



Managing Engine Air Sustainably

CFR Engines Inc. offers the Closed-Loop System as a sustainable solution for the precise management of engine intake air and auxiliary cooling.

In an effort to be environmentally friendly, CFR now offers the Closed-Loop System as a water reduction solution to save customers 780,000L per engine*, or more, of valuable water annually.

- High capacity design to accommodate a broad range of ambient temperatures and relative humidity
- Operates seamlessly with XCP® TECHNOLOGY or as a stand-alone system
- Industrial grade components and construction for extended life
- Provides cooling for the bowls, carburetor, and condenser
- Built in on-board system diagnostics as well as data capturing capability when paired with XCP TECHNOLOGY
- Remote access for the Outdoor Chiller Unit

Compliance

The Closed-Loop System is compliant to all procedures of the current ASTM Methods:

D2699 – Research Octane Number

D2700 – Motor Octane Number

D2885 – Online Test Method

D613 – Cetane Test Method

Reliability

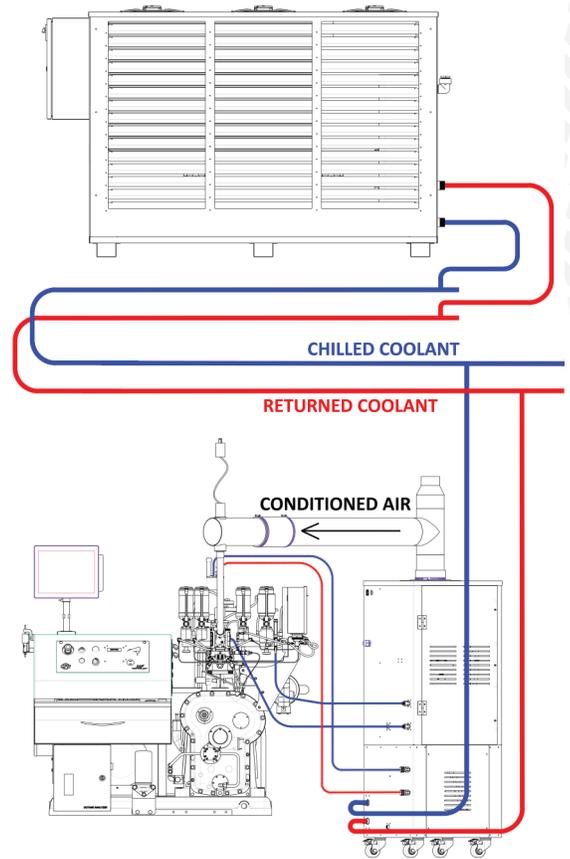
Highly engineered systems and well-designed construction result in performance that will consistently meet specifications for many years.

Accuracy

Precise control of engine intake air temperature and humidity are critical to meeting the precision that a documented and dependable Octane Number and Cetane Number test requires.

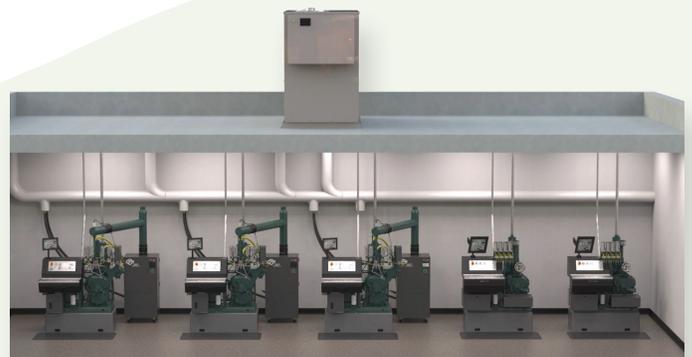
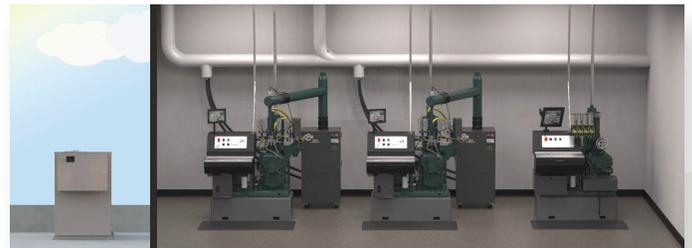
**Annual engine usage, based off of 3,000L used per day for 260 days, per engine.*

Closed-Loop System



Flexibility

The Outdoor Chiller Units can be secured on the roof or anywhere outside.



Configurations

Available as a CFR Genuine Part or with new units:

p/n G-840-10: Closed-Loop EACS unit

p/n G-840-8: 3 - Engine, Closed-Loop System Outdoor Chiller
(3 engine capacity, depending upon configuration)

p/n G-840-9: 5 - Engine, Closed-Loop System Outdoor Chiller
(5 engine capacity, depending upon configuration)

p/n G-840-12: 3 - Engine High Ambient Temperature, Closed-Loop System Outdoor Chiller (3 engine capacity, depending upon configuration)

p/n G-840-13: 5 - Engine High Ambient Temperature, Closed-Loop System Outdoor Chiller (5 engine capacity, depending upon configuration)

p/n 121033: Hose Kit, Chiller to EACS unit

p/n 121041: Hose Kit, Chiller to Engine

EACS Unit Specifications

- **Power Supply** = 220V, 1 Ph, 50/60 Hz
- **Condensate Drain** = 1/4 inch NPT
- **Approximate H x W x D:**
152 cm (60 in) x 64 cm (25 in) x 53 cm (21 in)
- **Carburetor Coolant Temp.** = 33-80°F (0.6-26.7°C)

Design operating range of 60-100°F (16-38°C) and 10-60% relative humidity, is needed for reliable rating per ASTM methods. Environments outside these ranges will need modifications to condition the air to meet the temperature and / or relative humidity ranges listed.

Chiller Specifications

- **3 - Engine Chiller Weight** = Approx. 1,100 lb (Approx. 500 kg)
- **3 - Engine Chiller Approximate H x W x D:**
137.2 cm (54 in) x 162.6 cm (64 in) x 96.5 cm (38 in)
- **3 - High Ambient Engine Chiller Weight** = Approx. 1,400 lb (Approx. 640 kg)
- **3 - High Ambient Engine Chiller Approximate H x W x D:**
137.2 cm (54 in) x 218.4 cm (86 in) x 96.5 cm (38 in)
- **5 - Engine Chiller Weight** = Approx. 1,250 lb (Approx. 570 kg)
- **5 - Engine Chiller Approximate H x W x D:**
137.2 cm (54 in) x 162.6 cm (64 in) x 96.5 cm (38 in)
- **5 - High Ambient Engine Chiller Weight** = Approx. 1,500 lb (Approx. 680 kg)
- **5 - High Ambient Engine Chiller Approximate H x W x D:**
137.2 cm (54 in) x 162.6 cm (64 in) x 96.5 cm (38 in)

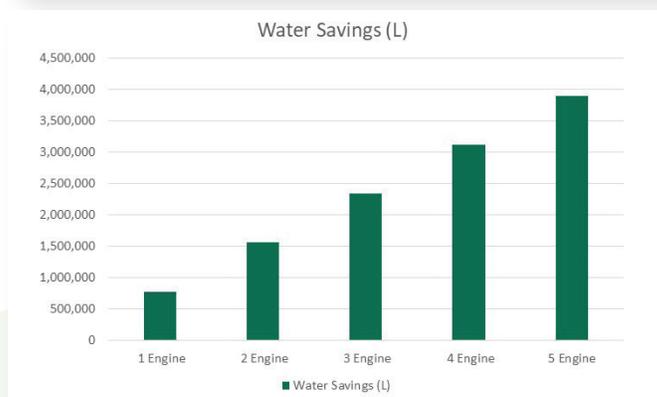
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Form C421, Revision B

| CFR Engine Air Control System | | | System OK |
|-------------------------------|------------------------|---------------|------------------------|
| System | Variable | Value | Status |
| ON | Incoming Fluid | 26.5°F | |
| | Intake Air Temperature | 80.1°F | Ready |
| | Intake Air Grains | 30g/lb | Ready |
| System Status | Carburetor Cooling | Configuration | External Heat Exchange |

| | | | |
|----------------------------|---|-----------------------------------|----------------------------|
| Engine Air System | Intake Air Temperature 80.0°F | Intake Air Setpoint 80.0°F | Moisture Content 30g/lb |
| Heating System Information | Heating Duty Cycle 35.0% | CFR | Return to Home Screen |
| Dehumidification Coil | Cold Coil Temperature 33.2°F | | |
| External Heat Exchanger | Heat Exchanger Temperature 42.7°F | Heat Exchanger Setpoint 60.0°F | |
| Incoming Fluid | Incoming Fluid Temperature (Carb Cooling Fluid Temperature) 27.7°F | | Supply OK |



*Annual engine usage, based off of 3,000L used per day for 260 days, per engine.

Smart PLC Control

- Leverages XCP® TECHNOLOGY
- Built-in system diagnostics
- Touch screen digital panel
- Data collection for XCP report

