HARTMAN SCALE CO. INC.
INDUSTRIAL WEIGHT CONTROL SYSTEMS
PERKASIE, PENNA. USA 18944 1-800-443-1164 Fax 215-257-9701

BULK CONTAINER FILLING 101

MOST CONTAINER SHAPES AND SIZES

- Unit fills bulk bags of various sizes and styles
- Gaylord boxes
- IBC’s
- Fiber drums: Individual or several placed on a pallet

Fill head can be raised or lowered as bag Height dictates.

Shown with manual control and acme jack screw option.

INFLATABLE BAG SEAL

Neoprene bladder used to put positive pressure onto the bulk bag
Fill chute forming a dust tight seal between the fill chute where the product Flows, and the bulk bag. Pressure is controlled by manual or solenoid valve at 12-15 psi.

Shown with Bladder inflated

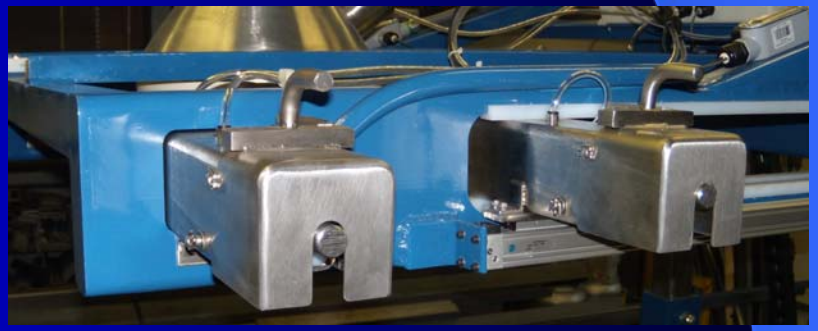
Shown with manual controls. Bladder deflated

EASY LOAD FEATURE

The “EASY LOAD” feature provides the means to move both the bag strap hooks and the center fill chute to a forward position to make it easy for the operator to load the empty bag. When loading bags onto stands with conveyors this is important so that the operator does not need to reach far or possibly step on the conveyor surface in order to reach the rear hooks.

BAG HOOKS SHOWN IN THE BAG FILL POSITION

Additionally when the “JACK SCREW” option is selected the operator can adjust the fill head to the most desirable height for loading to meet their needs simply by entering the desired height via the touch screen. The fill head will then travel down to this position for loading the bag. This is important when filling very tall bags.



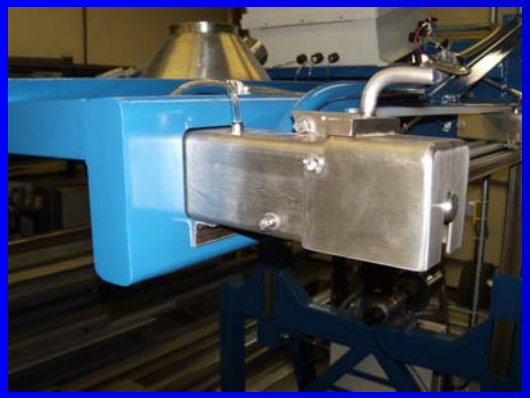
BAG HOOKS SHOWN IN THE BAG LOAD POSITION

DUST COLLECTION PORT

Used to remove airborne dust
As well as displace the air in the bag
During the filling operation.

PNEUMATIC RELEASE HOOKS

- Fixed hooks are standard
- Pneumatic actuated hook option
- Hooks are movable to accommodate different bag sizes
- Manual or automatic operation depending on control scheme
- Requires 80 psi plant air connection



HOOK AND SEAL CONTROLS

As an option the controls for the Seal and the bag hooks can be Remotely controlled by the PLC Controller. Solenoids and regulator Are enclosed in a nema 4X enclosure Or unit can be purged for hazardous Areas.

BAG INFLATION BLOWER

When the bulk bag has a liner it helps to
Pre-inflate the liner if it is not attached in the corners.
This blower is connected to the dust collection port with a
Diverter valve so that the air is diverted into the same port
As the vacuum is connected and the vacuum is removed.

ROTATING DRUM FILLING HEAD

Rotating fill head can be used for Evenly distributing product in larger containers Or for rotating from drum to drum to fill up to four Drums on a pallet. A dust hood which moves with the chute is available for dusty products.

The rotating chute can be turned clockwise or counter-clockwise. The speed is also adjustable. Four sensors are provided for proper positioning when filling drums.

JACK SCREW OPTION

The jack screw lifting option is used where the customer will be filling many different size bags or extra tall bags.

The jack screw allows for easy changing of the height of the fill head. On tall bags the head can be lowered to allow for easy loading of the empty bag. The fill head raises automatically when a batch is started to the proper height.

A TEFC three phase “C” face motor is used to operate the acme jack screw with Gearbox. Explosion-proof motors are available as option. A VFD is provided for accurate control of the lift and lower speed

JACK SCREW FEATURES

An encoder provides feedback to the PLC so that the bag moves to the proper Preset dimension as entered via touch-screen

Mechanical limit switches
At maximum travel for up and down
Are used as backup in event
Of encoder failure.

JACK SCREW OPERATOR SCREENS

The operator can change the bag height via the touch screen interface. If the bag is very tall they can also enter a “load position” which is where the fill head will travel to once the filled bag is removed. There is an alarm triggered if the fill head were to travel up to the high or down to the low mechanical limit switches. The operator can move the head with the manual controls provided via the touch screen.

BRC CONTROLLER

The BRC-623 controller is used on the bulk container filling system to control the weight and the feed device along with the other related equipment:

- Blower (when to run and for how long)
- Bag hooks (raise & lower)
- Bladder seal
- Vibration Platform: Controls cycles of on time and off time
- Jack Screw: Automatically adjusts the head to different heights based on bag seam length
- Roller Conveyors: In-feed and discharge conveyors are controlled via manual controls

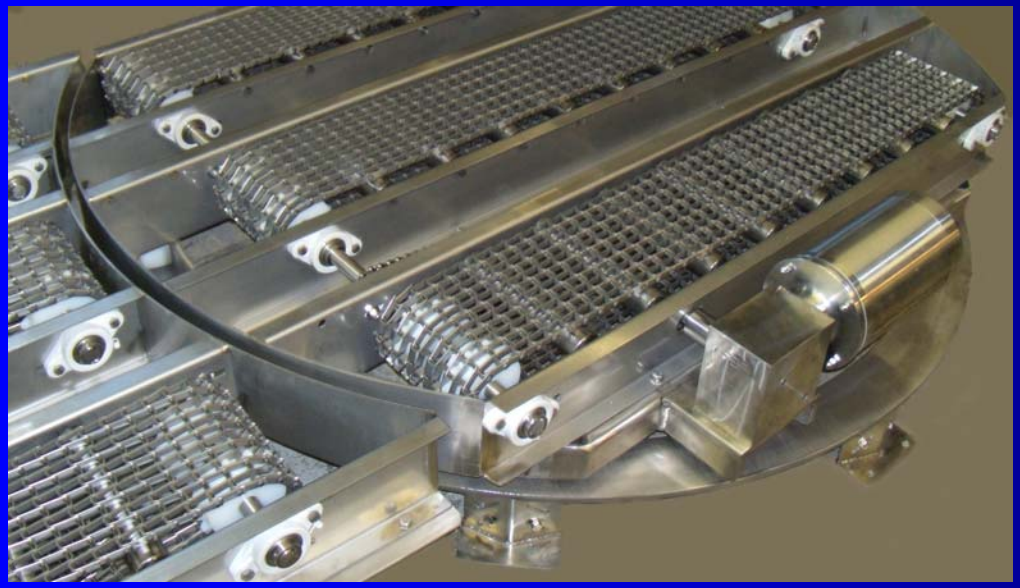
ROLLER CONVEYOR OPTIONS

Roller conveyors can provide for
Fast easy movement of the pallets
On the in-feed end or the removal
Of filled bag on the discharge end.

Once the bag is filled, to speed up the
Loading operation, the operator can
Release the bag straps and seal and
Then move the bag out of position so
That a new bag can be loaded. This
Eliminates the need to wait for a fork
Truck to move the bag out of position.

Standard conveyors are powder coated
With carbon steel rollers. Stainless rollers
Are available as well as all stainless
construction.

CONVEYOR TURNTABLES



STAINLESS STEEL 90 DEGREE TURNTABLE SHOWN FOR WASHDOWN APPLICATION

CONVEYOR SECTIONS CAN BE DESIGNED AND BUILT TO MEET EXACT REQUIREMENTS.

CARBON STEEL OR STAINLESS AS REQUIRED.

PORTABLE UNITS AVAILABLE

Features:

- Touch screen interface
- Slide gate contained
- Blower to inflate bag
- Hood over container
- Rotating Chute
- Vibration densification
- Low profile ramp to load with pallet jack
- Portable with fork truck
- Displays rate of fill and time ramaining
- Work in pairs for continuous filling

PORTABLE UNIT FEATURES

Removable chute for filling totes, drums, or bulk bags all on the same machine.

Self contained vibration system

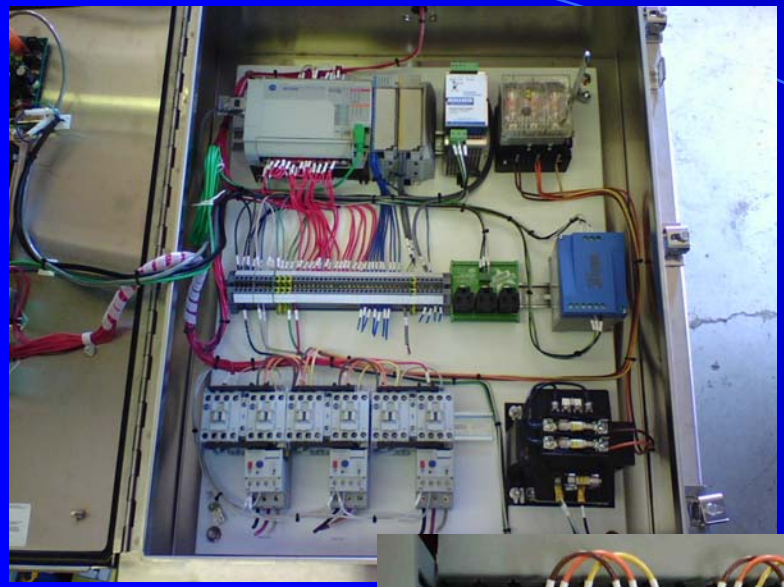
Stack lights to alert operator

Low profile ramp 2.5” above floor

PRODUCT FLOW CONTROL

- Screw Feeder
- Butterfly Valve
- Slide Gate
- Ball Valves
- Available with two speed control
- Available with linear control for ultimate control of weight

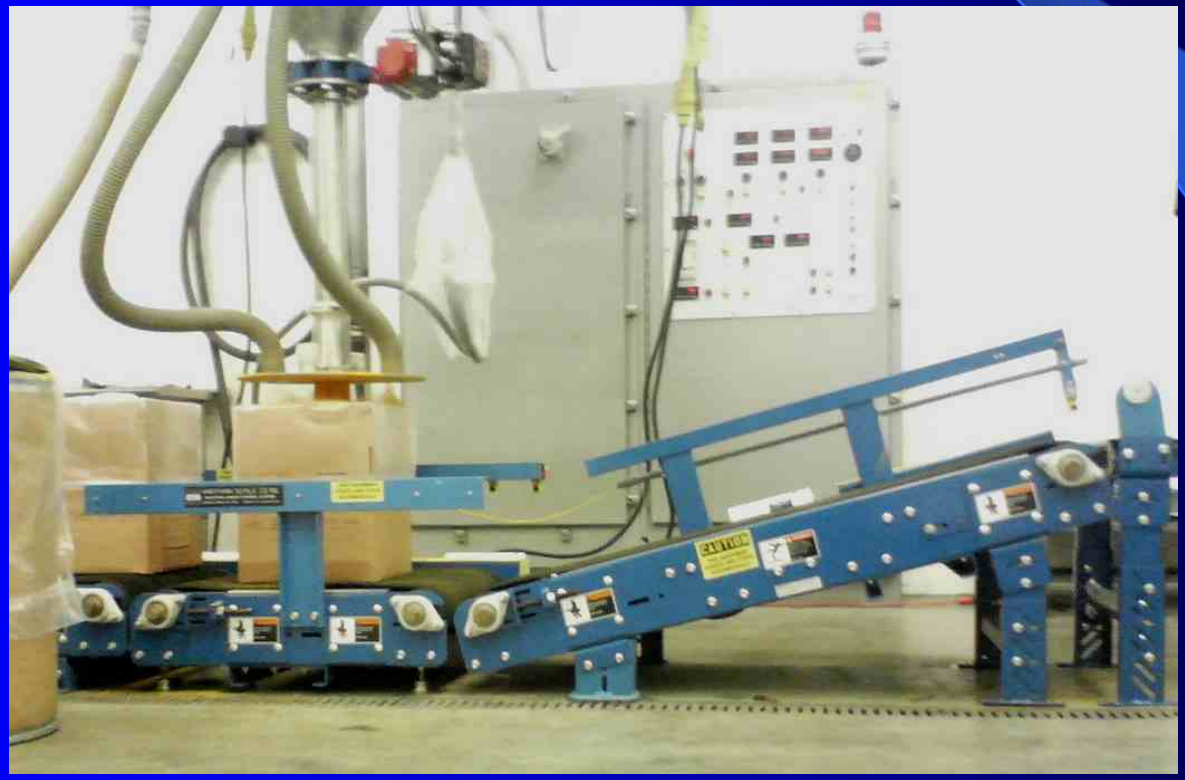
Shown with Linear control actuator



PLC control panel with optional manual control of conveyors.

Boxing system overview. Elevated roller conveyor for more comfortable sealing and labeling position.

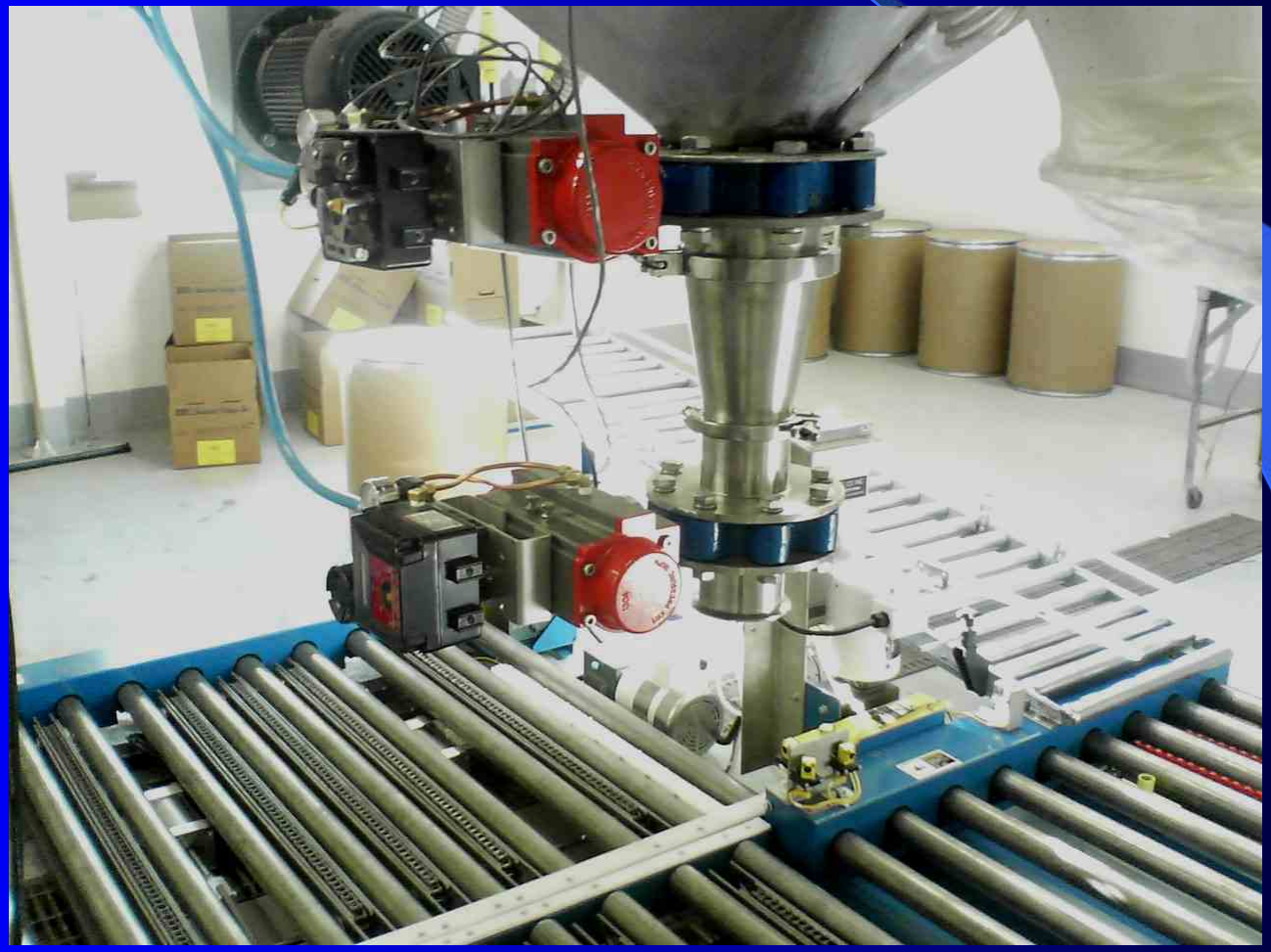
Boxing system with incline for boxes and drums



Scale conveyor section with load cells and sensors for monitoring container position.

Inclined conveyor for boxes. Systems available in carbon steel powder coated or stainless steel.

Larger system for filling boxes, drums, and gaylord boxes. Two different valves to control weight accuracy when filling smaller boxes.



Inclined conveyor for smaller boxes. Boxes increment up the incline automatically but can be transported when needed by pressing button.

Custom designed chain transfer units.

- Chain transfer unit 6.5” tall
- Up to 2000 pound capacity
- Stainless steel rollers
- Stainless steel chain and hardware.
- Pneumatic lift .75” above roller
- Motorized rollers and chain

Box filling system with gravity feed of empty boxes and motorized incline of filled boxes.

Batch reports to document ingredient amounts and keep track of lot numbers for future reference. Data is archived in Microsoft Access

Batch Performance Report

Report Date: 10/27/2007 11:42:25

Blend No: TestDL100A RecipeName Ti Recipe 1 Start Batch 1 End Batch 7

Feeder	1	2	3	4	5	6	7	8
Material Desc.	Ti Chip1	Ti Chip2	Ti Cip3	Sponge1	Sponge2	AlShot	A1.35Al/65V	Fe Flake
Part Number	IPT0500.P251	IPT0500.P251	IPT0500.P251	PT55025.P125	PT55025.P125	PMAA000.P231	PMAB000.P230	PMAB600.P232
Lot Number	CA-10010A1	CA-10010B1	CA-10010C1	07-0361	07-0362	1-4-2366	THI1126	04512034
Blend Target	680.00	680.00	680.00	346.00	680.00	680.000	70.000	346.000
Target Average	97.14	97.14	97.14	49.43	97.14	97.143	10.000	49.429
Actual Average	97.89	97.94	97.59	50.21	97.89	99.086	9.814	50.210
Batch Count	7	7	7	7	7	7	7	7
Minumum	94.8	92	94.6	46.4	94.8	96	4.95	46.4
Maximum	102.2	101.2	102.2	52.2	102.2	101.2	14.55	52.2
Std. Deviation	2.92	3.88	2.63	1.85	2.92	2.312	2.779	1.845
- Tolerance Spec.	2	1	1.3	2	1.3	0.3	1.1	1.4
+ Tolerance Spec.	1.5	1.2	0.6	1.3	1.3	0.9	1.1	0.5

Batch No.	Completion Time	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error	Target	Actual	Error
1	9/07/07 9:00:00	100.00	102.20	2.20	100.00	101.00	1.00	100.00	99.00	-1.00	50.00	51.00	1.00	100.00	102.20	2.20	00.000	01.000	1.000	10.000	9.900	-0.100	50.000	51.000	1.000
2	9/07/07 9:50:00	100.00	101.00	1.00	100.00	101.20	1.20	100.00	99.20	-0.80	50.00	52.20	2.20	100.00	101.00	1.00	00.000	01.200	1.200	10.000	9.920	-0.080	50.000	52.200	2.200
3	9/07/07 10:09:00	100.00	99.10	-0.90	100.00	100.20	0.20	100.00	102.20	2.20	50.00	51.23	1.23	100.00	99.10	-0.90	00.000	00.200	0.200	10.000	10.010	0.010	50.000	51.230	1.230
4	9/07/07 10:30:40	95.00	95.20	0.20	95.00	101.20	6.20	95.00	94.80	-0.20	50.00	50.30	0.30	95.00	95.20	0.20	95.000	01.200	6.200	10.000	9.400	-0.600	50.000	50.300	0.300
5	9/07/07 10:59:40	95.00	95.90	0.90	95.00	96.00	1.00	95.00	96.00	1.00	50.00	49.80	-0.20	95.00	95.90	0.90	95.000	96.000	1.000	10.000	9.965	-0.035	50.000	49.800	-0.200
6	9/07/07 11:10:10	95.00	94.80	-0.20	95.00	92.00	-3.00	95.00	96.00	1.00	50.00	50.54	0.54	95.00	94.80	-0.20	95.000	97.000	2.000	15.000	14.550	-0.450	50.000	50.540	0.540
7	9/07/07 11:30:33	95.00	97.00	2.00	95.00	94.00	-1.00	95.00	95.90	0.90	46.00	46.40	0.40	95.00	97.00	2.00	95.000	97.000	2.000	5.000	4.950	-0.050	46.000	46.400	0.400

THANK YOU:

For taking the time to view this presentation and for giving us the opportunity to show it.

If you would like more information, please contact us at 1-800-443-1164 or sales@hartmanscale.com