A Full Line of Equipment & Services for Processing Performance

APEC
Automated Process Equipment Corporation

Liquid Coating

APEC Mistcoater Liquid Applicator

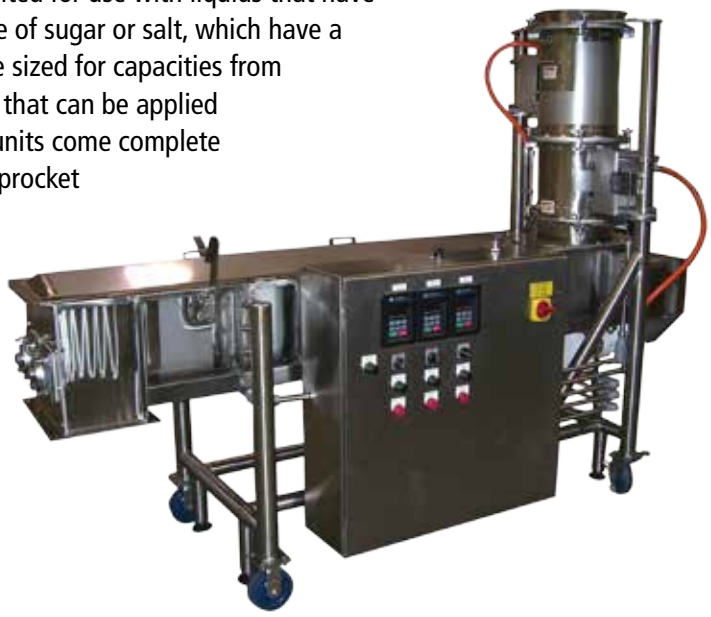
The Mistcoater is used to apply liquids to dry solids. The most common applications are to apply fat, flavorings, mold inhibitors or enzymes to pet food, animal feed, and aqua feed. The most common way to apply these liquids to dry products is with spray nozzles inside of a coating drum. In order to get uniform coverage of liquid on to the dry material the liquid needs to be finely atomized. These liquids quite often have suspended solids that can clog a spray nozzle. Since we use spinning disks to atomize the liquid we never have to worry about clogging nozzles affecting the performance of the machine. The other advantage of this machine is that all of the spray is contained inside the machine, which is not the case with an open ended drum. This keeps the surrounding environment cleaner by preventing fugitive particles from escaping the machine. Another advantage of this machine is that it creates less back pressure than spray nozzles, so the pumps and other components last longer. This machine also works very well for food products such as nuts, cereal, and snacks.

APEC Mistcoater SST

The SST stands for Superior Sanitation Technology and that is exactly what you can expect from this machine. For customers who have a need for increased sanitation in their liquid application process, APEC recommends the added convenience and security provided by the Mistcoater SST. The Mistcoater SST offers special upgraded features that increase the sanitation factor in the liquid application process. The Mistcoater SST's upgraded design allows for easier cleaning and maintenance, and includes food grade components for added sanitation. The SST boasts all stainless steel contact surfaces and includes food grade gaskets. The machine's design makes disassembly and cleaning a breeze.

How the Mistcoater works

Dry material is spun from a low RPM rotating disk and falls in a 360 degree curtain around a set of disks. Liquid drops on these disks spinning at high RPM and is atomized into a fine mist that is driven into the surrounding curtain of dry product. The unit is especially well suited for use with liquids that have suspended solids such as slurries and liquids with a high percentage of sugar or salt, which have a tendency to crystallize and clog spray nozzle type systems. Units are sized for capacities from 7-170 cu. meters per hour (250-6000 cu. feet). The percent of liquid that can be applied depends on dry materials porosity and ability to absorb liquid. The units come complete with flanged inlet and outlet openings, disk drive with timing belt/sprocket reduction, coating chamber with scraper, single access door, stainless steel liquid disks with v-belt drive and support legs. Available in mild steel, stainless steel or food grade construction. Units can be integrated with our Continuous Blenders to achieve further mixing action and product retention.



Liquid Handling

Liquid Storage

Capacities from 150-950 liters (40-250 gallons) in stainless steel or polyethylene construction. Tanks include support stand, inlet ball valve, high and low capacitance type level indicators, temperature gauge and discharge ball valve. Options include heat trace with insulation and temperature control, jacketed with insulation and temperature control, tank agitators, and food grade construction.

Pumps - High Flow Metering

Positive displacement gear pumps sized for flow rates from 1.8-300 lpm (0.5-89 gpm) in both mild and stainless steel. Pumps have built in pressure relief, TEFC motor and v-belt drive. Available in mild steel or stainless steel construction.

Pumps - Low Flow Metering

Diaphragm type pump sized for flow rates from 0-17.5 lph (0.5-5 gph). Pumps include stroke displacement adjustment and 4-20 mA analog/digital converter for external control.

Mass Flow

Coriolis type mass flow meters are sized for flow rates from 0-250 kgs per min (0-550 lbs per min) in stainless steel construction. Meters are complete with flow sensor, transmitter with pulse and 4-20 mA output proportional to flow. Accuracy is +- .1% of full flow rating. Coriolis meters have no moving parts, hold calibration very well, and sense the flow of liquid by weight so they are not affected by changes in temperature, specific gravity, or viscosity.

Volumetric

Nutating disk volumetric meters are sized for flow rates from 4-500 lpm (1-130 gpm) in cast iron construction. Units come with totalizing register and pulse output. These meters tolerate liquids with suspended solids, but since they work on positive displacement (volume), the valve needs to be calibrated for the specific liquid that will be flowing in the system. Calibration should be checked if the liquid characteristics change.

Proportioning Valves

These valves are used in place of a variable speed control on the pump to regulate the flow of liquid. They are commonly used in re-circulating systems and come complete with electro-pneumatic positioner, 4-20 mA signal for position setting and 4-20 mA signals for position sensing.

Accessories

Along with the above items APEC can provide: ball valves, basket strainers, check valves, manual by-pass valves for calibration, pressure gauges, pulsation dampeners, and electric shut-off valves.

Process Automation

Automation Pro Series

Batch System

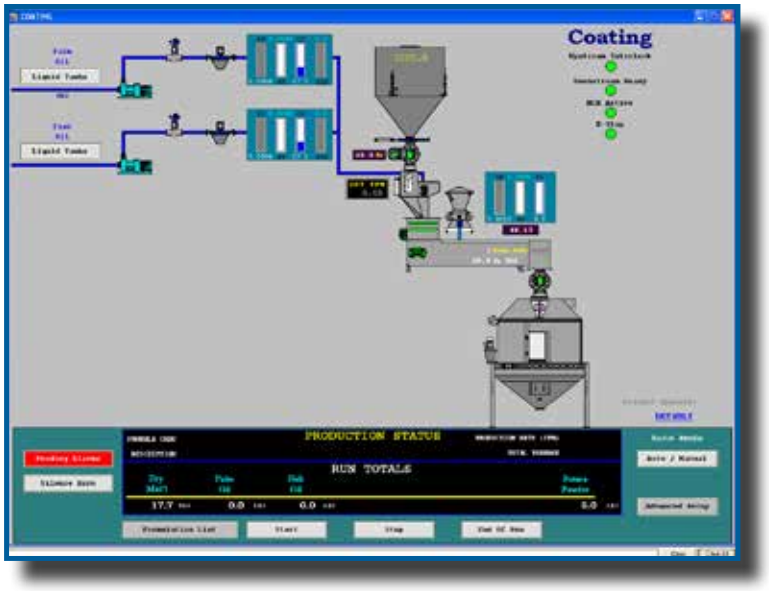
APEC PRO series Batch automation allows formulas to be manually or electronically entered into the system, and the control system will automatically make sure that the proper amount of ingredients are measured into each scale and that the material is transferred to the mixing operation where proper mixing cycle is handled. This includes mix time and transfer of ingredients to packaging or bulk load out.

Continuous Blending System

APEC PRO series Blend automation allows formulas to be manually or electronically entered into the system, and the control system will automatically make sure that the proper ratio of liquid and dry ingredients are proportioned and blended into a homogeneous mixture. This system when used in conjunction with our Mistcoater liquid applicator, mass flow and volumetric metering systems allows material to be accurately and consistently blended together automatically in a continuous flow process.

Common System Benefits

Off the shelf components are used in all APEC automation systems so you are not held hostage for parts. APEC is an Allen Bradley integrator and has a UL certified panel building shop.



APEC can provide barcode scanning and lot tracking to ensure the safety of the products that you are manufacturing.

Complete inventory control allows you to know immediately the ingredients that you have on hand, and the products that you have produced.

APEC BatchBox

With our experience, we have worked and are familiar with most of the control systems that are available on the market. This insight has lead to us to engineer the BatchBox – the first system that is easy to setup, operate AND change in the future. We realize that your business is constantly changing and it is our goal to provide you with a system that keeps pace – now and in the future. This latest APEC innovation is NOT a BlackBox. It is an Industrial, computer-based system with open architecture for easy integration with most brands of scale instruments. Since the system uses off the shelf industrial PLC components, you never have to worry about access to spare parts.

How the BatchBox works

When the BatchBox starts, it will ask the operator a series of questions, including the number of scales, number of metered liquids, ingredients, and mixers. After the questions have been answered, the BatchBox automatically sets up the graphic screen and I/O with the correct configuration. Later, if the system changes, the operator repeats the interview process and the HMI is configured with the new equipment. With the BatchBox you eliminate the need for custom programming, making the BatchBox a smart investment now and in the future. The BatchBox delivers advantages other controls simply don't offer:

Mixer control

Metered liquids into the mixer

High/Low speed control for ingredient feeders

Hundreds of formulas

Inventory management

On screen graphics of the process

Ethernet communications to management computers

Hand add verification

Weighing & Batching

Scales

Scales are manufactured to highest quality standards and are available in a variety of finishes from CEMA II welds to sanitary designs. Scales can be configured in a gain in weight or loss in weight mode and can be customized to meet your needs. Load cells are 10,000 div. for the highest available accuracy and are supplied with summing cards for easy calibration.

Major Scales

Conical and rectangular scale hoppers with capacities from 1-10 cu. meters (35-353 cu. feet) are available with slide gate, butterfly valve or knife gate discharges. Scales include 60 degree angle design, flanged inlet, solid bolted top cover, flanged outlet, load cell mounts, load cells with mounting hardware, and summing box. Materials of construction are carbon steel or stainless steel.

Minor Scales

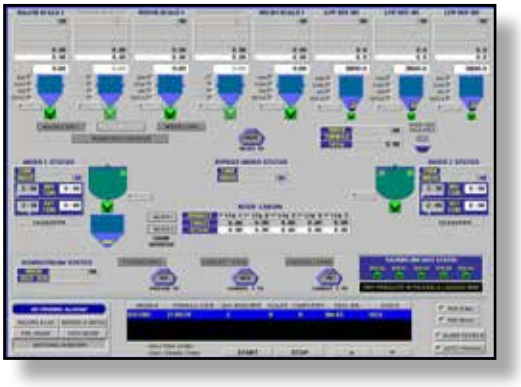
Conical and Rectangular scale hoppers with capacities from .3-1 cu. meters (10-75 cu. feet) are available with slide gate, butterfly valve or knife gate discharges. Scales include 60 degree angle design, flanged inlet, solid top cover, flanged outlet, load cell mounts, load cells with mounting hardware, and summing box. Materials of construction are carbon steel or stainless steel. Capacities from .1-1 metric tons. Scales are available with integral ingredient hoppers. Ingredient hopper sizes ranging from .75-3 cu. meters (27-106 cu. feet) are available.

Micro Scales

APEC's Micro Scales are available in bin clusters of 4-24 rectangular bins that are designed with chamfered corners to cut down on buildup and aid in product flow. Micro Scale bins can be setup in either a tight bin cluster or a walk-between design. Each Micro Scaling System is complete with rollover type scale hoppers, bins with integral feeder tube, mild steel support frame, and tub knocker device to enhance clean-out. All Micro Scales include electrical enclosure that is factory wired and mounted on the unit. Options include bin agitation, inlet screens, bin lid locks, bin lids with dust collection, feeder shutoff gate, and unloading extension on the rear of each bin for easy ingredient discharge when changing products. Bin capacities range from 6-65 cu. feet, with scale capacities ranging from 140-320 lbs.

Liquid Scales

Cylindrical scale hoppers with capacities from 5-175 liters (1-46 gallons). With ball valve inlet and discharge, load cell mounts, load cells with mounting hardware, and summing box, includes discharge surge with high and low level indication, chemical duty discharge pump.



Bulk Super Sack Discharger

Bulk super sack dischargers come with adjustable support frame for varying bag height, bag hanging support frame with fork pockets, bag untie opening with discharge isolation and pneumatic bag massage for difficult to discharge materials. Options include discharge feeder, chain hoist with motorized trolley, load cell tank weighing assemblies for loss in weight mode discharge and stainless steel construction.

Individual Ingredient Feeders

Ingredient feeders have integral hoppers with capacities from 70-700 liters (2-25 cu. feet) capacity. Feeders are available in either screw type or vibratory discharge. Feeders come complete with hinged cover, expanded metal trash screen, removable screw tube, floor standing support frame and TEFC motor drive with gear/chain reduction. Options include mechanical bin agitation for materials with difficult flow characteristics, load cells for loss in weight mode, AC or DC speed control. Available in mild steel, stainless steel, or food grade construction.

Batch Mixers

Batch mixers are available in sizes from 1-25 cu meters (35-882 cu. feet) swept volume. Ribbon mixers use a double ribbon agitator mounted with solid spokes to a solid shaft. The shaft mount reducer drive eliminates the sprocket and chain arrangement found on other mixers, and simplifies maintenance. Mixers are available in both slide gate and drop bottom designs. Materials of construction are mild or stainless steel.

Continuous Flow

Dry Solids Mass Flow Meter

Continuous dry flow measurement is accomplished with a patented curved plate sensing element designed to cancel frictional forces so that the resulting reading is unaffected by product elasticity, shape, or friction. Flow ranges are from 1-100 cu. meters per hour (35-3531 cu. feet per hour) with a turn down ratio of 20:1. The accuracy of the meter is +- .25% full scale on virtually all free flowing solids with a wide range of densities.

Weigh Screw Feeder

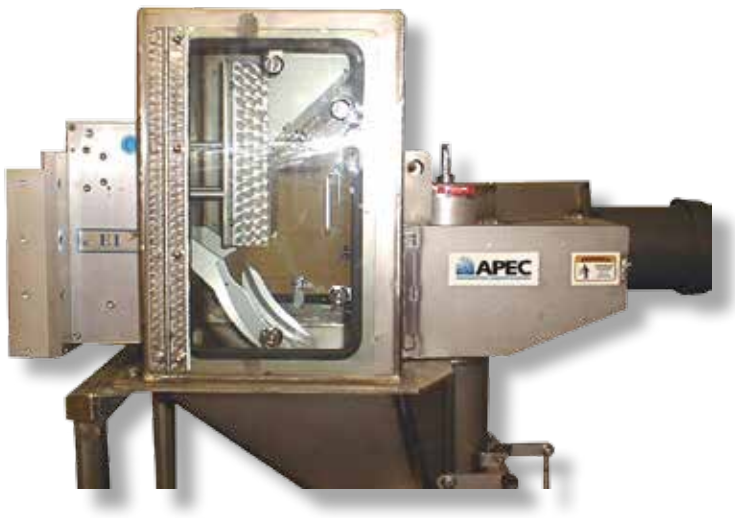
Continuous dry flow measurement is accomplished with a cantilevered screw feeder that has a pivot centered under the under the inlet. The feeder is suspended from a load cell hung from the discharge end. The feeder is sized for flow rates from 7-170 cu. meters per hour (247-6003 cu. feet) with a turn down ratio of 5:1. The accuracy of the feeder is +-2% full scale on virtually all free flowing solids with a wide range of densities. Optional close tolerance construction of the feeder and low RPM are used to minimize breakage of fragile materials. Each unit comes complete with support frame, inlet and outlet flexible connectors, load cell with mounting hardware, speed sensor, TEFC motor with gear/belt reducer. Materials of construction are mild steel with stainless steel optional.

Weigh Belt Conveyor

Continuous dry flow measurement is accomplished with a cantilevered belt conveyor that has a pivot centered under the inlet. The conveyor is suspended from a load cell hung from the discharge end. The belts are sized for flow rates from 7-170 cu. meters per hour (247-6003 cu. feet) with a turn down ratio of 5:1. The belt rides on a 3 ply polyester sliding bed with nitrile cover and hidden lacing. The unit comes complete with flanged inlet transition and flexible connector, adjustable bed depth gate, adjustable side skirting and scraper, hinged top cover, expanded metal bottom cover, outlet flexible connector, floor or ceiling mounted support frame, two load cells with mounting hardware and summing box, TEFC drive with gear/chain reduction, and rotary encoder. Options include stainless steel and food grade construction, AC or DC variable speed drive, and scale integrator. Accuracy is +- 2% of full scale.

Continuous Blender

Available in a 10 foot standard length, the continuous blender consists of twin mixing screws and either a ribbon and paddle or paddle only conveyor. The blender's agitator provides an aggressive yet gentle mixing action with a minimal distance between screw flighting and trough to cut down on breakage of delicate products. Blender options include heat trace, sub cover, insulated lids, C.I.P., and close tolerance construction. When paired with our APEC Mistcoater coating chamber, the continuous blender provides even distribution of coating materials onto a wide variety of dry products from pet food to animal feed, and snacks.



Material Handling

Material Handling Equipment

- Belt Conveyors—Capacity: 7-170 cu. meters per hour (250-6000 cu. feet per hour)
- Drag Conveyors—Capacity: 7-170 cu. meters per hour (250-6000 cu. feet per hour)
- Bucket Elevators—Capacity: 7-170 cu. meters per hour (250-6000 cu. feet per hour)
- Slide Gates—Sizes: .15-1 meter (0.-3.2 feet) Manual, Electric and Pneumatic
- Diverter Valves—Sizes: .25-.5 meter (0.8-1.6 feet) Plate/Basket Types
- Pneumatic Systems—Capacity: 6-170 cu. meters per hour (210-6000 cubic feet per hour), Engineer designed system.
- Bag Dump Stations—Ergonomically designed. Dust pull off, bag slitter and pneumatic bag lifter available.

Slide Gates

Slide gates are available in sizes from .15-1 meter (0.5-3 feet) in both slide and rack and pinion design with pneumatic or electric actuation. Units come complete with limit switches for open and closed position sensing. Materials of construction are mild or stainless steel.

Diverter Valves

Diverter valves are available in sizes from .25-.5 meter (0.8-1.6 feet) in both plate type and basket type designs with electric or electric over air actuation. Styles include both Y and offset diverters. Both two way valves and three way valves are available with options for rinohyde abrasion resistant linings, explosion proof limits. Available in mild or stainless steel construction.

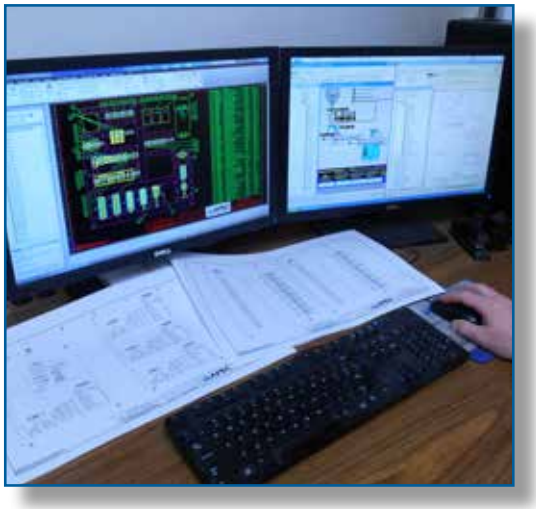
Bag Dump Stations

Ergonomically designed to allow for the discharge of bagged material directly into the process, or for refilling of product bins. Bag dump stations come complete with removable bar grate, 76 mm (3 inches) dust pull off duct, hinged cover, 60 degree discharge transition, flanged discharge, and support legs. Options include stainless steel and food grade construction, integral dust collector, integral bag slitter and pneumatic bag lifter. Available in mild or stainless steel construction.

Support Services

Engineering Services

APEC's team of mechanical and electrical engineers can assist in the layout and design of your system. We can provide drawings in AutoCAD and Solid Works formats. Our engineering services include:



Mechanical engineering
Electrical engineering
Software engineering
Programming

Field Services

Commissioning

APEC trained technicians and service engineers are available for commissioning of all of our manufactured equipment. They can provide:

Installation supervision
Startup assistance
Operator training
Maintenance training

Troubleshooting

Our technicians will visit your facility either personally or online to evaluate the problem and get your operations back to full capacity. We offer a variety of on-site and online service agreements tailored to the needs of your facility

Maintenance Programs

To keep your ingredient automation equipment and control systems operating at peak efficiency, APEC provides maintenance programs. Our maintenance programs offer scheduled service visits to inspect and calibrate your ingredient automation equipment, discounted pricing on replacement parts, and priority service.

Components

When you need replacement components, APEC can provide quick turnaround on quality parts. We offer expedited shipping on many quality components. A partial list of our preferred vendors includes:

Allen Bradley
Micro Motion
Endress & Hauser
Weg
Dodge
Sumitomo

Custom Fabrication

APEC brings together a support staff of electrical and mechanical engineers, field service technicians, certified welders, and fabricators in a facility that includes modern CNC cutting and forming equipment and state-of-the-art welding equipment. This winning combination allows us to provide our customers with quality products in a timely fashion. These products include something as simple as duct work for air handling systems to one of a kind, highly engineered prototypes. We have extensive experience in building products like stairways and landings, platforms, bins, hoppers, support structures, and custom electrical panels. Our equipment includes the following:

Shark Dual Head Waterjet Cutting System

- CAD compatible
- For materials up to 3" thick
- For cutting all types of materials including metals, glass, plastic, stone, ceramics and rubber.

Fryer CNC EZ-turn Lathe

- 24" swing x 60" bed, 3.43" thru hole, (8) position tool turret

Cincinnatti CNC CL 707 Laser

- Capable of cutting 3/8" HR plate, 3/16"sst, and 1/8" aluminum, in sizes up 72 x 144

Cincinnatt multi axis CNC 230 ton press

- Capable of forming 144" of ¼", 96" of 3/8pl, or 60" of ½" plate

Hydraulic Shear

- For 1/4 x 10' carbon steel

Cincinnatti CNC Millicron Mill

- 20" x 30" work envelope, 0-8000 RPM spindle capability, and a 21 place tool carriage capacity

Powder coat finishing system for small and large parts

- 8'x10'x9' and 40'x 15'x10' powder coat ovens

Initial Pinch Rolls

- 1/4"x 8' max
- 3/8 x 5' max

Hydraulic Iron Worker

Pittsburgh Seamer

MIG and TIG Welding

UL approved Electrical Panel Shop

APEC System Solutions

Innovative Equipment...Process System Success

Since APEC offers both the equipment and control systems, we can also provide a system solution for your processing needs. This gives you a single point of responsibility and eliminates possible mismatches. Since our founding in 1992, we have accumulated extensive experience in handling the most difficult ingredients. Our equipment and control systems have been used in such diverse applications as: automatic formulation of flavored drink mix, rubber mats, plastic, rubber gaskets and sealers, cereal products, pet food and animal feed, heavy duty brake linings, vitamin and mineral supplements, lawn patch, fertilizer, foam, and composite wood products. We believe that our strong commitment to customer satisfaction and decades of processing experience make APEC the right choice for your next processing system.

This system was created for a small vitamin and mineral premix manufacturer located in Mexico. APEC provided all of the process scales and storage bins with feeders including the major, minor and micro ingredient scales. In addition, the scaled ingredient collection conveyor, pneumatic conveyor, mixer and surge hopper, large and small bag packaging system, structural design for the local millwrights and a complete automation system including motor control center and computer based recipe automation were also provided.

This system was designed for a company that produces industrial floor coverings. APEC provided the bulk bag dischargers, micro scale, tote staging system, bag dump station, and complete automation including motor control center and computer based recipe automation.

APEC provided this system to a pet food products producer. This system included all the necessary pumps, meters, and tanks for the batching and dosing of multiple liquids. All of the liquid handling equipment was pre-wired, pre-plumbed, pre-tested and mounted on a skid for easy installation. The system also included the continuous blenders used to apply the liquid and dry flavorings to their products. In addition, a complete automation system was included with motor control center and PLC based automation.

Processing the Ingredients for Your Success

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