



# KRONES Process Group North America

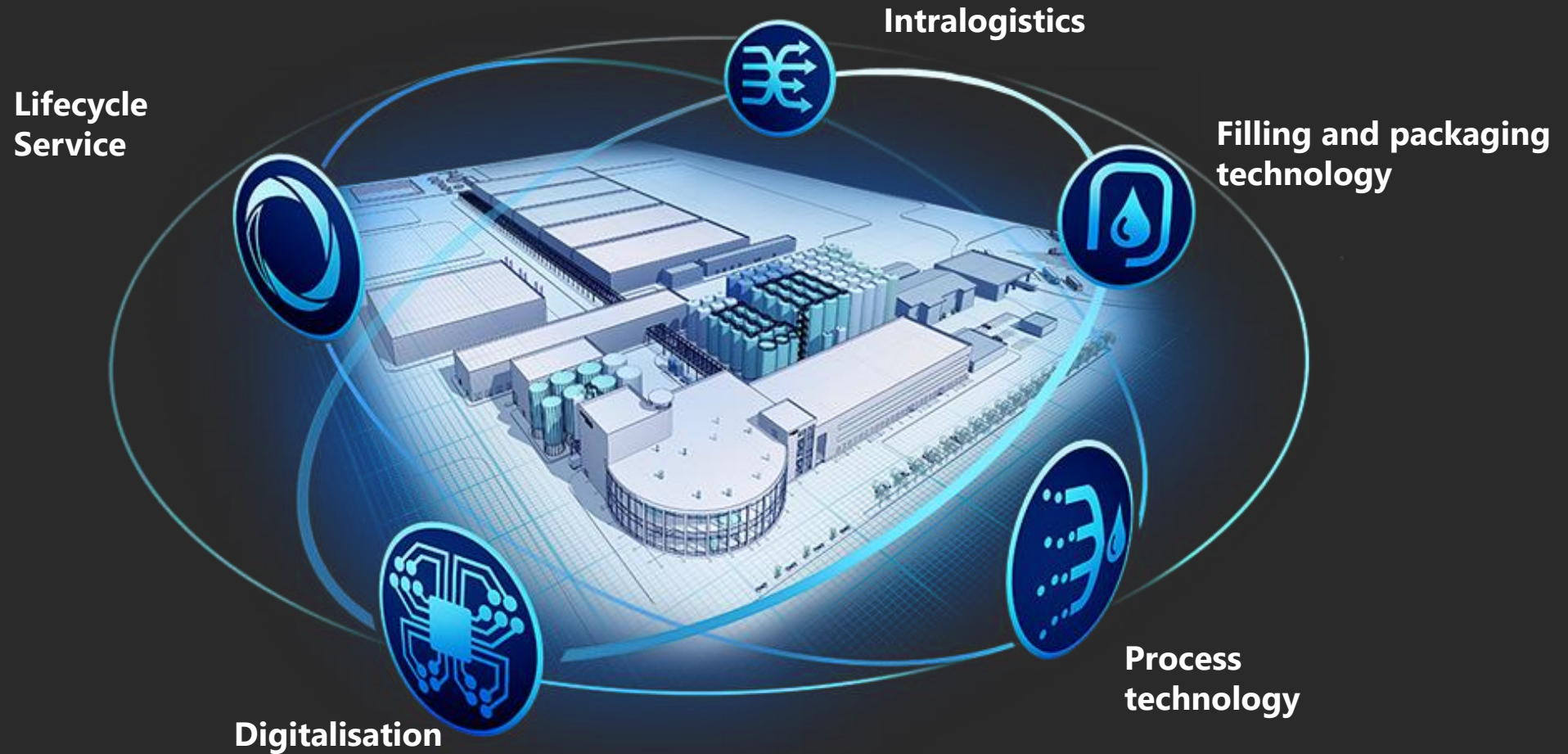
We know Process.

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2023



# Global Portfolio – House of KRONES



## What Sets Us Apart

A global network covering every region of the world.

- More than 5,300 employees in the global service team
- Prompt spare-parts supply
- Lifecycle Service for an entire line
- Digitalized support solutions and connectivity
- Immediate 24/7 assistance



# Krones Global Processing

The KRONES Group knows process technology. We understand each product has its own unique needs, and we offer tailored solutions from a single source no matter your location.

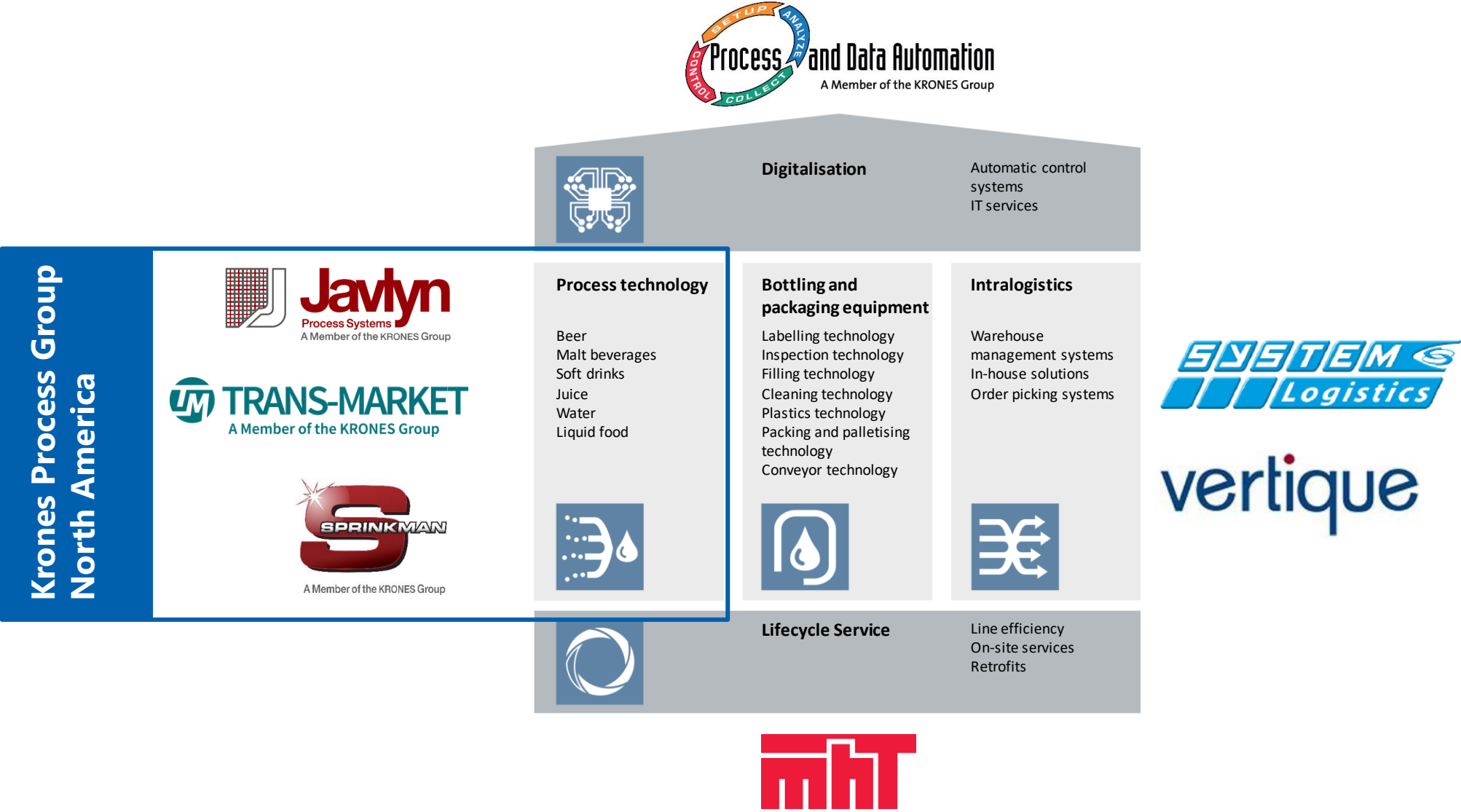


## At a glance:

- Comprehensive support and individual engineering from our experts in a wide variety of product lines
- Process solutions and lifecycle service
- Engineering Hubs: 10
- Employees: > 1,000



# House of KRONES – Krones Process Group North America



# Krones Process Group North America – We Know Process.

The Krones Process Group North America provides sanitary process system expertise backed by the global depth and experience of KRONES. We serve the *Beverage, Food, Dairy, Home - Personal Care, and Pharmaceutical industries.*

## Process Solutions

- Process Engineering | Engineering Consulting | Project Management

## Automation

- Software | Hardware | Integration

## Installation

- Process Installation | Shop Fabrication

## Fabrication

- Tanks | Brewhouses | Skidded Systems

## Lifecycle Services

- Distribution | Maintenance | Field Service | Support



## By The Numbers

168	Combined years in business
85%	Repeat business, built on Customer Satisfaction
100+	Staff including Engineers, Technicians, Sales and Support
8	Office locations throughout NA



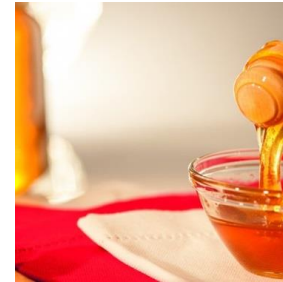
**COAST TO COAST COVERAGE**



# Industries Served



Non-alcoholic  
beverages



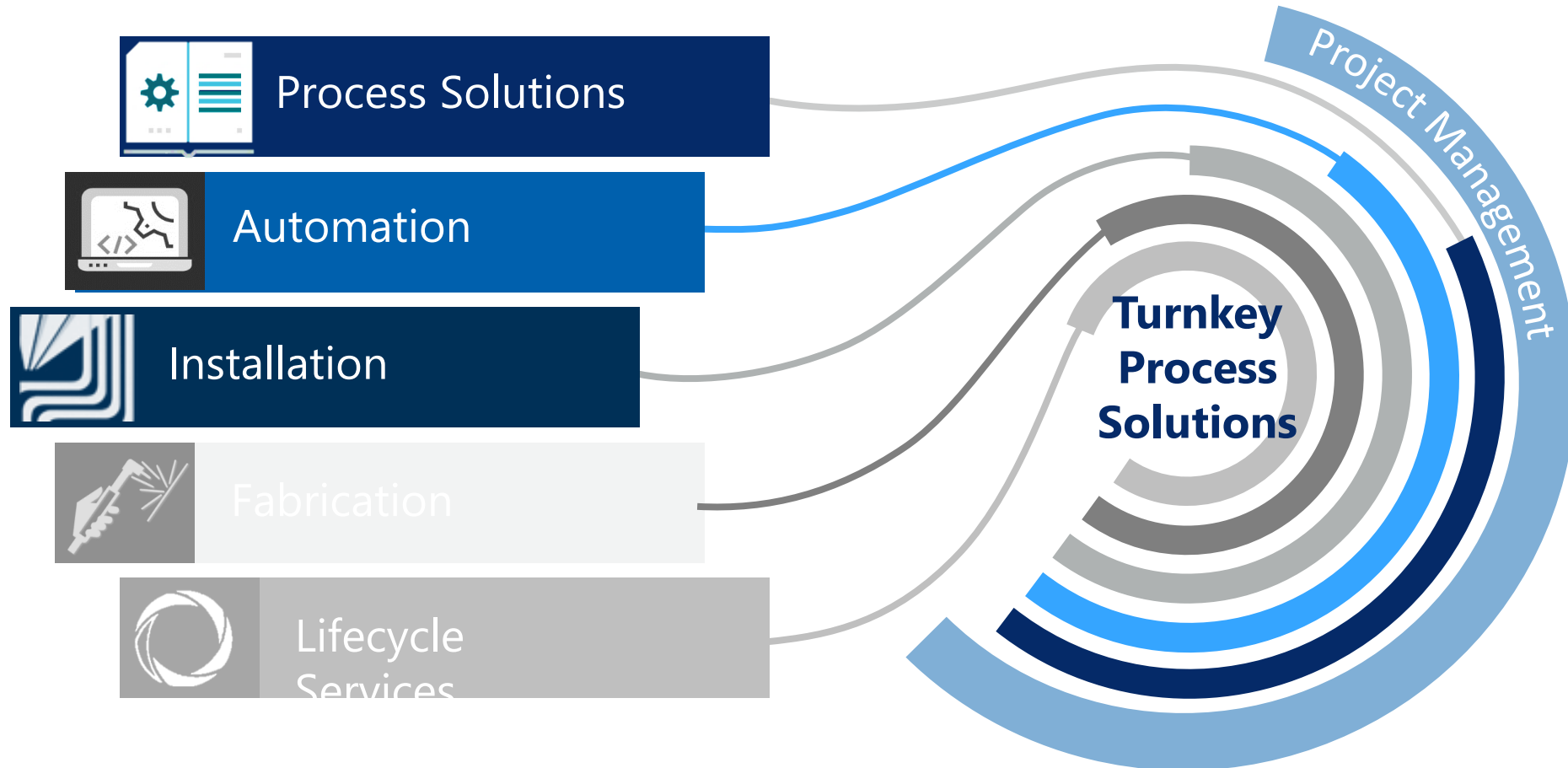
Alcoholic  
beverages



Food, Dairy, HPC,  
Pharmaceuticals



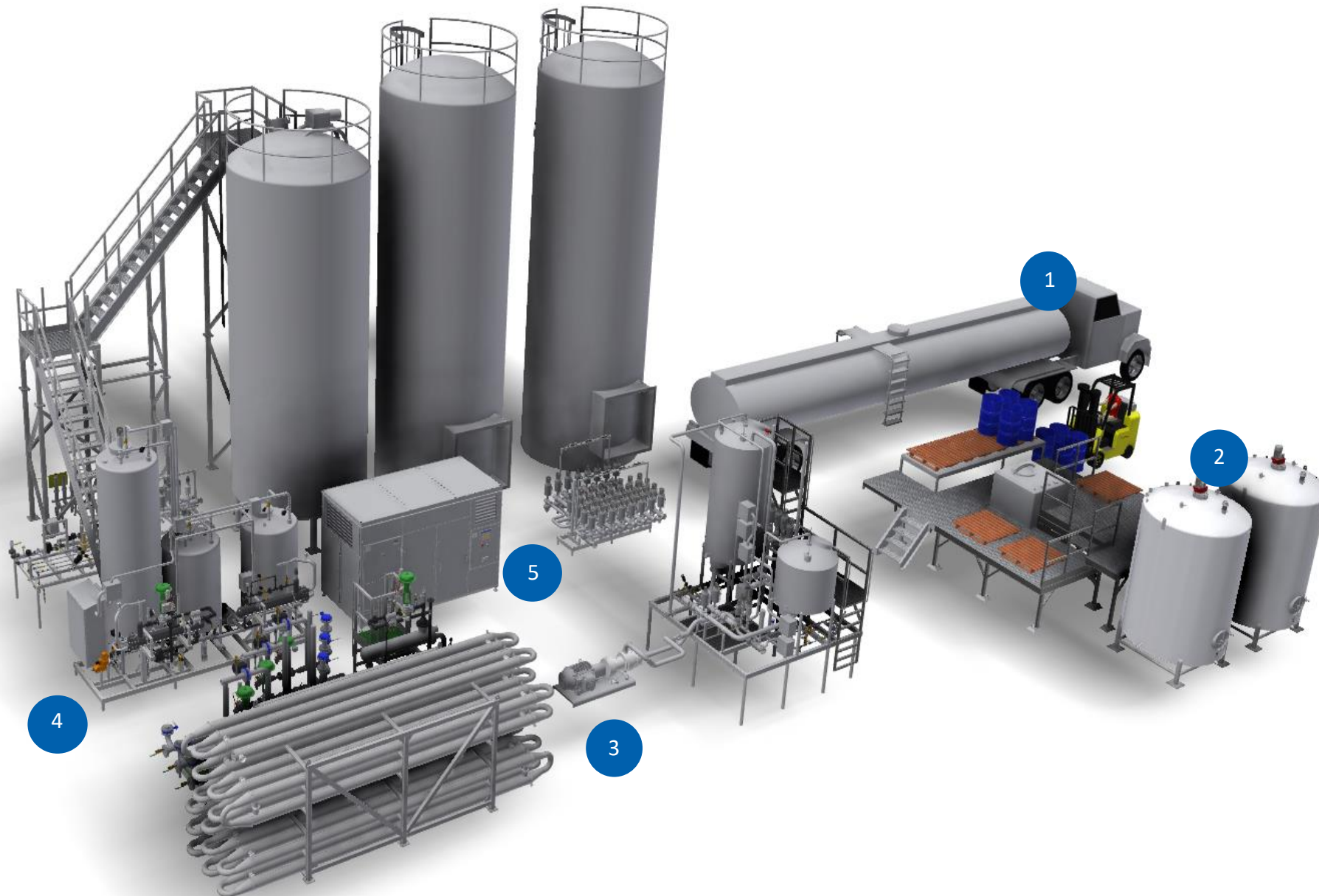
# We Know Process.



**Individualized Services | Combined Solutions**



# Process Solutions



## 1 Ingredient Handling

- Receiving bays
- Drum and tote unloading
- Dry ingredients
- Hand adds

## 2 Blending

- Batch blending
- In-line blending

## 3 Pasteurization

- Extended Shelf Life (ESL)
- High Temperature Short Time Flash pasteurization (HTST)
- Aseptic processing
- Hot Fill
- Ultra-High Temperature processing (UHT)

## 4 Cleaning

- Clean In Place (CIP)
- Sterilization In Place (SIP)

## 5 Conservation Technology

- Product recovery
- Water conservation

# Solutions to Fit Customers' Needs

## Design-Build

- Partnership with customers from the initial stages of design through implementation
- Single point of contact
- Saves time by overlapping the design phase with the installation phase
- We maintain our resources in-house, providing tighter control on quality, cost and time to market

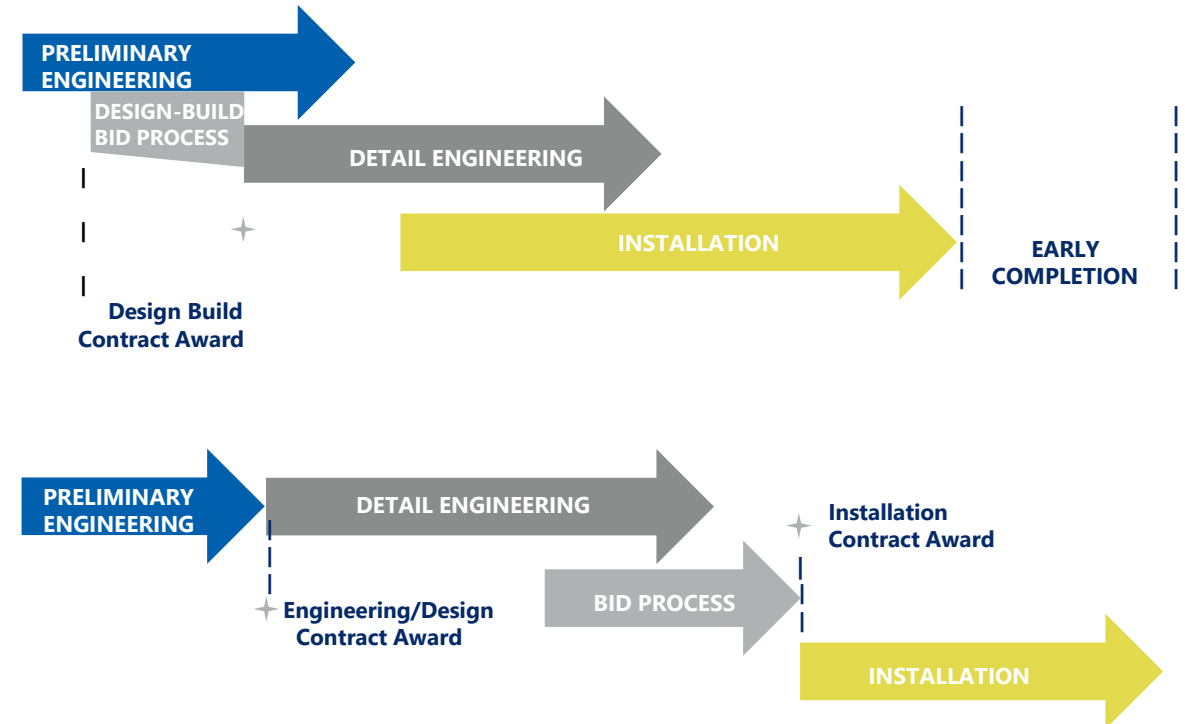
## Design-Bid-Build

- Preliminary and detailed engineering packages delivering bid specifications
- Fixed price proposals based on detailed RFQ
- Complete turnkey process systems or individualized services

## Time & Material

- Krones Process Group offers all our resources on a Time & Material basis
- Ideal for projects with dynamic requirements or undefined scopes
- Flexibility to modify the scope or workloads

**We know all projects are unique, so we deliver solutions to fit our customer's needs.**



# Process Solutions – Process Engineering and Consulting

## Process Engineering:

### Process Design

- System design
- Fluid dynamic calculations
- Thermodynamic calculations
- Mass balances
- Utility load calculations
- Modular system design
- Equipment sizing and specification
- Procurement

### Drawings

- Block Diagrams
- Process Flow Diagrams (PFD)
- Piping & Instrumentation Diagrams (P&IDs)
- Layout drawings
- AutoCAD Inventor 3D modeling
- Virtual Reality 3D

### Documentation

- System documentation
- Training
- Maintenance guides

## Engineering Consulting:

- Preliminary engineering
- RFQ development
- Detailed engineering
- Engineering design packages
- Cost estimates
- Budgeting and ROI calculations
- Process troubleshooting
- System optimization



**Our Engineering experience is the foundation of our success.**

We are proud to be active members in the organizations that lead our industries.



# Process Solutions – Project Management

**Certified Project Management Professionals (PMP), leading projects from initiation through closing.**

## **Initiation**

- Scope definition
- Stakeholder engagement

## **Planning**

- Project execution planning
- Scheduling
- Risk analysis

## **Executing**

- Site management
- Plant coordination
- Sub contractor management
- Commissioning
- Validation
- Support

## **Monitoring and Controlling**

- Communication
- Project dashboard
- Quality control
- Change management
- Cost controls

## **Closing**

- Quality checklist
- Documentation
- Training

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**National Society of  
Professional Engineers®**





## Process Solutions - Drawings

## Block Diagrams

- High level diagrams showing the process functions and concepts
- Utilized as a starting point for preliminary design options

## Process Flow Diagrams (PFD)

- Easy to read representation of the general flow and processes
- Identifies major equipment and process functionality

## Piping & Instrumentation Diagrams (P&IDs)

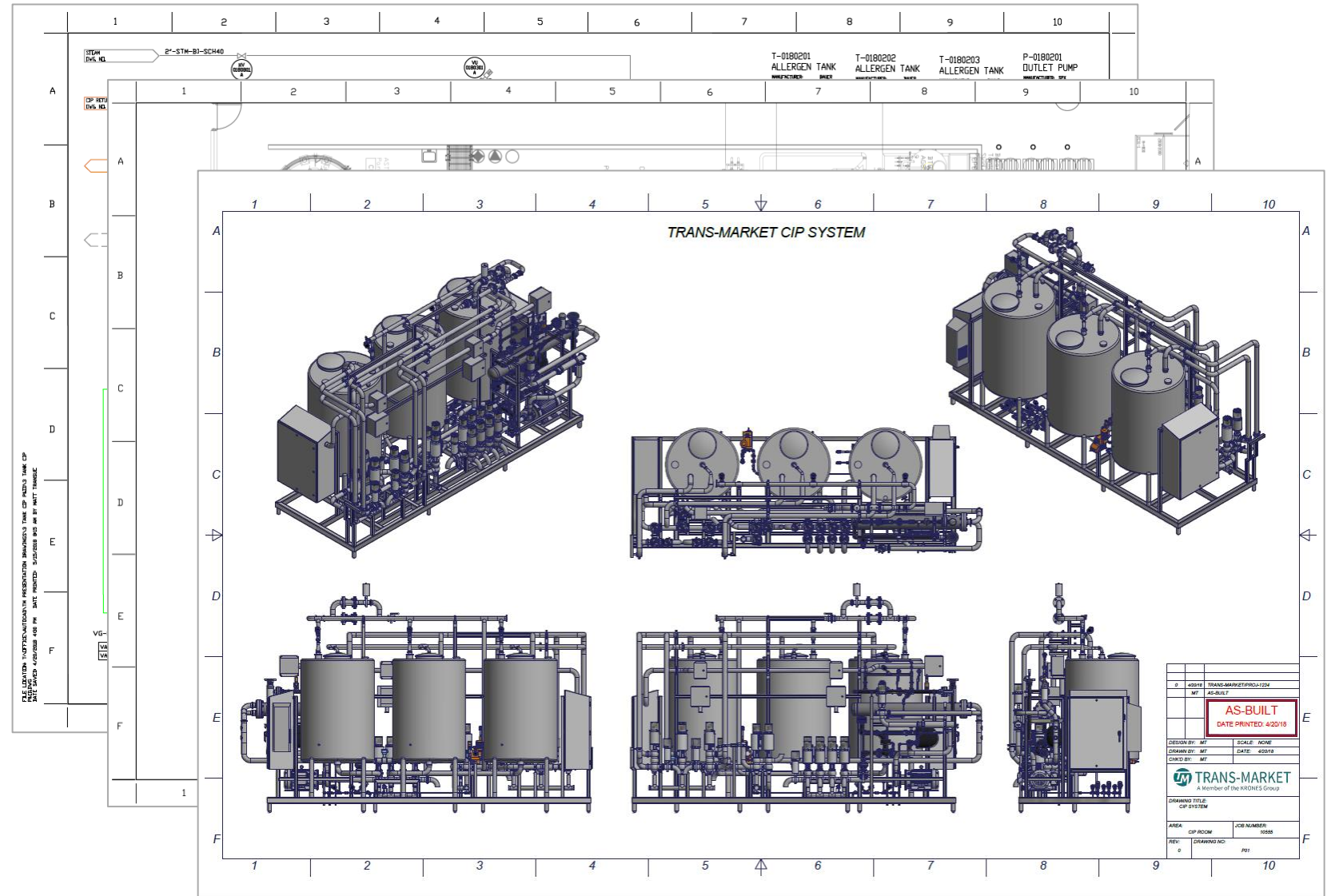
- Detailed P&ID's following ISA standards
- Preliminary, For Construction and As Built revisions utilized during project implementation

## Layout Drawings

- Scaled plan view layout drawing of process equipment
- Integrated into facility architectural plans

## AutoCAD Inventor 3-D modeling

- Detailed 3-D drawings for design reviews and approvals
- Designs generate shop drawings used for cut sheets, material take-offs and fabrication



# Process Solutions - Drawings

## Virtual Reality 3D

- Immersive virtual reality experience
- Visualize the solution, see it before it's built
- Improved feedback from all stakeholders
- Approve designs with confidence
- Avoid changes and construction delays
- No technical expertise required
- Provided in multiple formats
  - Video walk through tour
  - Browser-based room viewer
  - VR with Oculus Rift



# Process Solutions - Modular Systems

## Modular designs provide:

- Shop assembly
- Quality control
- Expedited schedule
- Reduced installation labor travel costs
- Reduced downtimes and installation time
- Minimize impact to plant operations
- Factory Acceptance Testing (FAT)



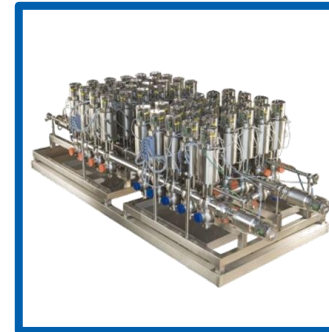
HTST Pasteurizer  
with glycol and hot water  
utility support skid



Balance Tanks for  
Hot Fill Process System



Holding loop and flow plate  
for variable speed  
pasteurizer



Mix proof valve group  
with support structure  
and drain pan



Outlet skid assembly for  
4-Tank 2-Circuit CIP Unit



Utility sanitizer skid



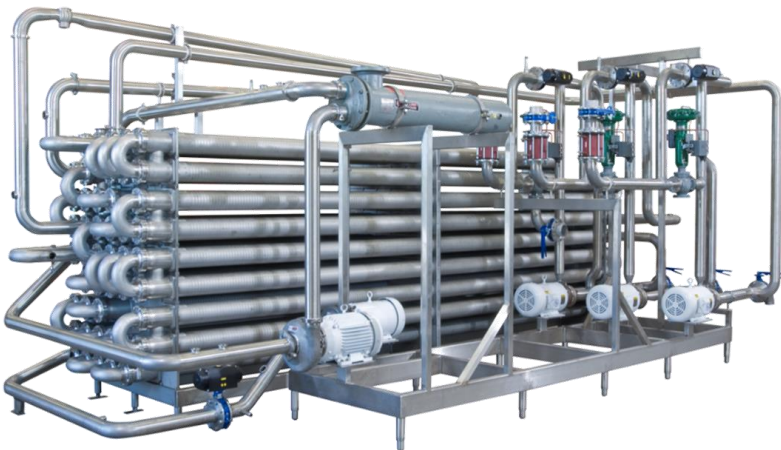
Chemical dosing skid



Heat exchanger skid  
for 2-Circuit CIP Unit



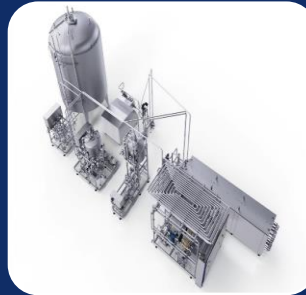
Hot Water Set  
for Pasteurizer





# Process Solutions – Additional Offerings & Capabilities

## Krones Process Technology



### Components

Evoguard valves  
Evoguard pumps  
HST homogenizers  
Tubular heat exchanger

### Tanks

Manufactured  
by Krones or by  
certified  
specialist  
companies

### Units

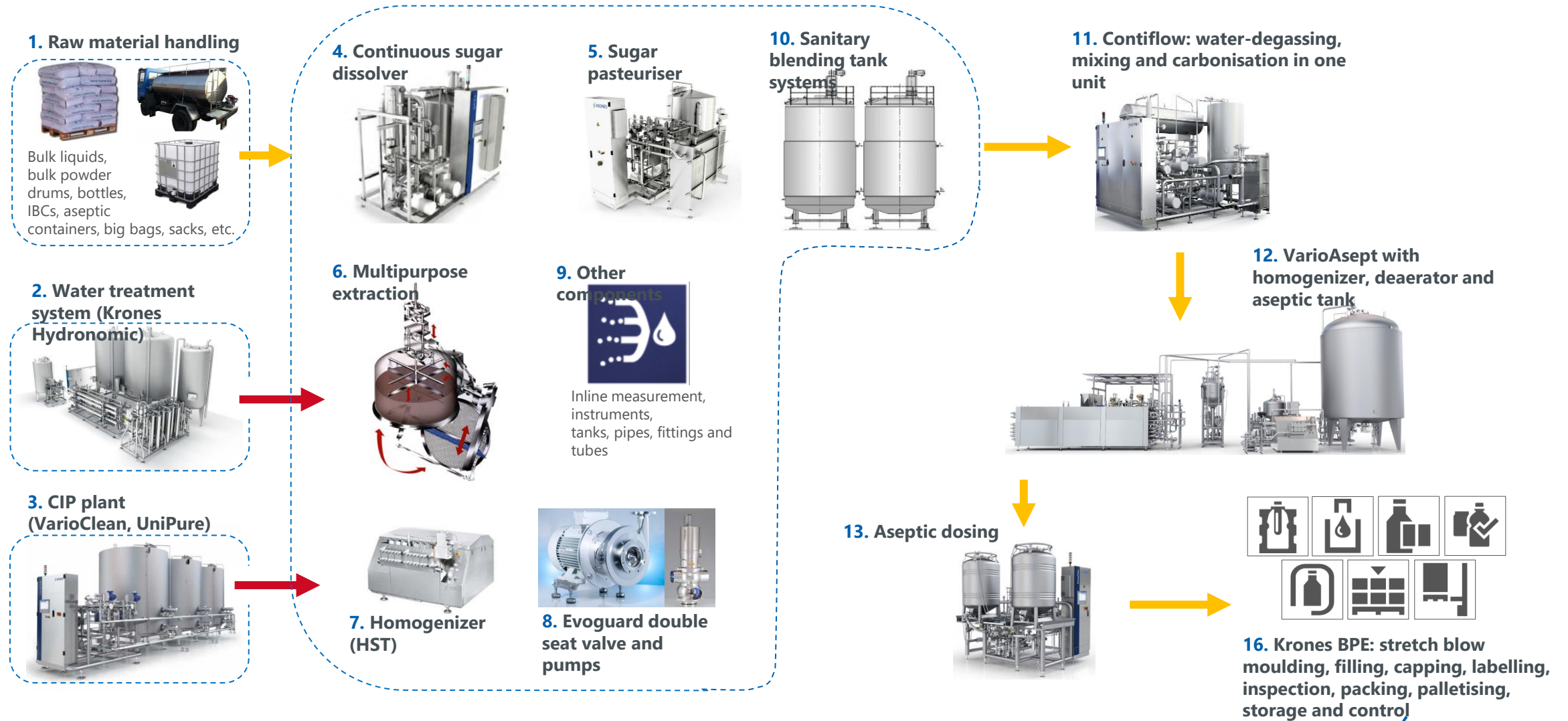
Thermal product  
treatment  
Water treatment  
system  
Mixer  
CIP systems

### Systems engineering

Sugar dissolvers  
Mixing systems  
Raw material handling  
Powder dissolvers  
Concentrate dissolvers  
Retrofits



# What we can provide



# Conservation Technology

## Product Recovery

- Our Conservation Technology utilizes a Fluivac Air Module to deliver a high volume of air at low pressure to effectively **recover up to 99% of product from pipelines.**

## Hybrid CIP

- The same air supply, combined with a low flow of water injected into the air stream, provides impingement cleaning to effectively rinse pipelines. This rinse can replace the CIP pre rinse and post rinse steps to achieve **up 85% reduction in CIP water usage.**

## Benefits:

- Recovery of up to 99% of product from pipelines
- Purge thru pumps, valves, heat exchangers & instruments
- Increase product yield and plant efficiency
  - Reduces waste to drain
  - Pre-production line evacuation
  - Reduces spills at divert panels
  - Reduce COD (Chemical Oxygen Demand)
  - Reduce water usage
  - Drying pipelines after rinses
  - Eliminating interface losses



# Automation



## Software

- **Programming**
  - PLC Programming
  - HMI Programming
  - Recipe-Based Blending Systems
- **Data Analysis**
  - Data Collection and Trending
  - Relational Database Systems
  - Reporting
  - Predictive Maintenance
- **IT/Networking**
  - Enterprise and Industrial Networks
  - Server Virtualization
- **Technology Upgrades**
  - Migrate and convert obsolete automation platforms
- **Custom Software Development**
  - Recipe, Batching, Lot Tracing, Reporting, RFID



## Hardware

- **Electrical Design**
  - Network Architectures
  - Power Distribution
  - Control Panels
  - Motor Controls
  - Instrumentation Specification
- **Control Panels**
  - UL508A Control Panels
- **Field Electric**
  - Wiring terminations
  - Instrumentation configuration
  - Troubleshooting



## Integration

- **Documentation**
  - Description of Operations
  - Functional Design Specifications
  - Operator Manuals
- **Validation**
  - Factory Acceptance Testing (FAT)
  - Site Acceptance Testing (SAT)
- **Commissioning**
  - I/O Check
  - Startup
  - Qualification
- **Training**
  - Classroom simulator-based training
  - Hands-on training for Operations and Maintenance
- **Support**
  - 24/7 Support

# Installation

- Complete plant installation & integration
- Extensive large-scale process piping installation experience

All of our installations meet or exceed the highest regulations and sanitary standards.



## Process Installation

- Process Piping
  - Orbital welding
  - Sanitary piping
  - Utility piping
- Structural Installation
  - Piping supports and hangers
  - Platforms, ladders and railing
  - Equipment delivery, rigging and setting
- Installation Management
  - Dedicated Installation Managers
  - Coordinating plant communications, installation activities, subcontractors, and schedule



## Shop Fabrication

- Shop Fabrication
  - 30,000 sq ft. of indoor facilities
  - High clearance ceilings with overhead cranes
  - Dock-high loading
  - Controlled environment allows for high quality and expedited project schedules



## Quality & Documentation

- Quality
  - Qualified welders
  - Material certifications
- Documentation
  - Sanitary piping and fitting documentation
  - Borescope inspections
  - Validation support



# Fabrication -- Processing Tanks

## Tank Manufacturing Capabilities

### Heat Transfer Surfaces

- Multiple zone configurations
- Welded dimple heat transfer surfaces
- Steam rating: 15 PSI@250°F
- Cool rating: 50 PSI@100°F

### Agitation

- All-welded CIP-able design
- Bottom and/or side sweeps
- Scraped surface with removable nylon blades
- Blending Turbines
- Nylon split-seal design

### Standard Options

- Custom designs available, including 3A, PMO and ASME
- Load cell plates
- Safety ladders and platforms
- Insulated
- Thermowell (recording or indication wells)
- Gasketed/non-gasketed manways



Balance Tank



Blend Tank and Platform



Mix Tank



Holding Tank



Cone Bottom Jacket Process Tank



COP Tank

# Fabrication – Processing Tanks

## Tank Manufacturing Capabilities

### Agitation

- All-welded CIP-able design
- Bottom and/or side sweeps
- Scraped surface with removable nylon blades
- Blending Turbines
- Nylon split-seal design
- Bottom-mounted agitators for high shear

### Gear Box & Motors

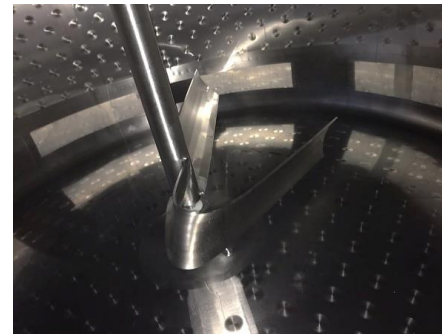
- Stainless steel for wash-down duty
- Painted if preferred
- Nord or vendor specified brand



Side Scraper



Mix Tank



Impeller



High Speed Blend Agitator



Side/Bottom Scraper



Helical Mixer

# Fabrication – Platforms and Rails

## Platform & Rail Capabilities

### Stainless Steel Accessories for our Process Systems

- Custom designs available
- Safety ladders
- Stainless steel platforms
- Stairs and handrails
- Mezzanines and catwalks
- Designed to meet your specific requirements and OSHA specifications



**Dairy Platform**



**CIP Platform**



**Stairs & Rails**



**Blend Tank & Platform**



**Brewhouse Platform**



**Brewhouse Platform**

# Brewing Systems



## SPRINKMAN

Ideal for small to mid-size, growing breweries. For the entrepreneurial brewer, Sprinkman brewhouses allow you the flexibility to brew a wide range of innovative beer styles. The standard and customized layouts are available in 10 to 60 bbl batch sizes, comprised of two to six vessels. Sprinkman brewhouses are designed and built-in the USA for high efficiencies, productivity and durability. This translates to higher volumes of quality beer being produced, adding to your bottom line.

- Layout can be customized to maximize floor space



## STEINECKER

Ideal for large batch, production breweries. The gold standard of Krones offerings, Steinecker brewhouses are engineered, designed and manufactured in Germany to brew some of the finest beers possible.

Designed for large production breweries, these completely customizable, innovative systems can produce 60,000 bbl or more annually, with a focus on consistent quality and efficiency.

- Modular design and layout
- Options include the most energy saving technology available



## KPG Brewhouse Lines

### *Solutions for the North American Brewer*

Brewers now have affordable options for every stage of growth in one trusted, quality brewing partner. Whether you're a small operation just starting out or a large, well established brewing operation, we have a brewhouse designed to meet your needs.

Don't need an entire brewhouse? We customize solutions and vessels to supplement your current Brewhouse:

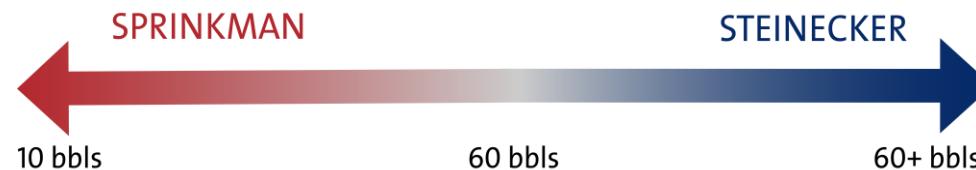
- Yeast Handling
- Dry Hop Skids
- Cellar Tanks
- CIP Solutions



# Brewing Systems



	SPRINKMAN	STEINECKER
Vessels	2+	3+
Batch Sizes (bbl)	10 to 60	60+
Perfect System for...	Small to large batch, innovation, likely production for retail	Large batch, production brewhouse
Annual Output (bbl)	Up to 100,000	+100,000
Platform/Vessel Configuration	Standard Custom	Custom
Level of Automation	Minimal (temp control) to Full	Full
Heating	Steam	Steam or Hot Water
CIP	Manual to Fully Automated	Automated
Energy Saving Technology	None to Minimal (Water)	Full



# Lifecycle Services – Distribution

As a stocking distributor for many top brands, we have relationships to source a complete inventory of dependable equipment and components.

Waukesha Cherry-Burrell® APV®



AQUIONICS  
UV Delivered

Scott Turbon Mixer  
A Hayward Gordon Company

Saunders®  
the science inside

Rockwell Automation  
Allen-Bradley



KRONES Group

EVOGUARD

HST  
KRONES GRUPPE



## Pumps

- Positive Displacement
- Centrifugal
- Diaphragm
- Twin Screw

## Valves

- Mixproof
- Single Seat
- Diaphragm
- Manual

## Heat Exchangers

- Tubular
- Plate
- Scrap Surface
- Brazed Plate

## Homogenizers

- High Pressure
- Aseptic
- Laboratory
- Mono-Block

## Drum/Tote Handling

- Drum Dumpers / Ice Crushers
- Tote Dumpers
- Drum Thawing
- Drum Filling

## Mixers

- Tank
- High Shear
- In-Line
- Colloid Mills

## Controls

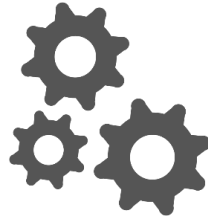
- Instrumentation
- Automation Hardware
- Controls Software
- Network Hardware

## Materials

- Hoses
- Fittings
- Tubing
- Utility

# Lifecycle Services – Maintenance, Field Service, and Support

- Certified service and repair center
  - Pumps
  - Valves
  - Homogenizers
  - Heat Exchangers
- Free pick up and delivery
- 1 Year Warranty



## Maintenance

- **Assessment**
  - Disassembly
  - Cleaning
  - Inspection
  - Assessment Report
  - Recommended Options
- **Maintenance**
- **Reassembly**
- **Testing**
  - Pumps
    - Hydrostatic Testing
    - Laser alignment
  - Homogenizers
    - Pressure Testing
  - Valves
    - Actuator Pneumatic Testing
    - Control Top Electrical Testing
    - Proximity Switch Adjustment
  - Heat Exchangers
    - Accusense Helium Leak Detection
- **Service Report**



## Field Service

- **Tank Inspections Exterior**
  - Shell
  - Outlets and nozzles
  - Ladders, legs and bracing
  - Manways
  - Motor Mounts
- **Tank Inspections Interior**
  - Shell
  - Agitator
  - Sprayballs
  - Overall cleanliness
- **Tank Repairs**
  - Leaking jackets
  - Hydrostatic blow-out of vacuum-damaged vessels
  - Vacuum-damaged silo tops (top job)
  - Fittings, manways and spraywalls
  - Agitators
  - Minor cracks and fractures
  - Minor tubing
  - Replace equipment if needed

## Tank Modifications

- ASME pressure vessels
- Add or modify agitation (vertical, horizontal)
- Add heat transfer surface to existing tanks
- Minor tubing
- Add or remove ferrules



## Support

- Documentation and literature
- Application consulting
- Troubleshooting
- Vendor support coordination
- Warranty management
- Preventative maintenance
- Training



# We Know Process.

## EXPERIENCE

With a depth of knowledge, **we provide process expertise developed from years of experience.** We maintain our resources in-house to offer consistent technical guidance from the people you know and trust.

## SAFETY

KPG follows an in-depth Safety Program and is **ISNetworld A+ Rated.** We are committed to protecting the health and safety of our team members and our customer's facilities.

## SUPPORT

When an issue arises, time is money, and we don't want you to lose any of it. Call our **dedicated 24/7 support line.** After an on-call engineer is contacted, you will be able to deal directly with them, until your problem is solved.

## QUALITY

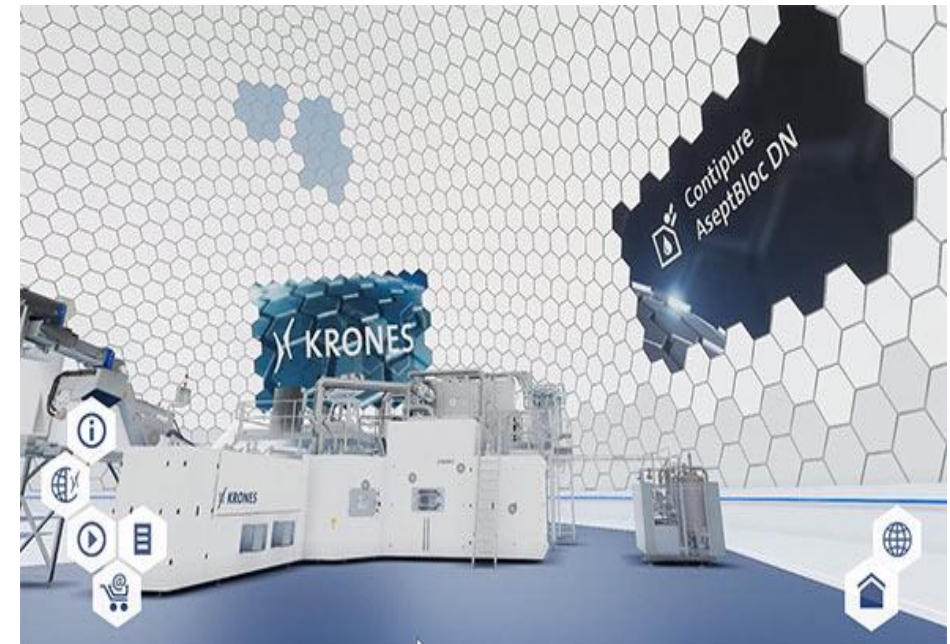
**Our Quality Assurance Program assures every aspect of a project meets specifications and your expectations.** We rigorously control our processes to deliver dependable solutions.

## CUSTOMER SERVICE

Our knowledgeable team members pride themselves on delivering outstanding customer service. We **focus on building relationships and providing you with exceptional service,** now and years down the road.

## WARRANTY

We stand behind our work and provide a **1-year warranty on workmanship.** All material warranties are limited to manufacturer's warranty and replacement will be facilitated by KPG.



**SOLUTIONS  
BEYOND  
TOMORROW**

