



Gusmer
Enterprises, Inc.®

CIP

Denwel Series #5



Agenda

- Gusmer & Denwel Overview
- CIP Overview
- General Tips
- System Options
- Q & A – Type questions in the Q/A box



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City and State

Minneapolis, MN

Industry

Brewing, WineMaking

GO

Tom Mondor

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Brewing

Distilling

WineMaking

Juice Processing



Founded in 1918

Management and Ownership currently in 3rd generation

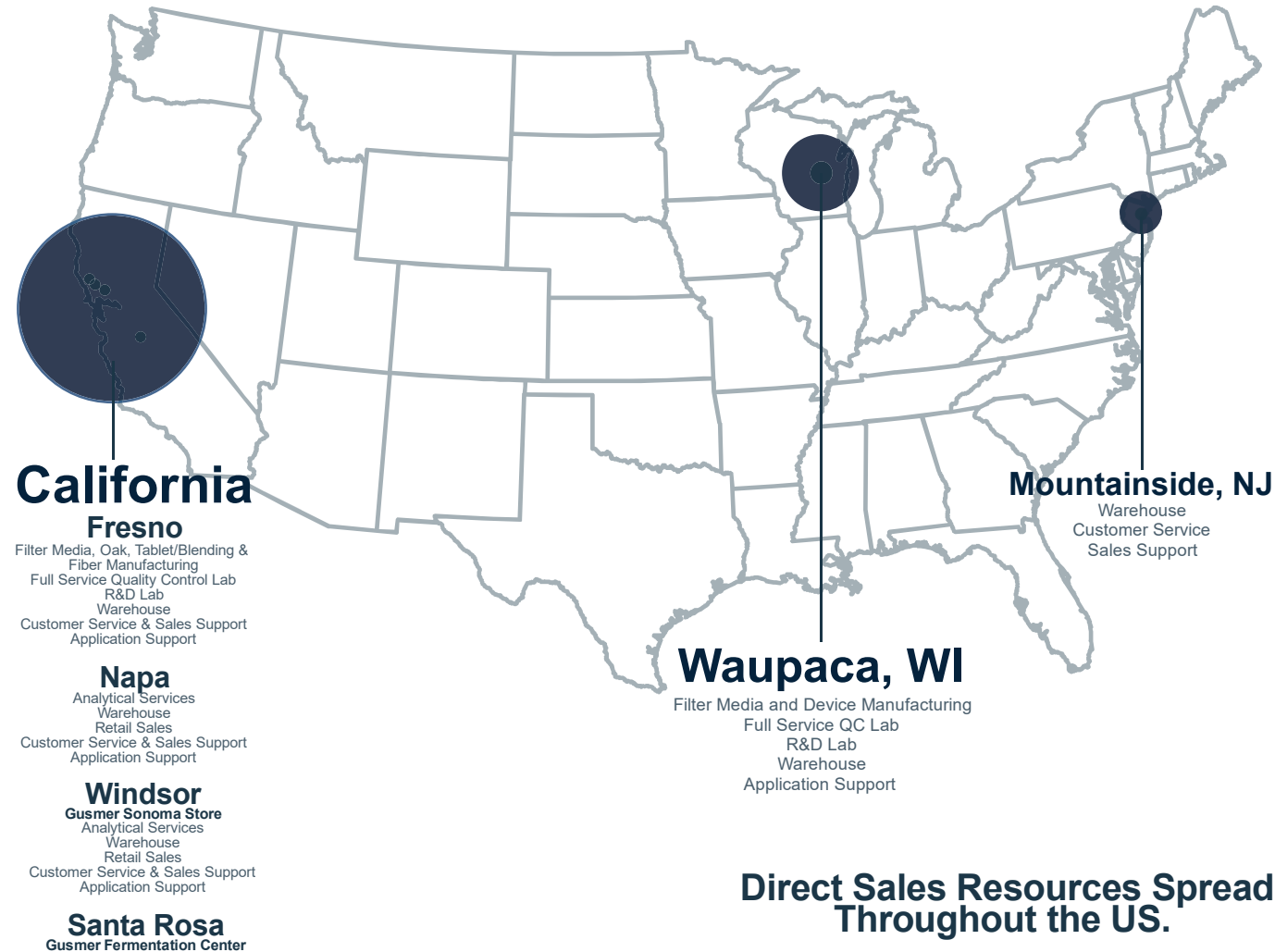
FERMENTATION & FILTRATION PRODUCTS AND SERVICES for FOOD, BEVERAGE & BIOTECH/PHARMACEUTICAL APPLICATIONS

Manufactured and Resale
Products

15 Direct Technical Sales
Representatives

4 Product Managers &
3 Application Specialists

16 Research &
Development Scientists





DENWEL



Overview:

Founded in 1997, DENWEL is a privately owned, independent company with headquarters in Prague and manufacturing facilities in Havlickuv Brod, Czech Republic. The owners and founders are still involved in the day-to-day operations of the company and oversee sales development and technical development/engineering, respectively. Although the core focus of the company remains in the brewing industry, DENWEL has been a respected global supplier to the beverage, pharmaceutical, chemical and energy industries for over two decades.

Although the company's capabilities are vast and include the ability to custom engineer many types of equipment, DENWEL specializes in the following types of standardized, skid mounted equipment:

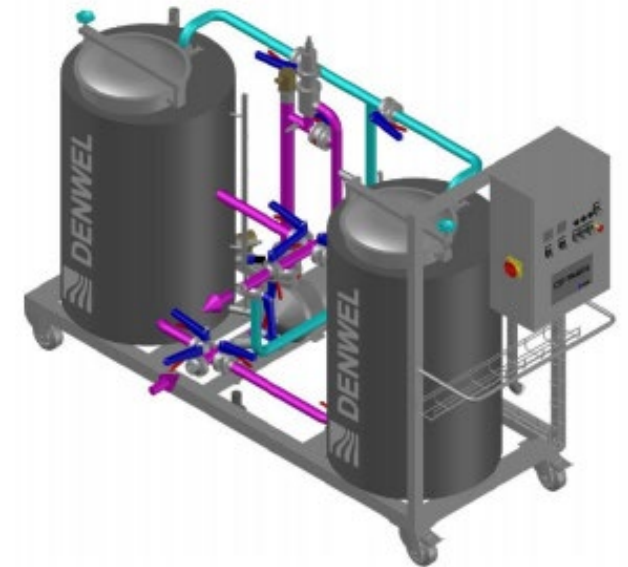
- Inline gas injection
- Water Deaeration
- Blending and additive dosing equipment
- Flash Pasteurization
- CIP skids and systems



CIP Overview



- **CIP** (Clean-In-Place) is the use of an automated cleaning system to perform closed-loop cleaning functions on transfer lines/hoses, process tanks, bottle/can/keg fillers, and other processing equipment.
- A proper CIP system will at a minimum consist of a supply pump, a control panel or PLC system and multiple tanks for cleaning/sterilizing agents. It can be configured to utilize:
 - Caustic solutions
 - Acid
 - Rinse Water
 - Hot Water (for Sterilization)
 - Sanitizers
- CIP systems recover cleaning agents for continual reuse – greatly reducing the amount of caustic, acid, or sanitizer you purchase or put to sewer.



CIP Overview - TACT



Utilizing CIP will automatically manage the four primary factors to assure a sanitary cleaning:

- **T**ime - Contact time with the cleaning agents to properly remove soil and kill microbiological contaminants.
- **A**ction – Mechanical force required to break up and remove material adhering to the process line or vessel.
 - Impingement
 - Velocity Cleaning
- **T**emperature – Proper temperatures of the cleaning solutions required to eliminate microbiological contaminants as well as prevent thermal shock to the process equipment.
- **C**hemical -- Selection of the proper cleaning/sterilization chemicals for the cleaning application(s).





The Benefits of CIP

- Product Quality and Integrity Assurance
- Material Cost Savings
- Energy Savings
- Water Savings
- Safety
- Environmental Considerations



CIP Application Tips



- Important Rules of Thumb for CIP:
 - Caustic should be 2.5 to 3.5 percent conductivity
 - Minimum velocity for cleaning lines is 5 feet/sec
 - Minimum CIP pressure will be determined by the cleaning nozzle manufacturer.
- Select good tank cleaning nozzles that achieve proper impingement cleaning - not all do.
 - Rotary spray balls or jet nozzles are preferred over static ones
 - Install a screen or trap filter on the CIP return to remove solid material to preventing the tank cleaning nozzles from becoming plugged.
- Utilize a Conductivity Probe for the CIP return (Hamilton ones are available from Gusmer):
 - Dilution prevention of the cleaning agent
 - Water savings
- Prevent tank implosions:
 - Ensure your process tanks have proper vents
 - Never follow a hot caustic with a cold water rinse
 - Never CIP a tank without removing CO2





System Options

- CIP Mobile Unit
- CIP Compact Unit
- CIP Plant
(fully custom application)





CIP Mobile Unit DCPXXXM

- DCPXXXM range of sizes: 1"/DN 25, 1.5"/DN 40 & 2"/DN50
- Each size in the range sized to clean vessels up to a certain diameter and piping runs up to a certain length
- Sized to suit small-mid sized breweries
- Manual control for simple/easy operation
- 2 tank system: heated caustic tank, ambient acid/rinse water tank
- Tank size varies with system size
- Available optional features include: inline heater, inline strainer, insulation of heated caustic tank, valve for CIP under pressure
- Convenient mobile cart can be wheeled anywhere in the brewery
- Dimensions from: h=1.6m x w=2m x d=0.7m





CIP Compact Unit DCPXXXC

- DCPXXXC range of sizes: 1.5"/DN 40, 2"/DN50, 2.5"/DN 65 & 3"/DN 80
- Each size in the range is sized to clean vessels up to a certain diameter and piping runs up to a certain length
- Automatic control for optimal operation
- 3 tank system: insulated caustic tank, ambient acid tank, recovery water tank
- Tank size varies with system size
- Optional inline concentrate dosing
- Compact skid mounted system
- Dimensions* from: h=1.8m x w=4.5m x d=1.5m

*custom dimensions may be possible





CIP Plant DCPXXXP

- DCPXXXP- fully customizable CIP plant
- Any size/number of tanks/tank configuration is possible
- Automatic control for optimal operation
- Picks up where the simpler Compact system leaves off...





Questions?



www.GusmerBeer.com/denwel-webinars

Past Webinars

- **Maximizing Fermentation through efficient wort Aeration/Oxygenation**
- **Improving efficiency and mastering your spec with Denwel's carbonation and nitrogenation systems**
- **Inline Carbo-Blending & Dosing Systems: Enhancing Hard Seltzer & High Gravity Beers**
- **Water Deaeration – Why You Needed This Yesterday**

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Thank You!

