TECHNICAL SPECIFICATION No.: 6710.28026.52
EKATO SOLIDMIX VST 11000

1 SOLIDMIX VST 11000– stock delivery S.N.: 76628

1.1 Product

Chick peas for drying. The suitability of the system has been confirmed by a small scale test at the EKATO Corporation labs.
Our quote is based on the below mentioned physical data:

Product	Solids	Chick Peas (sensitive to shear)
Condition	Free flowing	Sticky
Bulk density dry	0,6	kg / Litre
Bulk density wet	0,8	kg / Litre
Bulk density for drive design	0,8	kg / Litre
Moisture content	40	%
Process temperature	60...100	°C
Solvent	Ethanol	

1.1.1 Process Design

The suitability of the system was verified by carrying out pilot tests in the EKATO Corporation laboratory. The scale up to plant scale was carried out by EKATO SYSTEMS. The predicted process results are subject to a +/- 30% accuracy due to the small test size.

- Heating power demand: 2 x 60 kW
- Heating media: hot water in a closed loop.
- Solvent recovey system suitable for approx. 600 kg/hr ethanol (e.g. minimum 28 m² condenser)
- Vacuum system to maintain a average vacuum of 100 mbar abs during the drying process. The vacuum control will be capabale of running low vacuum (approx.. 30 mbar abs) to ambient pressure.

The VST 11000 will receive a blow-back dust filter to protect the vacuum system from debris. To keep the filter size reasonable, the filter will only be activated, once the "liquid only" evaporation has come to an end and dust is emerging. The operator will then de-activate the filter bypass line.

1.2 Technical Data

1.2.1 Volumes

Vessel gross volume [l]	13300
Filling volume max. [l]	11000

1.2.2 Operating and Design data

Our quote is based on the below mentioned technical design data:

	Product space	Heating/Cooling Jacket
EKATO Standard design		
Pressure Ps [bar]:	-1/+4	-0/+3
Temperature Ts [°C]:	10/+153	10/+153

	Site conditions
Ambient temperature [°C]	0/+40
Plant altitude a.S.l. [m]:	≤ 1000
Installation area:	Inside a building
Country of installation:	Canada

	Utility data
Power consumption [kW]:	55
Power supply:	3 × **575/600**
Base Frequency [Hz]:	**60**
Electric parts standard	IEC (CSA)
	CEC
Solenoid voltage [V DC]:	24
DCS voltage [V DC]:	24
Protection class IEC [IP]:	55
Compressed air [bar]:	4
Nitrogen [bar]:	4
Mode of operation:	Batch
Motor classification	XP Class I Div. 1 ClassC+D

1.2.3 Explosion protection measures

If the product fines and/or the solvent can form an ignitable (explosive) atmosphere, the product space must be blanketed with nitrogen during operation.

1.2.4 Explosion-proof execution

The system is designed for explosion-proof execution acc. to NEC 500
Class I, Division 1, Temperature Class T3, Group C, D.
XP classifications and applicable temperature class have been confirmed by OWNER.
IS cabling within the machine borders performed by EKATO SYSTEMS.
Closed conduits to be provided by OTHERS on site.

Installation regime:
- VST 11000 in explosion classified area
- HMI in the explosion rated area
- MCC and master control cabinet in non explosion area
- Heating rack in non explosion area
- Solvent recovery system in explosion classified area

1.3 Valve/nozzle standards

Chemical applications DIN	
Process nozzle standard	DIN 2501, DIN 28117, EN 1092
Utility nozzle standard	EN 1092
Valves	Chemical type

1.4 Materials of construction

- ✓ EKATO SYSTEMS is a certified fabricator for stainless steel, nickel based alloys, titanium and more.
- ✓ Full in-house material tracing acc. ISO 9001

1.4.1 Wetted Parts VST 11000

Process wetted metals	DIN-mat. no.	1.4301 (304)
O-Rings/Elastomers:		FKM (VITON)/FEP encapsulated or EPDM
Gaskets		GYLON blue
Shafts sealrings	FDA approved	PTFE compound

1.4.2 Wetted Parts Vacuum System

Process wetted metals	DIN-mat. no.	1.4301 or higher
O-Rings/Elastomers:		EPDM
Condensor housing		CS
Pumps		CS/ Cast iron or higher
Piping		CS

1.4.3 Non wetted parts

Heating jackets	DIN-mat. no.	1.4301 (304)
Agitator lantern / gearbox / motor	RAL 5003 (blue)	Cast iron painted
Insulation	By others	Mineral wool
Sensors	DIN-mat. no.	Vendor standard (aluminium)

1.4.4 Corrosion resistance disclaimer

Wetted parts as stated above (e.g. metals, elastomers, gaskets) **must** be confirmed by the process owner in respect to corrosion resistance. EKATO has only limited information about the behaviour of the materials in combination with the process thus cannot take responsibility in respect to corrosion/contamination. EKATO however is responsible for the proper design and use of the materials/elastomers in their function as parts of a blender/dryer for solids.

1.5 Surface finish

- ✓ The surface finish is executed as per needs of the process.
- ✓ EKATO SYSTEMS provides an almost crevice free designs and minimum in tank bolt connections.
- ✓ EKATO SYSTEMS provides easy to clean outside surfaces to make a perfect sight.

1.5.1 Wetted parts of the process compartment

- Welding seams ground flush
- Surfaces mill finnish, scratches ground

- Surfaces pickled and passivated

1.5.2 Non wetted parts (visible surfaces)

- Surfaces glass bead blasted , pickled and passivated
- Vacuum system: vendor standard
- Carbon steel parts/cast iron parts with shop primer and top coat
- Drive: colour code RAL 2000 (Orange)
- Vacuum system vendor standard
- Auxiliary parts acc. vendor standard.

2 EKATO PARAVISC Agitator

2.1 Drive

Type	3-Phase IEC Motor XP Cl 1 Div. Gr. D
Installation	V1 - Motor shaft pointing down
Name Plate power	55 kW
Gearbox type	Helical (ratio: 104,7)
Lubrication	Oil splash – including initial filing
Direction of rotation (seen from drive to impeller)	CW (clockwise)
Operation speed low	3 min-1
Operation speed normal at **60** Hz	13,8min-1

Gearbox hot surface: avoid installing near to gangways, etc. since surface temperatures > 60 °C are possible. Protective guards to prevent accidental contact to be supplied by others. Operation up to 87 Hz (no-load): centrifugal removal of residual product from the agitator blades or to assist a wet cleaning process. When vessel is empty: reversed direction of rotation during the cleaning process.

2.1.1 Frequency Converter – provided by others

The speed is adjusteable via a VFD

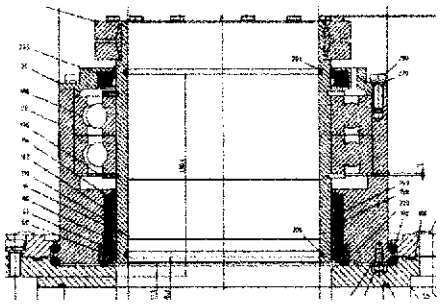
2.2 Bearing unit

Agitator bearing lantern type EKATO HWL 2000 A. Short version for easy access to the shaft seal.

2.3 Shaft seal – INTERSEAL lipseal

⇨ **Replace stuffing box by ATEX lipseal**

Agitator shaft sealing by means of a lip seal with radial shaft seal rings. The seal rings are assembled on a bushing and completely enclosed in a housing of stainless steel, seal housing bolted to the agitator mounting flange.



2.4 Agitator shaft

Solid one piece shaft.

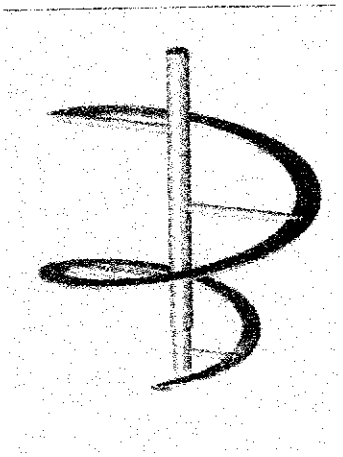
Upper connection	In the gearbox with a flange coupling inside the vessel
Shaft design	Free overhung, no in-tank bearing
Diameter in seal area	160 mm

Smooth running of the agitator shaft is ensured by keeping the operating shaft speed sufficiently far away from the critical speed of the shaft.

2.5 Impeller EKATO PARAVISC

EKATO PARVISC – benefits

- ✓ Blades attached to the shaft by means of solid massive arms.
- ✓ All welding design.
- ✓ No in-tank bolt connections – no bolt tightening.



2.6 Baffle

Baffle – benefits

- ✓ Allows handling of complex products
- ✓ Avoids product rotation

1 Additional baffle installed from the side vessel wall.

3 Vessel

3.1 Execution

The EKATO SOLIDMIX VST consists of a vertical mixing vessel with dished top dome. The vessel consists of a straight side and a cone bottom. The top dome is built as DIN Klöpper and welded to the cylindrical part. A double jacket for steam does provide full surface heating/cooling to support the process.

Inside vessel diameter	2000	mm		
Total height:	3090	mm		
	3 mounting brackets acc. DIN 28083			
	1 nameplate with holder			
	3 lifting lugs acc. DIN 28086			
	Top dome welded			

3.2 Design Code

Vessel manufactured as pressure vessel according to ASME Code .

DESIGN CONDITION SHELL

Design Code: ASME CODE SECT. VIII DIV. 1 Edition 2007			
Loading per UG 22			
Operating pressure (max.)		BARG/PSIG	4/58
Internal design pressure		BARG/PSIG	4/58
External design pressure		BARG/PSIG	1/14.5
Hydraulic Liquid pressure		BARG/PSIG	0.5/7.25
Design pressure+Hydraulic Liquid pressure		BARG/PSIG	4.5/65.25
MAWP at design temperature (Hot & Corroded)		BARG/PSIG	4/58
Operating temperature (max.)		°C/°F	153/307.4
Design Temperature	Internal	°C/°F	153/307.4
	External	°C/°F	153/307.4
MDMT		°C/°F	0/32
Maxim Liquid Level-above bottom T.L. : H		mm/in	4750/181.8
Fluid	Name	-	WATER/COCOA
Characteristic	Density	Kg/m³	1000
Corrosion Allowance		mm/in	0

3.3 Thermal insulation

As the surface temperature of the vessel can exceed 60 °C, insulation or a guard to protect against accidental contact must be provided. The vessel is equipped with the collars and rings necessary for supporting the insulation.
The insulation thickness is designed to meet the EKATO standard and OSHA requirements.

Insulation provided by OTHERS

3.4 Nozzles

Qty.	Designation	Size	Remark
1	Agitator	DN 500	with O-Ring
1	Manway	DN 500	Zimmerlin
1	Sight glass	DN 150	at the manway cover
1	Sparger	DN 40	With blind cap
1	Filling port	DN 125	With butterfly valve and rotary vane valve
1	Discharge port	DN 350	With gate valve
1	Filter	DN 300	
1	Vacuum Bypass	DN 125	With butterfly valve
1	Multi port: - Pressue sensor DN 50 - Safety valve LESER DN 80 - Vent nozzle DN 50 - Filter bypass DN 100	DN 250	with adapter flange and auxiliaries
1	Steam port	DN 150	at the bottom cone – replace with sampling valve
1	Drain bottom cone	DN 40	With blind flange
1	Baffle	welded	
1	Jacket heating IN	DN 50	With blind flange
1	Jacket heating OUT	DN 40	With blind flange
1	Jacket heating temperature sensor	1/2	Temperature sensor in the jacket heating line IN
1	Temperature sensor product	DN 25 special	Product temperature sensor in the jacket bottom cone

Note: EKATO to re-evaluate the use of the filling ports:

- Use the DN 125 mm for filling the slurry
- Use the DN 300 to fit a dust filter

3.5 New Heating ports (R1 modification on ASME code vessel)

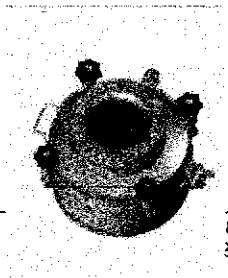
Qty.	Designation	Size	Remark
1	Bottom Cone heating IN	3" 150 lbs	
1	Bottom Cone heating out	3" 150 lbs	
1	Cylinder heating IN	3" 150 lbs	
1	Cylinder heating out	3" 150 lbs	

Tangential arrangement

Auxiliary parts

3.5.1 Manway

Manway with lid for easy access to the vessel. O-Ring seal. Fixed with bolts – to open use tools.



3.5.2 Sight glasses

One sight glass located on the manway, with wiper.

3.5.3 Automatic valve on filling nozzle DN 125

Product charging nozzle with a butterfly valve suitable for the specified operating conditions, Activation via a pneumatic actuator complete with pilot solenoid valve and "OPEN/CLOSED" limit switches. Failsafe position: Closed without energy.

3.5.4 Rotary Vane Valve

Hold

3.5.5 Automatic valve on vent nozzle DN 50

Product charging nozzle with a butterfly valve suitable for the specified operating conditions, Activation via a pneumatic actuator complete with pilot solenoid valve and "OPEN/CLOSED" limit switches. Failsafe position: Closed without energy.

3.5.6 Automatic valve on filter bypass DN 100 (Hold for owner approval)

Product charging nozzle with a butterfly valve suitable for the specified operating conditions, Activation via a pneumatic actuator complete with pilot solenoid valve and "OPEN/CLOSED" limit switches. Failsafe position: Closed without energy.

3.5.7 Discharge – gate valve

Product discharge flange with a gate valve appropriate for the specified operating conditions, flush with the vessel inner wall when closed. Activation via a pneumatic cyliner complete with pilot solenoid valve and "OPEN/CLOSED" limit switches.
Failsafe position: Hold without energy

3.5.8 Sampling valve in old steam port (Hold for owner approval)

Special spool valve for withdrawing samples, with glass sample cup, spool manually operated by hand wheel and screwed stem. This valve with a vent cock makes it possible to withdraw samples under all specified operating conditions without interrupting the process.

3.5.9 Pressure relief valve

Safety valve (pressure relief valve) for overpressure protection.
LESER Type 484 (short version)
Ventilation to safe area required (by others)

3.5.10 Pressure sensor

Pressure measurement loop comprising one pressure transmitter, directly mounted on the multi port.

3.5.11 Temperature measuring product

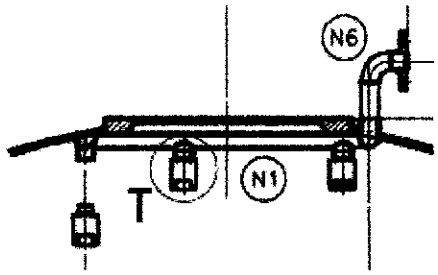
Temperature sensor Pt 100 RTD located in the bottom cone, with stainless steel thermo well protruding into the product space.

3.5.12 Temperature measuring jacket temperature

Temperature sensor Pt 100 RTD located in the hot water line.

3.5.13 Valve block in non ex area

To activate the pneumatic valves.



4 Potash spray system – blind plugged

4.1 Spray nozzles

EKATO supplies one set of spray nozzles. The spray balls will be connected to the on-site potash suppy.

⇨ Remove Lechler nozzles

⇨

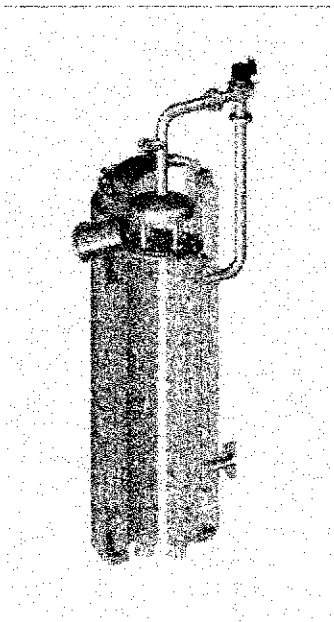
5 SOLIDMIX – Dust filter (Hold for owner approval)

5.1 Technical Data

Filter surface		1 m²
	Product space	Heating/Cooling Jacket
EKATO Standard design		
Pressure Ps [bar]:	-1/+3	-1/+5
Temperature Ts [°C]:	10/+131	10/+151
Blowback reservoir: 0/+4 [bar]		

5.2 Design

Filter housing comprising a cylindrical shell with bottom flange for mating with the vessel and a top flange with a removable dished cover, with hinge or davit for cover.
Unfiltered and filtered vapour sides separated by a gastight filter tube sheet fitted with filter elements/bags. The filter elements/ bags are sealed in tube sheet by O-rings and secured with clamping strips externally. The filter bags are fitted over wire retainers.
Cleaning of the filter elements alternately with gas pulses from a heated pressurized gas reservoir. The flushing gas is released through a pilot operated diaphragm valve, complete with pilot solenoid valve. The cleaning intervals are controlled either by differential pressure or at set intervals by the control system.
Nitrogen or compressed air supply by others.
Pressure in vacuum line measured by a pressure sensor. The differential pressure is computed at the processing signals in control system using the vacuum line signal and the vessel pressure signal. (2 sensors). The signal processing is not included in the EKATO SYSTEMS scope



5.3 Design Code Filter

Vessel manufactured as pressure vessel according to ASME Code (CRN)

5.4 Thermal insulation

As the surface temperature of the vessel can exceed 60 °C, insulation or a guard to protect against accidental contact must be provided. The vessel is equipped with the collars and rings necessary for supporting the insulation.
The insulation thickness is designed to meet the EKATO standard and OSHA requirements.

Insulation provided by others on site

5.5 Nozzles

Qty.	Designation	Remark	Remark
1	Filter base flange	Same as vessel	with O-Ring
1	Filter top dome cover	DN 500	with O-Ring
1	Pressure sensor (vacuum side)	G1/2"	
1	Vacuum line	3"	
1	Jet pulse supply	1"	
2	Jacket heat IN/OUT	1"	
1	Jacket vent	1/8	

5.5.1 Pressure sensor

Pressure measurement loop comprising one pressure transmitter, directly mounted on the vacuum line.

5.6 Type of filter element/bag

Bag filter	Bag filter with stainless steel wire cage

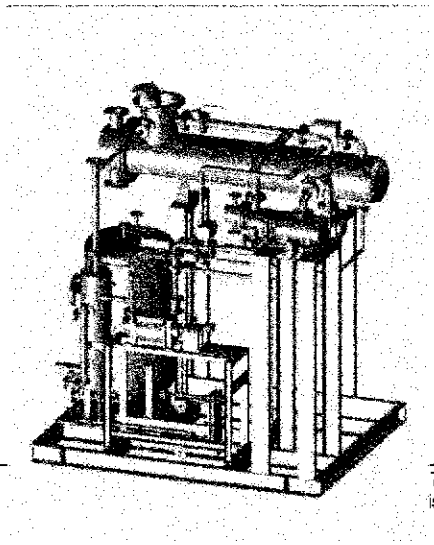
6 Solvent recovery system

EKATO vacuum system – benefits

- ✓ Vacuum pump with condensers and collecting vessel from one single source
- ✓ Audited and proven vendors
- ✓ Designed to suit the SOLIDMIX dryer process

The solvent recovery system does create the vacuum in the dryer and re-condenses the solvents. The solvents are collected in a recovery vessel.

The solvents will be re-condensed in a tube bundle heat exchanger installed in the vacuum line. The vacuum pump is designed to compensate for all vacuum losses and nitrogen bleeds.
The vacuum pump is a liquid ring vacuum pump with a booster. This pump is robust against solvents and debris passing. Operation is possible with both solvent and water. Vacuum control is achieved via the addition of nitrogen or air (bleed) introduced in the vacuum line.



The factory set point for the system is minimum vacuum level, maximum evaporation/condensation

rate. Vacuum levels from 10 mbar abs to atmosphere are standard set points.

The efficiency of this system is directly connected to the available cooling water supply. Please note the utility requirement for cooling water.

Our design calculation is based on the following utility temperature (cooling water supply): 10°C (+/-2°C)

⇨ **Provided by chiller on site**

6.1 Design parameter of the vacuum line

The components of the vacuum system (piping, condenser, pump skit) are designed acc. the supplier's standard:

Ps design pressure: bar	-1 / +0,5
Ts design temperature: °C	0/90

6.2 Tube bundle heat exchanger

Surface m^2	Ca. 28

6.3 Condensate collecting vessel

Collecting vessel for the solvents from the condenser.

Total volume liter	**750**
Filling volume liter	**700**
Ps design pressure: bar	-1 / +0,5
Ts design temperature: °C	0/90
Solvent density: kg/m^3	1000

Note: durig a normal drying cycle, the solvent recovery vessel needs to be ddrained to a IBC (by others) once the 1000 liter volume is reached.

6.4 Installation

Collecting vessel installed in the base frame.

6.5 Thermal insulation

Armaflex insulation of all cold surfaces to reduce/avoid condensation by the humidity in the service area.

6.6 Liquid ring vacuum pump

- ✓ Robust design
- ✓ Low maintenance

✓ Not sensitive to solvents and debris

With closed loop cooling system, with minimum water consumption.

Liquid ring fluid: water

6.6.1 Suction media

0, 05...0, 10 kg/h air bleeding, 0, 05 kg/h N_2 from flush, loaded with low amounts of solvent (within saturation level). Suction temperature= approx. cooling water temperature.

6.6.2 Design vacuum pump

Exhaust pressure: 1013 mbar,
Shaft seal with mechanical seal acc. DIN 24960

Motor power kW	7,5

6.6.3 Auxiliaries

- Liquid ring storage vessel
- Valves and lines
- Base frame

7 Vacuum piping

The pipework from the dryer to the vacuum system is provided by: **Others**

7.1 Vacuum piping dryer-to-vacuum system

Heated piping from the dust filter to the vacuum system.

Size (DN)	100
Estimated length	50 m

8 Heating/cooling system (electric) – 2 units (Hold for owner approval)

EKATO heating system -benefits

✓ Closed loop liquid circulation system. The heating/cooling fluid does not touch the product area.

✓ Installation at the dryer or in the utility room

✓ Exact control of the process in respect to temperature

8.1 Design condition

Heating demand for bottom cone: 60 kW

Heating demand for cylinder: 60 kW

8.2 Design

- Circuit pressure approx. 3 bars.
- 1 Circulation pump 200 liter /min capycity, 5 bars
- 1 Expansion vessel
- 1 Electric heating
- 1 plate heat exchanger for cooling water
- Heating media: glycol / water
- Signal processing: Profibus

Heating system power kW	2 x 60

Signal transmission: PROFIBUS

9 Process controls

The process controls (e.g. starters) are provided by: EKATO

9.1 Hardware

All the limit switches and sensors directly mounted on the mixer/dryer and necessary for its safe operation are supplied by EKATO. These devices are equipped with the field connections supplied by their manufacturers (terminal board or box).

The electrical switch gear required for the motors and actuators is NOT included in EKATO's scope of supply and must be supplied by others. Interconnecting cabling also by others.

9.2 DCS

EKATO PLC – benefits

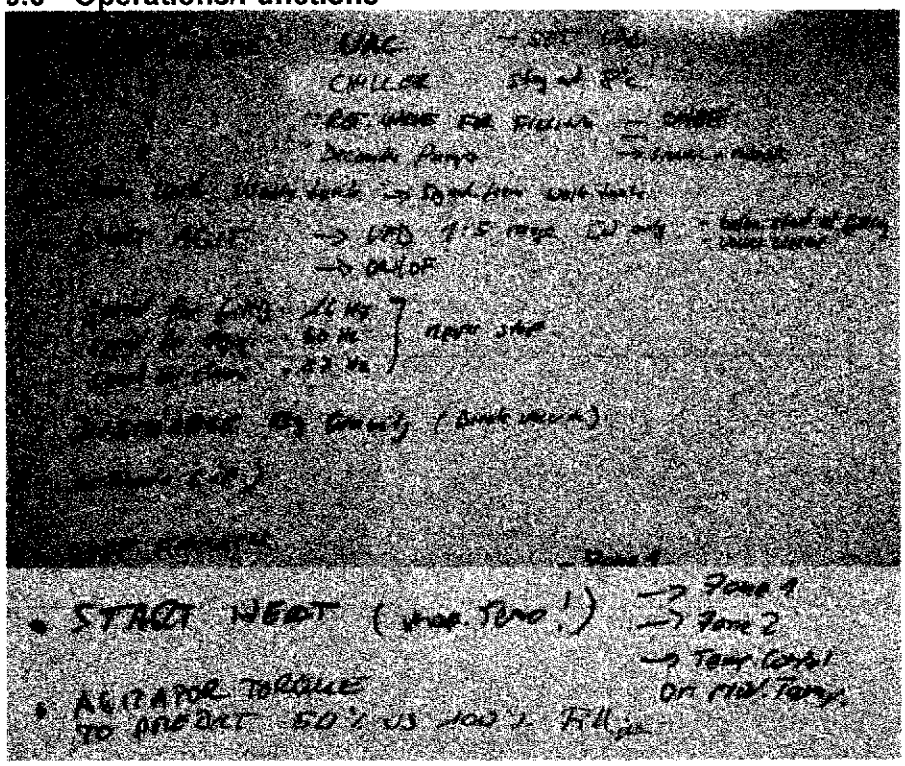
Control of all functions by means of a central DCS with a touch panel.

Personalized touch panel schematics, passcode protection for maximum operational safety.

Built to suit your needs

Motors connected directly to the control cabinet, power supply enters control cabinets from underneath, cabling to control cabinets and between control cabinets and process unit by others.
Operator panel with LCD display, mounted at the dryer in the ex area, indicating current status of set points and process variables, with numeric input and function keys for menu driven operation.

9.3 Operations/Functions



Operations to run the system:

- Agitator ON/OFF
- Speed
- Agitator run time
- Filling
- Drain
- Light
- Temperature control – 2 set points based on heating fluid temperature or product temperature
- Vacuum control – 2 set points.
- Operation of the vacuum system
- Calibration
- Alarms
- Password access

Additional functions at the panel:

- Control voltage ON/OFF
- Emergency shut off

9.4 Master Control cabinet – installation in the non ex area

Installation of the main cabinet: in the utility room

Main cabinet consist of:

- Main Switch
- Frequency converter

- Starters
- Siemens SIMATIC
- Cables
- Power supply

For the FAT the cables from the dryer/blender to the power cabinet are factory mounted with plugs. Cable length:

- Master cabinet to dryer : 15 m
- Master cabinet to HMI: 15 m
- Vacuum System: 15 m
- Heating system : 15 m

9.5 On site wiring

The system is factory tested during the FAT. Installation of the wiring is NOT included in the EKATO scope and will be carried out by others.

Closed conduits wiring – if any – have to be provided by others on iste

9.6 Remote access to the PLC

The main cabinet is equipped with a remote modem/internet access port.
A telephone connection or INTERNET access has to be provided on site. This allows the EKATO programmer to enter the PLC for trouble shooting.

9.7 (HMI) Panel –separate installed inside ex area

Panel language: English is standard. Local operator language available at extra cost.
Foot mounted

3 User Levels:

1. Manual
2. Calibration
3. Full automatic

10 Quality assurance

- ✓ EKATO SYSTEMS is a ISO certified supplier
- ✓ EKATO SYSTEMS meets most of the relevant customer specifications

The design, manufacture, installation and acceptance testing of the equipment are subject to the Quality Assurance Instructions on the basis of the EKATO Quality Management in accordance with ISO 9001.
Changes to the technical construction of the equipment or the operating conditions specified above require the prior written agreement by EKATO; otherwise EKATO disclaims all liability for claims under the terms of the warranty.

10.1 Pressure vessels

EKATO issues the required documentation for its scope of supply according ASME Code.

10.2 Corrosion resistance disclaimer

Wetted parts as stated above (e.g. metals, elastomers, gaskets) must be confirmed by the process owner in respect to corrosion resistance. EKATO has only limited information about the behaviour of the materials in combination with the process thus cannot take responsibility in respect to corrosion/contamination. EKATO however is responsible for the proper design and use of the materials/elastomers in their function as parts of a blender.

11 Documentation

Language: Drawings and parts list in English.

1-set in paper form, 1x on CD including:
1x operator manual
1x drawings / parts list
1x maintenance check list / lubricants and coolants
1x sub-supplier documentation
1x certificates for product contacting parts and seals acc. to EN 10204-2.1
1x pressure vessel documents.

11.1 Factory Acceptance Test (FAT) at EKATO-SYSTEMS

The equipment will be checked by the customer/user during FIQ and FOQ before shipment.
Duration: 1 day

12 On site services

12.1 Kick off meeting

In order to expedite the technical release process a kickoff meeting is held at the owner site or the EKATO office - eastcoast USA (Maryland or New Jersey).
EKATO:
Automation expert
Project manager
Project manager sales
2 days on iste including travel expenses

12.2 Small scale test

In order to fine tune the process, additional test are doen at the EKATO Germany labs.
2-3 runs in a 100 liter scale.
2 days
Owner participation appreciated

12.3 Supervisor for installation of the loose parts

The installation of the dryer in the building will be performed without EKATO supervisison on site by others. Once the separate shipment of the valves, motor and seal has arrived, the dryer will be upgraded with therse parts.

EKATO will send a mechanical supervisor to install these parts and will be supported by 2 machanical trained helpers on site. Cost for the helpers by others.

1 EKATO service technician from USA for 2 days on site including travel/ lodging.

12.4 Automation technician for startup

Once the electrical wiring is completed (by others) and the hard piping of all utilities is performed, a EKATO automation expert will take the automation into action:

- Startup dry
- Check all functions
- Water tetstrun

⇨ Perform SAT with water (evaporation test)

1 EKATO automation technician from Germany
4 days on site including travel and lodging

13 Packing, Transportation

See Commercial Conditions.

13.1 Shipment of VST 11000

Travel by sea incuding seaworthy packing

13.2 Shipment of valves / motor / PLC cabinet

Travel by air including packing

13.3 Travel of Solvemt recovery system

Most likely by land from New Jersey to port of entry

14 Utilities to be provided on site

- Electrical power supply (3-phase A/C)
- Mains configuration: assumed TN-S-Form (please specify if deviant)
- Compressed air (min. 4 bar g, dry, oil free), with service valve

15 Weight / height

SOLIDMIX bledner without lift: 6810 kg
Height without lift : 6000 mm

16 Service EKATO SYSTEMS

✓ 24h-emergency phone

✓ Worldwide coverage

17 Revisions Index

Revision / Revision	Datum / Date	Name	Art der Änderung / Type of Revison	Claim