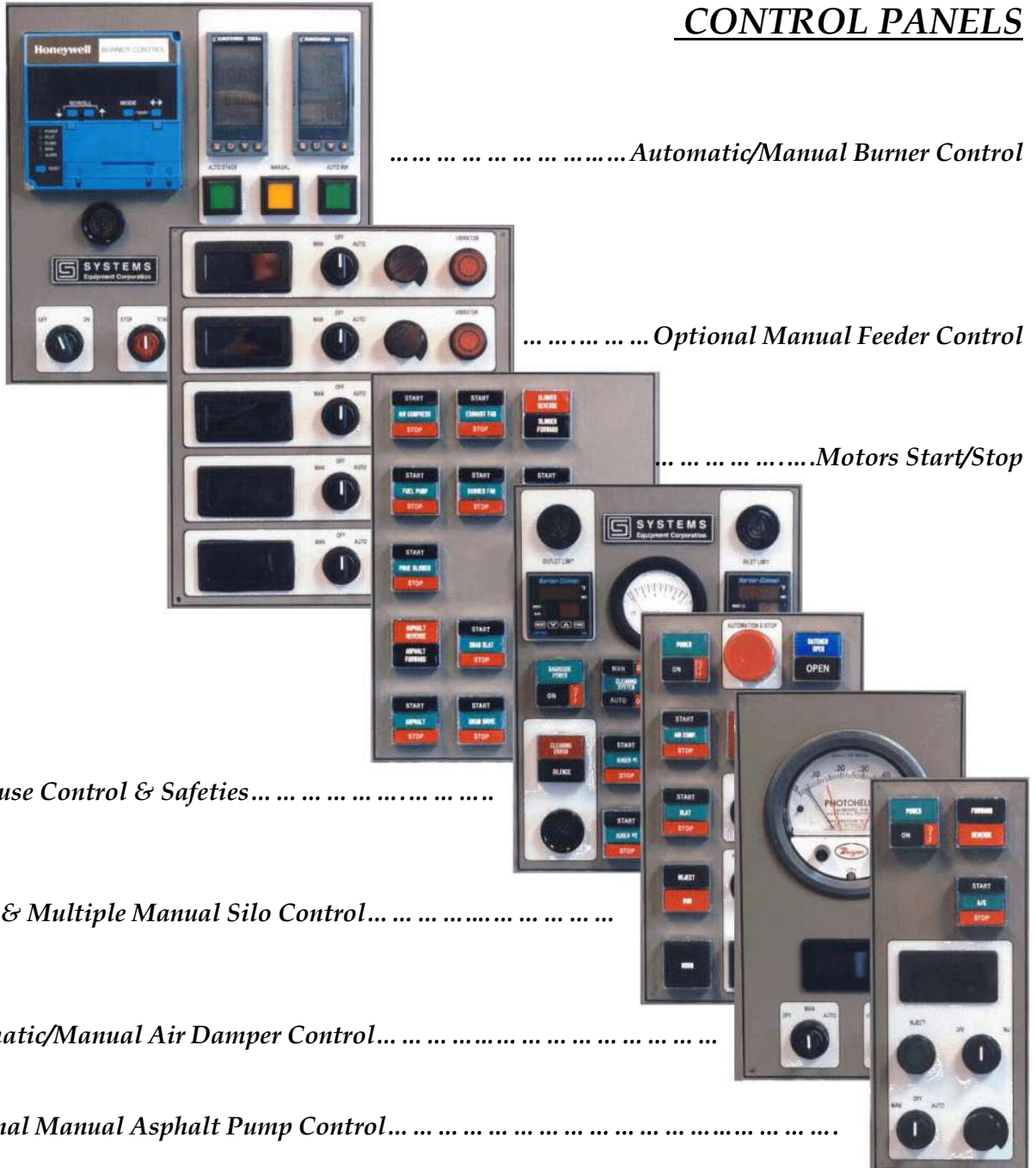


**DROP-IN, HARD WIRED  
CONTROL PANELS**



..... Automatic/Manual Burner Control

..... Optional Manual Feeder Control

..... Motors Start/Stop

*Baghouse Control & Safeties*.....

*Single & Multiple Manual Silo Control*.....

*Automatic/Manual Air Damper Control*.....

*Optional Manual Asphalt Pump Control*.....

**STANDARDIZED, PRE-ASSEMBLED PANELS, UTILIZING READILY AVAILABLE INDUSTRIAL GRADE COMPONENTS, COMPLETE WITH OPERATIONAL AND TROUBLESHOOTING DOCUMENTATION.**

## Model SC 3800/x Multi-Silo Control Panel

Designed and constructed to allow multiple silos to be easily and safely operated. Panel can be readily expanded at any time to include additional silos. Not all of the features listed will apply to all installations.



*Button format example only. Actual panel background color is consistent.*

### Alarm Panel.....

- Cutler Hammer E30 series operators are provided for all switches.
- Silo control system power ON/OFF switch.
- Silo loading emergency abort/interrupt switch to disable loadout automation.
- Low air indicator light.
- Momentary truck horn switch.
- Audible safety alarm.
- Audible high silo alarm interlocked to the *fill* selector. Momentary alarm *silence* button.

### Fill Selector.....

- Cutler Hammer E30 series operators are provided for all switches.
- Start/Stop operators for the silo air compressor, slat conveyor and transfer conveyor.
- Momentary fill selector switch with indicator light. Fill indicators light only if the selected fill path is made and proven.
- Fill path is checked for proper position of flop gates and necessary transfer conveyors. Audible alarm sounds if selected fill path cannot be made and verified.

### Silo Manual Control.....

- Cutler Hammer E30 series operators are provided for all switches.
- Manually set timer for control of the batcher open/closed cycle. This timer has separately set open and closed intervals. Timer controls only the batcher defined by the *fill* selector switch.
- Individual momentary *batcher open* push buttons allows manual cycling of the batchers independent of the silo fill selector position.
- Individual *open* indicator lights operated by users batcher gate actuated limit switches.
- Individual High, Mid and Low silo indicator lights. Interlocks to the silo gates to prevent material from being drawn from a low silo without the deliberate use of the individual low silo *bypass* switches. An output to a remote horn is provided that is powered by activating any *bypass* switch.
- Individual momentary silo gate *open* operators are provided. Silo gate actuation is interlocked to the low air pressure sensor and to the *low silo/bypass* interlock. Individual silo gate *open* indicators are provided.
- Individual momentary *open/momentary close* operator safety gate operators. Opening any silo safety gate will automatically close all other silo safety gates. The gate circuit can be latched open only if the sensed air pressure is adequate, an open indication is received from the gate mounted limit switches, and all other gates are closed. In an emergency, this safety interlock can be overridden by manually maintaining the OPEN actuation. Individual *open* indicators activated by limit switches on the safety gates (limit switches by others).
- *Because of the use of a momentary control and a holding circuit, the loss of power or adequate air pressure restores all safety gates to their safe (closed) position.*

## **Model BH-3800 Baghouse Control**

Designed to provide both automatic and manual start/stop control of all baghouse motors, monitoring of the cleaning system, inlet & outlet temperatures, and automatic fire safety shutdown.



- MANUAL/OFF/AUTO E30 series Cutler Hammer style control switches will be provided for all dust handling motors. All lenses will be engraved. All operators will be lit.
- In the automatic position, the dust handling system will be interlocked to and will start and stop with the injection of the liquid asphalt. An alarm will sound if any part of the dust handling system fails to start.
- A 0-10" Minihelix differential pressure gage is provided to measure and display the pressure drop across the baghouse.
- User set baghouse inlet and exit gas temperature alarm/meters. These alarms are interlocked with the burner and exhaust fan and provide warning and corrective action in the event of a potential baghouse fire. Excessive inlet temperatures will cause an audible alarm will drive the burner low fire. Excessive exit temperatures will shut down the burner, the burner and exhaust fans, and close the exhaust damper and the fire door (when available) in an attempt to starve the fire of oxygen.

## Model ABC-3000 Burner Control Panel

Designed to provide burner safety management, automatic and independent manual burner control for aggregate dryers with Genco or Hauck burners, utilizing industry recognized and proven off-the-shelf commercial components.



- Honeywell 7800 burner safety control system. Provides full automatic sequenced start cycle including air control during the pre-ignition purge cycle. Dynamic Self Check continuously monitors total system performance to assure the highest degree of safety available. This standard product from Honeywell has a text readout of flame strength, annunciated errors, status sequence and historical review of the six most recent faults.
- Operator interaction with the stack or mix controller is necessary *only* to change target temperature set points used in automatic operation.
- A full and separate manual control can be used to override the automatics or can be used in a full manual mode.
- Control is automatically reset to manual in the event of flame out to prevent unexpected startup in the automatic mode.
- Separate digital readout burner position indicator, independent of the automatic controllers, provides a readout of *actual* burner position at all times.
- Utilizes dual temperature controllers for fully automatic burner control by mix *or* by stack temperature. The use of dual controllers allows optimum automatic tuning constants to be separately established for each control technique and provides automatic control that is particularly effective with parallel flow drum mixers.
- User settable stack temperature limit alarm. In the event of stack over temp, the burner is driven to low fire and control is automatically returned to manual.
- A control input, often generated as an isolated limit contact of a baghouse inlet gas temperature alarm, is available to drive the burner to low fire.
- Accommodates a variety of user shutdown interlocks.
- Utilizes the low cost and commercially available Honeywell UV MiniPeeper flame sensor.
- Provided as an 11 3/4"h x 11 1/4"w drop-in panel connected to a 14" x 16" backplate and field termination strip by an 8 1/2' cable. A 50' backplate extension cable is optionally available.
- *Chart recordation, desktop or floor mounted enclosures, exhaust damper control, baghouse safety or control, flame sensors, stack and mix temperature sensors / probes, plant interconnect wire and installation is available from SYSTEMS Equipment Corporation, but is not included.*

## Model ADC-3800 Automatic Damper Control

Designed to provide both automatic and manual control of the exhaust fan damper along with indicators of damper position and bulkhead negative pressure differential. The following items are included:

- Digital display of damper position shown in percent open.
- Self contained sensor excitation supply. (Suitable damper position sensor provided by user.)
- Rotary manual OPEN/CLOSE and MANUAL/OFF/AUTO control selector switches.
- Manual control is always allowed; manual control overrides automatic control.
- Photohelix bulkhead negative pressure indicator with user set high and low limits. In automatic mode, the damper opens immediately and continuously if the bulkhead negative pressure is insufficient (less than the lower limits setting). The rapid open response to this condition minimizes flame flashback. When the negative pressure is higher than the high limit setting, the damper will close. The slow close response eliminates control overshoot in this direction.
- Socketed buffer relays are provided for the 120vAC control signal to the damper actuator. In the event of a cable fault, only the readily replaceable and expendable relays would be damaged.
- An interlock to the exhaust fan is provided to drive the damper closed when the fan is off. This reduces fan starting current and is required by many baghouse safety systems.
- *Damper actuator is not included. Users' actuator must have a sufficiently slow response time to insure proper operation. The response time from full open to full to full closed must exceed 15 seconds.*



## Model ADC-3800/VFD Automatic Damper Control Panel

Designed to provide both automatic and manual control of the exhaust fan speed together with indicators of fan speed and bulkhead negative pressure differential. The following items are included:

- Digital display of fan speed shown in percent of full speed.
- Rotary manual OPEN/CLOSE and MANUAL/OFF/AUTO control selector switches.
- Manual control is always allowed; manual control overrides automatic control.
- Photohelix bulkhead negative pressure indicator with user set high and low limits. In automatic mode, the fan speeds up immediately and continuously if the bulkhead negative pressure is insufficient (less than the lower limits setting). The rapid open response to this condition minimizes flame flashback. When the negative pressure is higher than the high limit setting, the fan speed will slowly be reduced. The slow close response eliminates control overshoot in this direction.



## Model MM-3800 Motors Start/Stop Panel

Designed so that the process Start/Stop operators, Safety Interlock Bypass and Master Start/Stop controls are arranged in a logical sequence.



- These drop in panels come complete with backplate mounted interlock and master start PLC.
- All operators will be of the E30 series Cutler Hammer style. All lenses will be engraved. All operators will be lit.
- Safety interlocks are included. The interlocks are hardwired allowing field changes or additions without the need for any reprogramming of the control PLC.
- A single *safety off* interlock control operator will be provided.
- A single button *master start* is included to allow one button hot restarts of all lower horsepower process motors. The mastering control is hardwired which allows sequence changes to be made without reprogramming the control PLC.
- A momentary horn button is provided.

## Model AC-3800/RATIO Or Model AC-3800/INC DEC Manual Asphalt Control

Designed to provide manual control of the asphalt delivery rate in the unlikely event that automatic control were to fail. A digital rate meter is provided so that backup operation is a simple matter of manually adjusting the output of the asphalt pump to values observed and recorded during normal operation.



Features include:

- One (1) each – Two-position rotary switch; pump MANUAL/AUTOMATIC control.
- One (1) each – manual asphalt delivery RATE control.
- One (1) each – momentary INJECT/DIVERT switch with electrical holding circuit.
- One (1) each – lighted INJECT indicator.
- One (1) each – digital meter. Meter reading will nominally indicate the volumetric asphalt pump output.

### **Model FD-3800/x Manual Feeder Control**

Designed to provide manual control of the material delivery rate from individual feeders in the unlikely event that automatic control were to fail. Digital meters are provided so that backup operation is a simple matter of manually adjusting the feeder output to values observed and recorded during normal operation.



- Components will be included as specified for virgin, recycle, dust, and additive feeders.
- 1 - 3 position rotary MANUAL/OFF/AUTO control switch for each feeder
- One (1) each – single turn speed control with marked dial or momentary rate INCREASE/DECREASE switch as required by the feeder rate controller. No master controller is utilized or required.
- One (1) lighted momentary push button that can be used as a low aggregate indicator and/or vibrator ON/OFF control switch
- One (1) each – digital meter. Meter reading will nominally indicate the feeders volumetric output.

*Products are sold subject to SYSTEMS Equipment's current Warranty, Terms, & Conditions*