



Food and Beverage Industry

Buyer's Guide for Submersible Pumps



Improve FSMA Compliance and Maintenance Efficiency

Look Below the Floor

Facing a new world of FSMA regulations, food and beverage suppliers, manufacturers and retailers are looking for smarter ways to meet compliance regulations and improve maintenance efficiency. Sanitary design factors into every part of the process and on every surface of the operation, beyond food contact areas. To ensure business success, process efficiency has taken center stage.



Where once dry cleaning was an option for some areas, standards required for removal of dirt and organisms have increased the use of wet cleaning techniques, including high-pressure, high-temperature wash, and the addition of acid and/or alkaline cleaning solutions. Cleaning to a microbial level, to reduce contamination hazards, now often include

ceilings, walls, and floors as well as equipment areas.

Stringent hygienic demands on the food and beverage industry preserve our standing in the world of safe food supply. But the industry has taken a new look at efficiency in every aspect of compliance, and every piece of equipment has to stand up to more sanitation processes.

As the frequency of clean-in-place and washdown schedules increase, the demand on your system below the floor must pass the test. Gallons of wastewater and solids, caustic and acidic cleaning solutions, high-temperature fluids will challenge any pump. Pumps must handle the flow that food and beverage processing plants produce every day:

- High volume rinse water and runoff
- Oil, grease and animal fats
- Pits, skins, rinds
- High temperature wastewater and solid waste
- Corrosive and abrasive fluids
- Caustic and acidic chemicals used for cleaning
- Unexpected plastic, wood or rubber that find their way into their wastewater stream.

Downtime is not an option

Operational pumps are an integral part of the hygienic environment of the plant, so there is no room for unreliability. Pumps need to be field-tested and proven to last, even in 24/7 use. Uptime means your pump keeps the wastewater and solids moving, without clogs or overheating. Pump seals need to be impervious to the temperature, cleaning and pH levels of the daily washdowns. These demands on one piece of equipment have to be met, without fail, in some of the most rigorous environments.

Keeping a pump online should not become a full-time job. When a robust pump performs, uptime requires little more than monitoring its daily efficiency.

Scheduled downtime for maintenance is a cost of doing business. Unscheduled downtime of a pump is a productivity and profit loss. In the food and beverage industry, a halt in production due to a faulty pump leads to work stoppage, spoilage, and contamination. Profits drain away as workers sit idle waiting for the removal of a clog, the repair of a failed motor or replacement of a pump that just quits working. Downtime protection, engineered into a quality pump, gives operations alerts for motor moisture or seal compromise. With routine inspections, maintenance can be limited to yearly oil changes. If parts or replacement is needed, the supplier needs fast, responsive service and quick shipping. With a team that designs and builds pumps for reliability, backed with personal service and a commitment to being the best, your submersible pump for food and beverage is a robust workhorse.

How do we know so much about the food and beverage industry?

For more than 35 years, our pumps have been serving meat and poultry processing, dairy, growers, vineyards, breweries and packaging companies across America and around the world. In this time, we've built pumps to serve the specific challenges of this growing industry. We work closely with customers like you to define your pumping needs and select the optimal choice for your application. Listening to our customers has allowed us to develop and design new pumps with unique features to tackle specific problems and raise industry standards.

THE POWER

Below the Floor

FSMA Compliance is reshaping the industry from top to bottom. Manufacturers and the rest of the value chain require new processes for compliance that affect maintenance efficiency. Critical washdowns and clean-in-place schedules push the resulting wastewater and solids to your pump below the floor. If your pumps can't handle the waste residue or the acidic and caustic liquids, your business grinds to a halt. Our pumps are built specifically for these applications. We offer pump power below the floor, so your efficient cleaning time maximizes your production time.

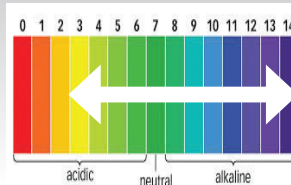
COMPLIANCE EFFICIENCY



Handle over **700** gallons per minute of wastewater



Withstand washdown temperatures up to **200°F**



No corrosion in pH levels from **2.5 to 13+**



Shred solids up to **3.5"** diameter

MAXIMIZE UPTIME



Our highly-trained, experts recommend the **right pump** for your application



No clogs maximize your production **time**



Durability and **long life** saves you money



Keep your plant **running**, even in **24/7 environments**

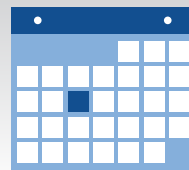
MINIMIZE DOWNTIME



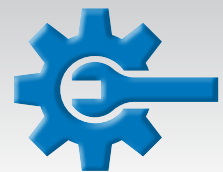
Worry-free, industry-proven performance



Seal Minder® instant leak notification



Minimal scheduled maintenance



Quick, responsive service for parts replacements

BJM Pumps® Play Trio of Roles at Major Juice Processing Plant

The Company

The company is one of the United States' largest juice processors and marketers, buying fresh fruit juice from partners and suppliers and turning it into a variety of beverages that are sold around the world.

The company produces orange juice at



a 720,000 square-foot plant in central Florida. The plant was recently expanded to add a new production line for one of the company's fastest-growing brands, a storage "tank farm" and to upgrade telecommunications, information technology and other systems.

The Challenge

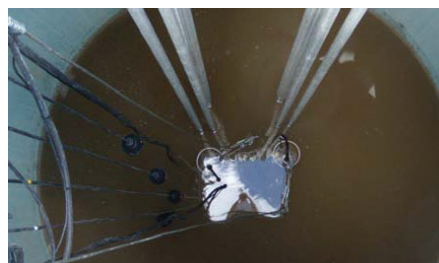
The challenge for any submersible pump manufacturer is to offer a full line of products that deliver excellent performance and reliability in a wide range of applications, conventional as well as niche. Between the original juice plant's legacy equipment and new demands created by the recent expansion, the plant required satisfaction of a range of divergent needs: excellent non-solids dewatering performance for storm-water runoff, corrosion-resistance and solids-handling capabilities for acidic

wastewater and process water, and high-temperature resistance coupled with solids handling for bottle washing.

The Solution

In early 2010 the company purchased two BJM SX15CSS stainless-steel, non-clog pumps from Barney's Pumps in Florida. These two-horsepower pumps—which have stainless-steel impellers, wear plates, oil housings, pump housings and inner pump tops to resist corrosion and can pass two-inch-diameter solids—performed well in handling the plant's large volume of slightly acidic, pulpy process and wastewater. Based on that success, the company's consulting engineer specified BJM pumps for use in all of the company's plants.

About a year after the SX pumps were installed, the central Florida plant bought two BJM S75CF, high-temperature, high endurance non-clog Fahrenheit™ pumps for its bottle-washing sump. These 10-horsepower, cast-iron pumps can pass 2 ½" solids and are engineered to withstand the heat of liquids that are as hot as 200 degrees Fahrenheit; these pumps, too, have performed flawlessly. Finally, in early 2012 the plant ordered two 7½-horsepower stainless-steel pumps, BJM Pumps' Model JX55CSS, for a large, new sump built to handle the extra process water and stormwater runoff generated by the 20 percent expansion in the size of the facility. BJM's JX pumps are designed for general



Challenge:

New pump needs due to company expansion:

- Corrosion-resistance and solids-handling capabilities
- High-temperature resistance with solids handling
- Non-solids dewatering performance

Solution:

- Two BJM SX15CSS stainless-steel, non-clog pumps
- Two BJM S75CF, high temperature, non-clog Fahrenheit® pumps
- Two 7½-horsepower BJM JX55CSS stainless steel pumps

Results:

- The SX15CSS pumps handle the slightly acidic, pulpy process and wastewater
- The Fahrenheit™ pumps pass 2½" solids while withstanding temperatures up to 200 degrees Fahrenheit
- The JX55CSS pumps handle the extra process water and storm water runoff generated by the facility expansion.

pumping purposes where the passage or shredding of sizeable solids is not required. The pumps were shipped within two weeks of being ordered; they were installed on rail assemblies within the sump, and the whole system was started up in March. The pumps are excelling at their work, and the company has placed subsequent orders for BJM pumps at other facilities around the country.

Shredder Pump Eats Offal, Saves Electricity at Chicken Processing Plant

The Company

The company is one of the world's largest meat processors and marketers. With more than 400 facilities worldwide, it produced more than 42 million chickens and a half-million head of beef and pork per week in 2010.

The Challenge



Depending on the species, one-third to one-half of every animal produced for meat in the United States is not consumed by humans. At a chicken processing plant, for example, feathers, fat,

blood, bone, organs and certain parts such as heads and feet—collectively known as offal—are separated from the edible meat. The meat is packaged and shipped to retail stores and restaurants, while the offal is sent to rendering plants where it is processed into high-protein meals or liquids for use in animal feed or biofuel.

At the industrial level, meat production is highly automated—done by ma-



chines that slaughter the animals; cut and trim the parts; separate meat from offal; package the final product and carry waste away from the production line. It's a dirty job, and the machinery, plus the walls and floors of work areas, need to be washed regularly for efficient operation, safety and cleanliness.

At a company chicken processing plant in northwest Arkansas, workers using hoses do the washdowns by hand, and the runoff—carrying blood, fat, feathers, small pieces of meat and bone—flows to a huge catch basin. There the runoff sits until it is pumped into a truck for transport to the world's largest rendering facility, about 20 miles away.

The Solution

For many years, the plant used air-operated diaphragm (AODD) pumps to empty the offal basins, but—especially given today's high price of electricity—these were costing the company too much money. To properly do their job, the AODD pumps required a 150-horsepower compressor to be running almost constantly at the plant, even weekends when the production lines weren't fully operational.

Arkansas Industrial Machinery, Inc., (AIM) of North Little Rock, which sells handling and treatment systems for air, gas and liquids, saw a chance to save the company money by retiring the compressor, which James Reid, an AIM sales representative, describes as “the highest-cost utility in the plant.” On Reid's recommendation, starting in 2010, the company replaced the AODD pumps with three BJM SK55 submersible shredder pumps (a fourth SK55 is used for backup), whose flow rates were similar to those of the AODDs. Not only can these 7½-horsepower pumps run without a compressor, they have tungsten carbide-tipped cutting im-

Challenge:

- Cut electricity costs of running pumps that empty offal basins.

Solution:

- Replaced current pumps with three BJM 7½-horsepower SK55 submersible shredder pumps.

Results:

- The BJM pumps use 80% less electricity than the AODD pumps, and the cutting impellers shred almost any solids up to 3 1/2-inches in size, including bones. The pumps run 12 hours a day with no failures.



pellers that can shred almost anything they encounter and pass solids up to 3½ inches in size. “There's enough torque in the SKs to keep them from plugging up,” says Reid. “If they hit a bone, they just shear it.” The SK55s have run nearly 12 hours a day since their installation with no unexpected failures, leading the company to use them for other applications and to designate BJM's SK series as the plant's standard pump.

BJM SK Shredder Pumps Eliminate Sump Problems

The Company

A large meat processing plant in Michigan produces a variety of cold cut meats for prepackaged supermarket sales and loaves for slice-to-order outlets.



This USDA certified facility is focused on providing top product quality and protecting public safety. Maintaining efficient operational processes are necessary to meeting consumer expectations as well as making company bottom line objectives. Meat processing requires the conveyance of many process fluids and wastes. Operational success is contingent upon moving these liquids efficiently and continuously.

The Challenge

The plant was experiencing continual problems with their non-clog submersible pumps. The problematic cast iron submersible pumps controlled evacuation of the plant's wet wells. These 10 horsepower, 4" non-clog units were installed in the main lift station that pumped from the factory's wastewater pretreatment plant to the city's force main sewer. The wet well of this treatment plant lift station catches the effluent from the entire operation. The process waste stream contains a mix of spices, meat juices, and cleaning chemicals, while the sanitary sewer line handles flow from the restrooms and

showers. This stream, as expected, contains a heavy load of sanitary products, including wipes and personal hygiene products.

The solids content from this combined flow caused continual blockages making it necessary to have the non-clog pumps pulled at least once a week to be cleared, cleaned, and reset. This weekly maintenance of the non-clog pumps was performed by an outside contractor using a small crane at a cost of \$350 per visit. This amounted to over \$20,000 per year in extra maintenance expense. There was an additional serious cost/risk involved should the pumps not operate effectively. If the waste treatment plant could not discharge to the City, it would result in the plant having to bypass the pretreatment plant and be faced with substantial fines from the City.

The Solution

Kerr Pump and Supply, a premier fluid handling distributor in Michigan, was asked to provide a solution to this continuing operational problem. After studying the system and media handling requirements, Kerr recommended replacing the existing pumping units with shredder pumps offered by BJM Pumps. The SK series Shredder pumps are designed to "shred" solids before passing the liquid. The Shredder pumps leave solids slightly larger than if passed through a grinder pump. The shredding action is produced through use of a unique Fang™ non-clog cutting impeller with Tungsten Carbide vane tips, against a high-chrome "toothed" shaped diffuser plate. The cutting tips shred solids against the pump suction plate, continuously ripping the solids apart with 360° shredding action. It works on many objects that would clog an ordinary pump. The hardened materials provide maximum wear resistance

Challenge:

- The current pumps continually clogged resulting in weekly maintenance to clear and clean the pumps, costing more than \$20,000 per year.

Solution:

- Two BJMSK110C shredder pumps utilizing the existing control panel and upgraded motor starters.

Results:

- No clogs in 16 months in service, saving more than \$22,400.



for long service life. The SK shredder pumps are used extensively in farm and food sump applications handling agricultural and animal waste.

Kerr installed two BJMSK110C shredder pumps and rail systems in the problematic sump. Kerr saved the customer additional expense by utilizing the existing control panel and upgrading the motor starters.

Since their installation, the BJM pumps have been running without incident. After 16 months in service, savings totaled over \$22,400 with an annual contribution to this plant's bottom line of \$20,000.

Needless to say this plant is very pleased with the performance of the pumping system, Kerr, and BJM Pumps. In fact, Kerr has changed-out more non-clog pumps in the wastewater treatment plant, replacing them with BJM shredder pumps.

Nationally known sausage maker increases uptime and improves productivity with BJM shredder pump

The Company

The company is a third-generation, family-owned maker of sausage, sausage products and gravy that sells its products through grocery, supermarket and fast-food restaurant chains nationwide. It has a headquarters in Tennessee and plants in Tennessee and Arkansas. One of the Tennessee plants is a 100,000 square-foot, highly automated facility that employs 370 people and produces 3,600 pounds of gravy per hour and packages 190 million breakfast sandwiches every year.

The Challenge

The plant has an on-site wastewater lift station that processes some 200 gallons per minute of rinse water and runoff containing animal fat, grease and some solids; the water is eventually pumped offsite to a city water treatment plant. An ongoing problem for the company has been that plastic sheets or bags from the packaging operation find their way into the wastewater stream. The facility's "non-clog" submersible pumps,



installed in a 20-foot-deep wet well, couldn't handle the plastic and failed often. Every time a pump clogged, a plant engineer had to raise the pump

from the bottom of the sump and clean it out and repair it by hand—an effort that took about an hour of labor and put manufacturing operations at risk, as the wastewater system was running only on a backup pump.

The Solution

The solution to the company's problem has its roots in the International Poultry Show in Atlanta, BJM displayed our Shredder pumps, which are designed to cut up debris before pumping. A representative of the sausage company was among the many people impressed by our Shredder video (and the squawking rubber chickens that we gave away) at the show, and he asked



BJM to visit the Tennessee plant. After discussing the clogging problems with BJM during that visit, the company decided to replace one of its existing submersible pumps with a BJM SK22 Shredder pump. The plant installed the SK22—a 3-horsepower, hardened cast-iron pump that is rated for 240 gallons per minute and is equipped with Tungsten carbide-tipped cutting impellers to shred solids and other debris that may end up in the waste line. When a plastic sheet ended up in the line, the SK22 tore it up and passed it through without clogging. After about a year of maintenance-free operation of the SK22, plant management decided

Challenge:

- The plant processes 200 gallons per minute of rinse water and runoff, but plastic sheets or bags clogged the pumps often.

Solution:

- Replaced current pump with BJM SK22 shredder pump.

Results:

- After a year of maintenance-free operation, the plant upgraded to the BJM SK37 pump for higher capacity. This pump has been running trouble-free as well since being installed.

that it needed a higher-capacity pump and replaced the SK22 with BJM's SK37, a 5-horsepower pump rated for 330 gallons per minute. The SK37 pump has been running trouble-free, and the company has since purchased and installed additional SK37s to ensure reliable, efficient operation of its wastewater lift station at the Tennessee plant.

Solids Handling Pumps

Solids in wastewater require robust submersible pump performance to shred, chop and cut for a manageable waste stream. BJM Pumps destroys solids, for clog-free operations, with specialized handling pumps for peak efficiency. From dirty water with some solids, to solid waste managed to shear debris, BJM Pumps have a solid handling solution for any food or beverage process.

SV Series

SOLIDS PASSING

The unstoppable Vortex impellers of the BJM Pumps SV pumps are the industry standard for non-clog pumps and ideal for thick waste. Larger solids, up to 90% of the pumps outer dimension, pass easily.

- Perfect for food and beverage floor sumps; handling large, problematic industrial waste
- The vortex impeller design allows for a wide range of hydraulic operating conditions
- Submersible cast-iron construction for durable handling
- 304 stainless steel motor housing for longevity



SK Series

LIGHT DUTY SHREDDING

BJM Pumps SK tungsten carbide tip Fang™ shredding impeller cuts through solids against an engineered cutting slot on suction cover opening. Solids that would jam-up a standard non-clog pump, pass through easily, making the SK pump ideal for even unexpected waste items.

- Manages fish, meat, poultry waste, fruits and vegetables
- Seal Minder® protection for motor moisture warning
- Hardened cast iron stands up to rough handling unlike pumps with soft resin impellers or plastic exterior components



SKG Series

HEAVY DUTY SHREDDING

BJM Pumps Industry changing patented RAD-AX® Dual Shredding Technology attacks difficult and heavy solids with unmatched cutting, shearing and macerating radial and axial action.

- Ideal for meat and poultry processing, fibrous food waste
- High torque 4-pole motor
- Durable, long-life 440C stainless steel with Rockwell hardness 55C on all cutting elements
- Hardened cast iron construction with chrome iron impeller and suction cover for extra durable wearing life.



All pumps are tested at factory, both for performance as well as safety. (Specifications dependent on model & may change without notice.)

Corrosion Resistant Pumps

BJM Pumps handles the tough environment below the floor. These pumps endure the harsh acidity of food waste and the abrasive and caustic clean-in-place chemical exposure that corrodes cast iron pumps. Corrosion resistance avoids sump overflow, pollution and business interruption. Outlasting cast iron pumps in corrosive environments for five years or more, the long pump life saves replacement costs.

JX Series

CLEAR WATER OR LIGHT SOLIDS

The JX BJM Pumps protects all pumped liquid exposed parts with durable 316 stainless steel. Ideal for corrosive sump, effluent or chemical spill and collection.

- Used in bottling plants, breweries, beverage manufacturing
- Side discharge designs can easily be fit to slide rails for easy of pump maintenance
- Custom engineered double mechanical sealing system
- Efficient for general pumping without large solids



SX Series

SOLIDS PASSING

Non-clog reliability of the BJM Pumps SX model provides high volume and lift for food waste water. Corrosive protection from 316 stainless steel on all wet and liquid exposed surfaces.

- Proven in wineries and pH challenged applications
- Non-clog impellers to pass solids through to downstream processing
- Custom engineered double mechanical sealing system
- Two impeller trims available for each model, to expand hydraulic coverage



SKX Series

LIGHT DUTY SHREDDING

BJM Pumps Shredder pumps (Cutter Pumps) Tungsten Carbide cutting tip(s) shred solids that would clog an ordinary pump. Cast 316 stainless steel construction is ideal for corrosive environments that have solid wastes that may need to be shredded or cut.

- Perfect for fish processing, poultry processing, beverage plants
- Delivers high volume of liquid through 2" – 6" pipe
- Tears through tough waste with 360° shredding
- Capable of shredding and passing almost any solid
- Grabs debris with engineered cutting slots on suction plate



All pumps are tested at factory, both for performance as well as safety. (Specifications dependent on model & may change without notice.)

High Temperature, High Endurance Pumps

BJM Pumps Fahrenheit® series are engineered for submersible pumping hot materials up to 200°F. From liquids to full shredding power, the hard-wearing construction lasts through the heat with flawless performance. All Fahrenheit pumps feature Three-Seal Motor Protection. The motor is protected by double mechanical seals, a lower seal made of silicon carbide/silicon carbide and upper seal is made of carbon/ceramic. An additional lip seal has been installed above the impeller to help prevent abrasives, such as dirt, silt or sand, from entering the seal chamber.

Stainless Steel Pumps

JXF Series

CLEAR WATER OR LIGHT SOLIDS

The JXF BJM Pumps are ready for clear liquid 200°F sump and dewatering applications with 316 stainless steel on all "wet" parts.

- Dewatering for all food and beverage applications
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F
- Available in high flow and high head designs
- Designs can easily be fit to slide rails for easy pump maintenance



SKX-F Series

SOLIDS PASSING

316 stainless steel and ready for the solids up to 200°F, BJM Pumps SKX-F pumps have non-clog, single and double vane impellers. Easily handles 1" – 2.5" solids for productive waste flow.

- Used for edible oil production, citrus juices and beverages
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F
- Ideal for high temperature washdowns
- Proprietary, CSA approved, high temperature, chemical resistant, power and sensor cable designs



SXF Series

LIGHT DUTY SHREDDING

BJM Pumps SKX-F shredder model wear and wet parts are sealed in 316 stainless steel. Non-clog single or double vane impellers pass through hot 200°F solids and high-volume liquids. Corrosion-protected and submersible for long life.

- Great for dairy, poultry, meat and beverage processing
- Ideal for high temp washdown with solids
- Cutting impeller with tungsten carbide tips
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F



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High Temperature, High Endurance Pumps

Cast Iron Pumps

SVF Series

SOLIDS PASSING

Equipped with Vortex impellers, the BJM Pumps SVF combines rugged cast construction with the most powerful non-clog handling of viscous liquids and larger solids. Submersible in high temperatures, up to 200°F.

- Beverage and bottling plants
- 304 Stainless steel motor housing
- Cast iron impeller blades resist abrasive liquids and solids
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F
- Proprietary, CSA approved, high temperature, chemical resistant, power and sensor cable designs



SKF Series

LIGHT DUTY SHREDDING

A cast-iron shredder powerhouse, the BJM Pumps SKF pumps withstand the 200°F heat as its tungsten carbide tip cutting impeller makes quick work of tough pumping. It includes 304 SS motor housing for abrasion resistance.

- Bottling and beverage applications
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F
- Withstands non-caustic high heat temperature CIP cleaning fluids
- Proprietary, CSA approved, high temperature, chemical resistant, power and sensor cable designs



SKGF Series

HEAVY DUTY SHREDDING

High temperature and high endurance are engineered into the BJM Pumps SKGF. Cast iron construction coupled with patented RAD-AX® dual shredding technology obliterates tough solids in high temperature applications.

- Dairy product processing, poultry/meat processing, beverage and bottling
- Hardened 440C Stainless Steel Cutting Components
- High torque, 4-Pole motor
- Three impeller trims available for each model, to expand hydraulic coverage
- Exclusive Class R electrical insulation system allows stator temperatures to 300°F



All pumps are tested at factory, both for performance as well as safety. (Specifications dependent on model & may change without notice.)



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