

# Food and Beverage Industry

High-Pressure Pumps and Systems



Product Quality, Reliability and Support You Expect

[www.catpumps.co.uk](http://www.catpumps.co.uk)



## Keep It Clean with Cat Pumps

Cat Pumps offers a complete line of positive displacement high-pressure pumps and systems that exceed industry expectations for reliability, availability and support. Our commitment to produce the highest quality, longest lasting products available is supported by maintaining a rigorous zero defect quality assurance program.

When high-pressure liquid is required, Cat Pumps is the supplier of choice for pumps, pumping systems and control accessories. Applications include central cleaning, washdown, evisceration tool cleaning, mist cooling, humidification, and numerous other industry uses.

### Benefits of High-Pressure Cleaning

Using high-pressure water significantly reduces cleaning time and water consumption compared to using low pressure (under 250 psi, 17 bar) water or other cleaning solutions.

A high-pressure stream of water directed toward a surface provides increased kinetic energy, yielding a higher impact force and agitation on the surface being cleaned. Steady flow from the nozzle then flushes the contamination, resulting in a completely cleaned surface. Benefits include:

- Less time and labour required
- Water savings through reduced flow requirements at higher pressures
- Less energy consumption
- Improved cleaning results



### Readily Accepted and Available

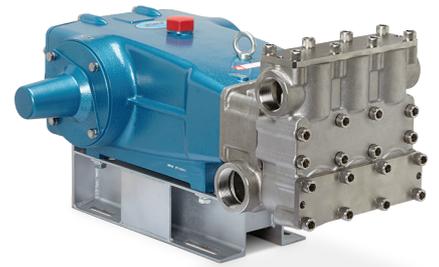
The dependability of Cat Pumps products is a major reason why our pumps and systems are in use for livestock mist cooling, pizza production and chicken processing. Cat Pumps products are hard at work in a remarkable variety of high-pressure applications in the food industry.

In addition to receiving the highest quality products available, Cat Pumps customers also benefit from 24-hour shipping, as well as the support from a worldwide sales and service channel. Customers trust Cat Pumps to keep their equipment operational and ready for production.

# Product Performance Range

A variety of pump options are available, including products that meet industry certifications and directives.

- Flow: 0.13 to 240 gpm (0.49 to 908 lpm)
- Pressure: 100 to 10,000 psi (6.9 to 689 bar)
- RPM: 100 to 3450
- Liquid Temperature: -10 ° to 200 °F (-23 ° to 93 °C) Cat Pumps offers special high-temperature seals in addition to stainless steel valves and seats for compatibility with many liquids and temperature ranges.
- Manifold Materials: Brass, Nickel Aluminum Bronze, 304 and 316 Stainless Steel, Duplex Stainless Steel.
- Sealing Materials: NBR, FPM, EPDM, PTFE, high-temp (200 °F, 93 °C), silicone-free and other materials available upon request
- Drives: Electric, Engine, Hydraulic, Pneumatic



Model 67102C  
100 gpm (378.5 lpm), 1,000 psi (69 bar)

## Custom Pumping Systems

Cat Pumps is the industry leader in providing custom-engineered pumping systems to meet a wide range of application needs, including central cleaning systems, facility cleaning, washdown, belt and tote cleaning, among others.

By selecting Cat Pumps for your next pumping system, you eliminate the expense of designing, procuring, fabricating, and testing. The Cat Pumps technical sales team assists with proper component selection as well as operation support.

With thousands of installations running around the world, Cat Pumps is the supplier of choice for custom pumping systems.

Options include:

- Variable Frequency Drives (VFD)
- PID Loop (varies speed of pump to maintain system pressure)
- Multiple Pump Systems
- Low-Pressure Seal Monitors
- Auto Shutdowns (Temperature and Low Inlet Pressure)
- Other control options to meet application needs



Custom-designed systems meet the requirements for central cleaning and other food & beverage applications.

# Food Industry Applications

## Cleaning and Sanitation

Cat Pumps provides the longest-lasting and most dependable pumps for high-pressure cleaning and sanitation applications.

- Conveyor Belt Cleaning
- Equipment Washdown
- Surface Cleaning
- High Pressure Rinse
- Screen Cleaning
- Portable Cleaning Equipment
- Keg Washing
- Tote-Bin-IBC Cleaning
- Central Cleaning Systems
- Sanitizing
- Tank Cleaning
- Spiral Chillers/Freezers
- Aqueous Ozone



### Application Spotlight

The power of directly applied high-pressure water improves cleaning efficiency in many ways. Nozzles, spray bars and rotating spray arms direct concentrated flow producing agitation that removes impinged material from totes, bins, belts, conveyors, floors, walls and other surfaces. With the power of high-pressure systems, fewer cleaning passes are required, greatly decreasing cleaning time and labour while reducing water consumption.



Photo provided by Commercial Cleanser, Schiller Park, IL

#### Tote Cleaning

Previous system to clean totes required 8 hours to clean 200 totes. This system also used high volume of low-pressure water and often required multiple passes. A newly installed system using Cat Pumps products greatly improved the cleaning process.

Results: in 3 hours, 1300 totes cleaned with considerable water and labour savings.



#### Belt Cleaning

Previous method of cleaning coated nuts from a belt required 8 hours and 2 employees using high-temperature water and chemicals. The customer installed a Cat Pumps high-pressure pump in a system with rotor arms.

Results: reduced cleaning time from 8 hours to 1 hour, reduced chemical and hot water consumption, and increased belt life due to less exposure to chemicals.

## High Pressure Misting/Cooling

With thousands of systems in operation worldwide, Cat Pumps is the standard for providing high pressure misting pumps. From poultry barns in Indiana to greenhouses in Ontario and to the finest wineries in California, Cat Pumps are on-the-job.

- Humidity Control
- Temperature Control
- Greenhouse Misting
- Odour Control
- Produce Storage
- Pre-Cooling HVAC
- Dust Suppression
- Flash Evaporation
- Livestock and Poultry Cooling
- Pest Control
- Poultry Hatchery



### Application Spotlight



#### Egg Production Facility – Misting

Heat stress has severe economic impact on egg production facilities. High heat results in lower resistance to disease, increased metabolic disorders, productivity losses and increased bird mortality. Previous system relied on airflow alone to control barn temperatures, which was not always adequate when the outside temperature reached 90 °F, 32.5 °C or above. A 1,000 psi, 69 bar high pressure misting system was installed to reduce the temperature of the incoming air. At this pressure, water droplet size is 5 micron, which will flash evaporate and reduce air temperatures — in this case by up to 20 °F, -6.7 °C.

Results: reduced heat related bird loss from thousands to zero, increased egg production and egg size, and reduced airborne dust.

## Processing

Cat Pumps industrial-grade products are designed for continuous duty applications, keeping your equipment running. From reverse osmosis to tool cleaning, trust Cat Pumps products to get the job done.

- Homogenization
- Vinegar Production
- Evisceration Tool Cleaning
- Fish Descaling Machine
- French Fry Cutting Tool
- Flash Drying
- Waterjet De-Boning
- Reverse Osmosis
- Margarine Processing
- Liquid CO<sub>2</sub> Lipid Extraction
- Injection
- Crab Cleaning
- Egg Wash
- Liquid CO<sub>2</sub> Freezing
- Wine Production



# Wash-Saver

## Energy-saving high-pressure pump package designed for multiple gun wash down systems

Common multiple wash down systems are sized to run at the full demand at all times with the unrequired water circulated until the demand is increased. The Wash-Saver system produces only the water flow that is actually required, eliminating the need to recirculate the flow. This results in significantly lower energy costs and water usage.

- Pump unit/s comprising of Pump, Motor, Base, Guard, Transmission, Sensors, and Valves.
- Single Variable Speed Drive Control Panel

### Options:

- Multiple Pump Units
- Interconnecting Inlet and Discharge Pipe Work
- Header Tank/s
- Remote Access
- Accessories: Other Valves, Components or Sensors

### Features:

- Instant response to changing gun demand reduces water use
- Low consumption idle mode
- Automatic start/stop function (sleep mode) saves energy costs
- Run dry and pipe leak detection for better maintenance
- Pre-configured control panel with adjustable parameters

### Benefits:

- 24/7 high-pressure cleaning water availability
- Minimal water bypass
- Pump speed matched to demand resulting in energy reduction
- Positive displacement pump, with 85% mechanical efficiency reduces energy consumption
- Easy on-site servicing, reduces downtime



### Wash-Saver Operation

Demand is managed by the Wash-Saver control panel, specifically designed to exactly match demand with supply. The Wash-Saver uses a feedback signal from a sensor to a variable speed drive (VSD) to control the pump speed. The pump, drive motor, accessories and VSD panel come fully assembled, tested and pre-configured at our UK facility to match customers' individual requirements.

We can also provide an optional pre-piped water header tank, and installation into existing centralised high-pressure pipe system is an uncomplicated procedure. The control panel can be readily incorporated into a factory automation system or linked into a local area network.

# Forrester Chicken Wash-Saver

Most large food processing and production sites have a centralised hygiene or sanitation cleaning system, many of which feature one or more high-pressure pumps feeding a distributed array of wash-down guns and lances. Using high pressure water demonstrates advantages over chemical-based cleaning, not least of which are effective removal of deposits and simpler waste-water disposal. With many users moving to pressures below 60 bar, the objection against airborne aerosols has also been largely addressed.

However, many such systems were installed at a time when excessive energy consumption was not even a consideration. The rotary pitot-tube type pump had its advocates but today is widely recognised as being very inefficient. Typically running at less than 40% mechanical efficiency even at its optimum operating point, this can drop even lower under part-loads. A further disadvantage is that these pumps have to be run at very high speeds (4,500 to 5,500 rpm) in order to achieve even 60 bar so cannot be slowed down by use of a VFD (Variable Frequency Drive) 'inverter', and also making them highly susceptible to lime scale build-up throwing the rotor out of balance. This in turn leads to early seal and bearing failure, requiring the pump to be removed from service and sent away to a specialist for what can be a lengthy and expensive repair. Conversely, reciprocating positive-displacement pumps such as those manufactured and supplied by Cat Pumps have a long and respected reputation in food factory sanitation systems. Running at speeds of 1,000 rpm and slower, these pumps return consistent high pressure and typically 85% mechanical energy efficiency irrespective of operating speed.

## Forrester Chicken's Experience

One advocate of Cat Pumps is Forrester Chicken, based in Cheshire and described as 'one of the leading UK suppliers of raw, cooked and coated chicken products to both the retail and food service sectors.' Forrester's have used Cat Pumps for many years, including a fixed speed stainless steel model 2531 plunger pump to power their factory hygiene wash-down lances.

Operations Director Angus Dillway-Parry explains: "I've always been impressed with Cat Pumps reliability, ease of servicing and customer support. When we needed more cleaning capacity we had no hesitation in choosing their latest variable-speed technology with its promise of energy savings and improved reliability." He continues: "We installed a Cat Pumps Wash-Saver system based around the same pump model, which gives us the benefits of commonality of parts. The new pump came complete with the manufacturer's original



equipment valves and accessories already fitted, together with their automatic inverter control panel. The system has already been running over 1,000 hours and we haven't needed to touch anything since it was set up and commissioned by Cat Pumps."

During the night shift the pump runs at variable speeds, continually matching its output to the number of guns Forrester's operators are using at any moment whilst maintaining the same high energy efficiency. During the day the pump mostly remains in its pre-programmed idle mode, consuming almost no power at all. However, it is pressurised and ready to re-start automatically as soon as the first wash-down gun is opened, then returns to idle when not required. It also has in-built protection against dry-running, minor and major leaks amongst other features.

Angus continues: "I'm impressed how the Cat pump still generates the same high pressure even when running at the lowest speed. In the past we ran the old pump at full speed the whole time, just recirculating water and consuming power unnecessarily. As a result we also suffered short life of some associated components not supplied by Cat Pumps, such as the unloader valve. But the new pump only runs as and when required. Even ignoring the energy savings, the reduced wear and tear on the whole system is sure to result in longer service intervals. Then when the electricity bills come through the cost advantages are obvious." "We still have the previous pump in place as a back-up but have never needed to use it. I'm sure we've made the right decision. VFD inverter drives make sense on many types of machinery and we are delighted with our new Cat Pumps system."

## ABOUT CAT PUMPS

## Proven Quality, Customer Focused

Cat Pumps is the world leader in the design, manufacture and marketing of the most dependable high-pressure positive displacement reciprocating triplex pumps and systems in the market. Our mission to exceed customer expectations for quality, reliability, availability, delivery, technical expertise and aftermarket support to assure the best value in all the industries served.

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