rings
- Up to 3 m (10 ft) suction lift
- Systems idle at dead-head
- No electric motors; no generated heat
- Eliminate costly pressure systems

Why White Knight?

Laminar Flow & Filter Retention

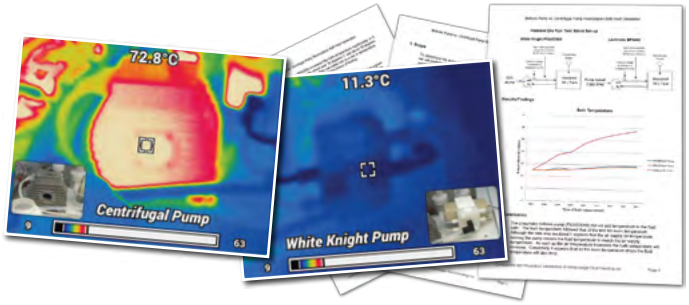
Improve flow and reduce particles to increase yields.

"The flow pulsations from the White Knight and Levitronix pumps were both relatively low and nearly identical, regardless of operating conditions tested."
-- CT Associates

When comparing pressure and flow pulsations from a White Knight closed-loop system and Levitronix system, no measurable difference in filter retention was observed. The flow pulsations from the White Knight and Levitronix pumps were both relatively low and nearly identical, regardless of operating conditions tested.

Maintain Temperature

Stable temperatures ensure chemical quality.



A White Knight pump and Levitronix pump were run simultaneously in identical recirculation systems. White Knight's pump maintained a stable fluid temperature. The centrifugal pump heated the fluid bath 10°C in 2 hours, and more than 30°C in 8 hours.

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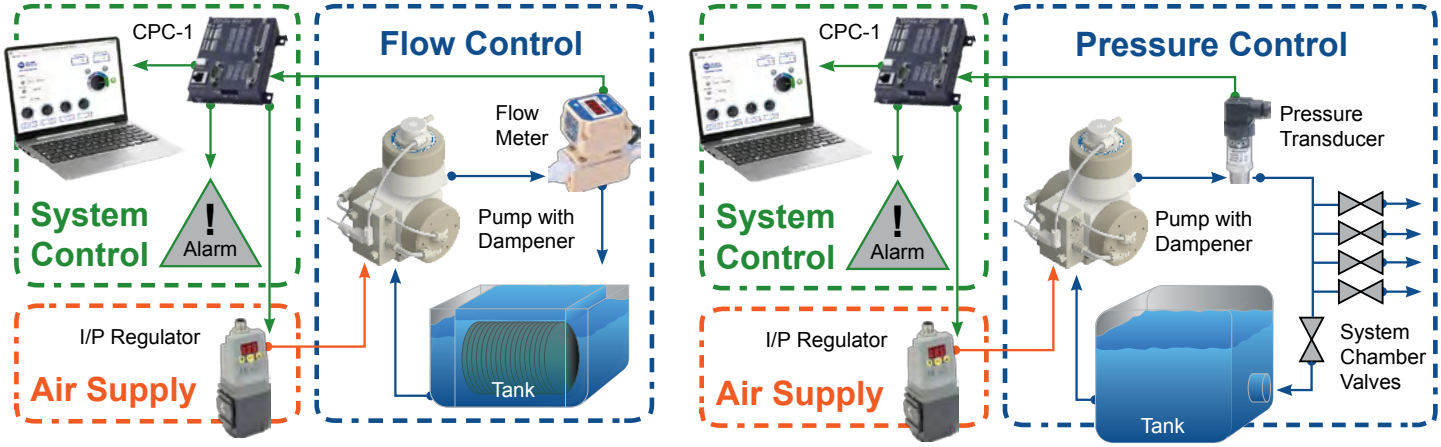
Closed-Loop Operation

CPC-1 signals an electro-pnuematic proportional regulator. The regulator applies pressure to the pump, and the pump pressurizes the fluid line. Sensors in the fluid line relay system information to the CPC-1, which then adjusts to repeat the process. The CPC-1 communicates to external alarms, a PLC, or Windows computer.

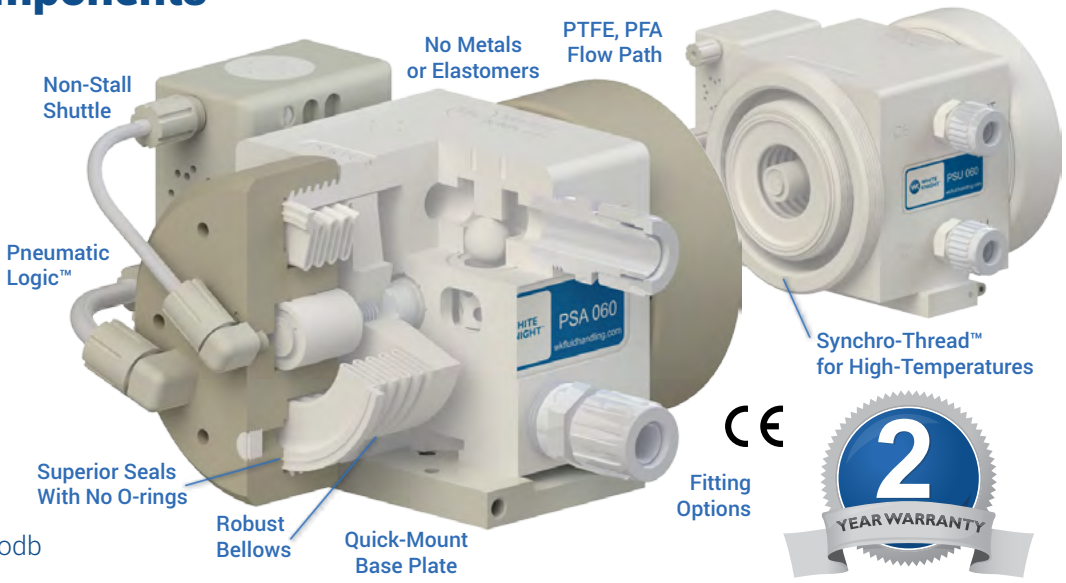


Closed-Loop Components

Ultra-Pure Pumps

White Knight pumps are capable of 140 lpm (35 gpm) flow rates, 7 bar (100 psi) pressures, and 210°C (410°F) temperatures. They provide up to 3 m (10 ft.) of suction lift, and idle at dead-head. They do not contain metals, which eliminates potential for corrosion, prevents leaks, and reduces contamination risks. The pumps also do not utilize elctric motors, which generate heat that alters chemicals.

https://wkfluidhandling.com/aodb



Pulse Dampeners

White Knight pulse dampeners reduce pulsation in fluid systems to improve flow control, increase batch yields, protect fittings and pipes, and minimize downtime for system repairs. They have interchangeable bases and fittings that allow them to fit any size of White Knight high-purity pumps.

https://wkfluidhandling.com/dampeners

Closed-Loop Controller

The programmable CPC-1 monitors and controls pneumatic pump systems to maintain liquid pressure or flow rate using feedback from a pressure transducer (no delay) or flow meter (two second signal delay). It supports supply pressure control operation to manage the system without feedback control.

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