02

CHARGING POWDER WITH A LOW MINIMUM IGNITION ENERGY

De Dietrich
PROCESS SYSTEMS

THE CLIENT'S NEEDS

A leading supplier of toughening agents and resins for high-performance thermoset systems needed to safely transfer a material with a Minimum Ignition Energy (MIE) of 3 mJ. Due to space restrictions, the system would need to be installed outdoors in an extremely seasonal climate.

12» Powder Pump unit featuring reducer

OUR SOLUTION

The two primary requirements for safe pneumatic conveying of material with a low MIE are 1) reduce the oxygen level in the solids/gas mixture, and 2) ensure conductive or static dissipating materials and proper grounding measures are used in the equipment design and installation.

Based on those requirements, DDPS proposed a dense-phase, vacuum conveying system capable of monitoring and controlling the O_2 level in the conveying stream below 6% which represented the lower explosive limit (LEL).

A 12" x 8" concentric discharge hopper, lined with a sintered metal screen was supplied on the bulk bag unloader. This allowed the wall of the reducer to be flushed with nitrogen which helped prevent any bridging or rat-holing of powder during discharge.

In addition, a fluidizing gas control system was provided to monitor the flow of nitrogen into the transfer line to ensure proper inertion and dense phase transfer was maintained. Also, conductive and static-dissipative polymers and a bulk bag grounding system were included to provide electrical continuity to ground.

Finally, panel heaters, heat tracing, insulation and protective shrouds and bellows were included to shield instruments and equipment from precipitation and help withstand sub-freezing temperatures.
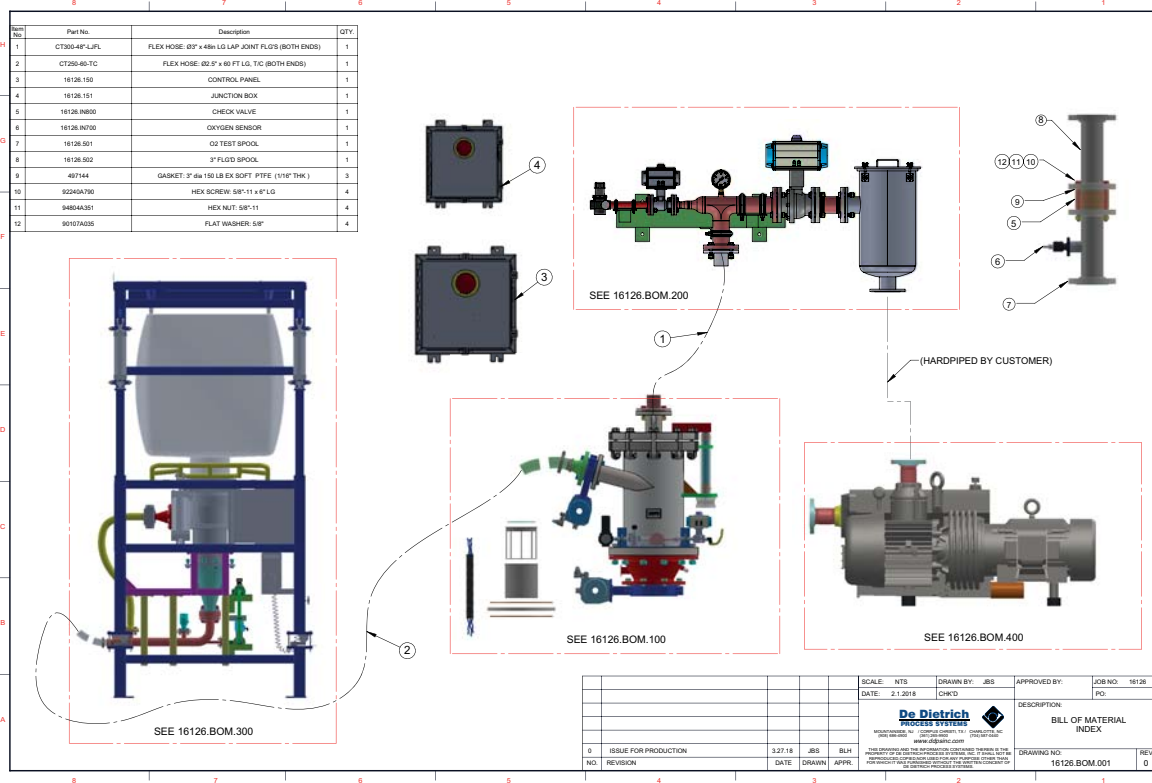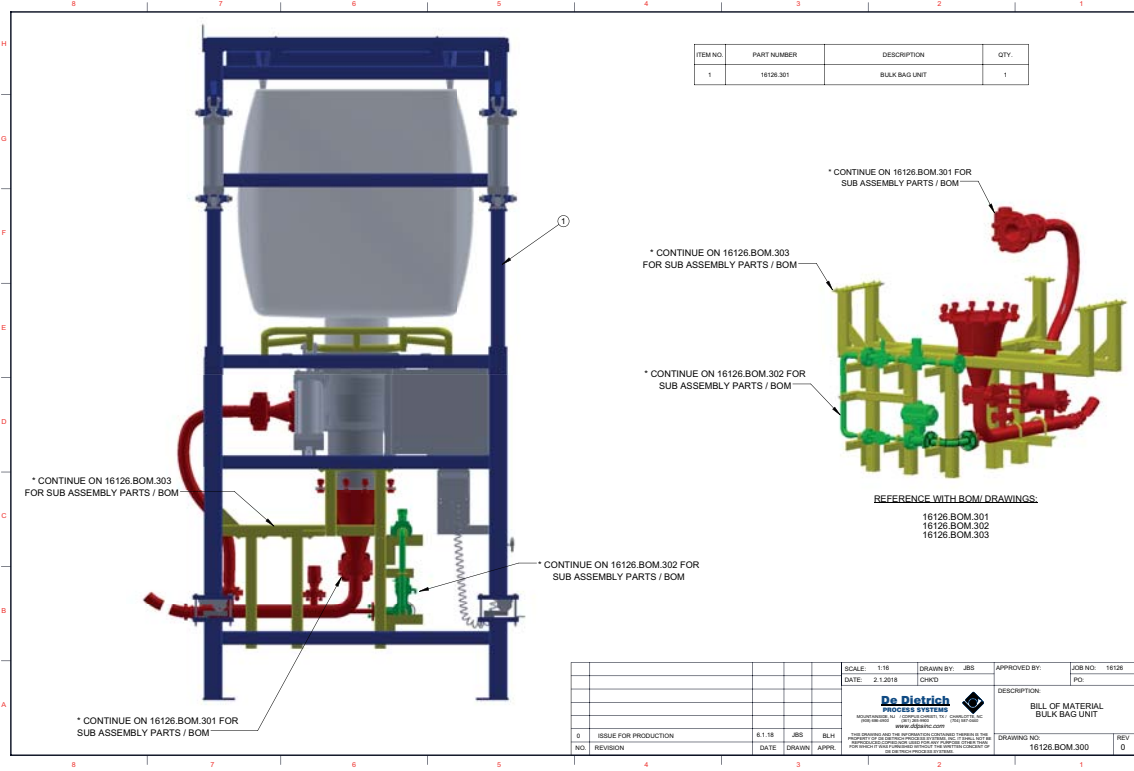

Bulk bag unloading station

RESULTS & BENEFITS

The system was able to achieve, maintain and monitor an oxygen content < 6%, which met the process design safety requirements. Also, the ability to install the system outdoors preserved floor space inside the facility for other important manufacturing operations.

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	16126.301	BULK BAG UNIT	1

* CONTINUE ON 16126.BOM.301 FOR SUB ASSEMBLY PARTS / BOM

* CONTINUE ON 16126.BOM.303 FOR SUB ASSEMBLY PARTS / BOM

* CONTINUE ON 16126.BOM.302 FOR SUB ASSEMBLY PARTS / BOM

REFERENCE WITH BOM/ DRAWINGS:
16126.BOM.301
16126.BOM.302
16126.BOM.303

* CONTINUE ON 16126.BOM.303 FOR SUB ASSEMBLY PARTS / BOM

* CONTINUE ON 16126.BOM.302 FOR SUB ASSEMBLY PARTS / BOM

* CONTINUE ON 16126.BOM.301 FOR SUB ASSEMBLY PARTS / BOM

SCALE:	1:16	DRAWN BY:	JBS	APPROVED BY:	JOB NO:	16126
DATE:	2.1.2018	CHK'D			PO:	

De Dietrich
PROCESS SYSTEMS
MOUNTAINSIDE, NJ / CORPUS CHRISTI, TX / CHARLOTTE, NC
(908) 686-4900 (361) 289-9900 (704) 587-0440
www.ddpsinc.com

DESCRIPTION:
BILL OF MATERIAL
BULK BAG UNIT

0	ISSUE FOR PRODUCTION	6.1.18	JBS	BLH	DRAWING NO:		REV
NO.	REVISION	DATE	DRAWN	APPR.	16126.BOM.300		0

Item No	Part No.	Description	QTY.
1	CT300-48"-LJFL	FLEX HOSE: Ø3" x 48in LG LAP JOINT FLG'S (BOTH ENDS)	1
2	CT250-60-TC	FLEX HOSE: Ø2.5" x 60 FT LG, T/C (BOTH ENDS)	1
3	16126.150	CONTROL PANEL	1
4	16126.151	JUNCTION BOX	1
5	16126.IN800	CHECK VALVE	1
6	16126.IN700	OXYGEN SENSOR	1
7	16126.501	O2 TEST SPOOL	1
8	16126.502	3" FLG'D SPOOL	1
9	497144	GASKET: 3" dia 150 LB EX SOFT PTFE (1/16" THK)	3
10	92240A790	HEX SCREW: 5/8"-11 x 6" LG	4
11	94804A351	HEX NUT: 5/8"-11	4
12	90107A035	FLAT WASHER: 5/8"	4

SEE 16126.BOM.200

(HARDPIPED BY CUSTOMER)

SEE 16126.BOM.100

SEE 16126.BOM.400

SEE 16126.BOM.300

SCALE:	NTS	DRAWN BY:	JBS	APPROVED BY:	JOB NO:	16126
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DESCRIPTION:
BILL OF MATERIAL
INDEX

0	ISSUE FOR PRODUCTION	3.27.18	JBS	BLH	DRAWING NO:		REV
NO.	REVISION	DATE	DRAWN	APPR.	16126.BOM.001		0

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QVF
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