

GEA Solutions – Beverage

Order Confirmation 30279424

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M I C R O B R A S S E R I E
LE BOCKALE

Reverse Osmosis Unit for Beer Dealcoholization

Microbrasserie Le BockAle

2400 rue Canadien

Suite 201

Drummondville, QC J2C7W3

Attention: Michael Jean

Table of Contents

SECTION 1 – PROJECT DATA	2
SECTION 2 – INTRODUCTION	3
2.1 GENERAL DESCRIPTION	3
2.2 TECHNICAL SUMMARY	4
2.3 PROCESS INFORMATION	6
2.4 GENERAL DESIGN CRITERIA.....	6
SECTION 3 – SCOPE OF SUPPLY	8
3.1 RO UNIT COMPONENT SPECIFICATIONS.....	8
3.2 RO FEED/CIP SECTION	9
3.3 RO UNIT DIAFILTRATION (DF) SECTION.....	9
3.4 RO UNIT REVERSE OSMOSIS STAGES	9
3.5 RO UNIT FRAME	10
3.6 PROCESS CONTROLS	10
SECTION 4 – PROFESSIONAL SERVICES	15
4.1 ENGINEERING.....	15
4.2 DOCUMENTATION	15
4.3 PROCUREMENT SERVICES and GENERAL PROJECT ADMINISTRATION.....	15
SECTION 5 – COMMERCIAL	22
5.1 DELIVERY TIME	22
5.2 MAIN SCOPE PRICING	22
5.3 TAXES and FEES.....	22
5.4 VALIDITY OF QUOTATION.....	Error! Bookmark not defined.
5.5 PAYMENT TERMS	22
SECTION 6 – PROCESS GUARANTEES.....	24
SECTION 7 – ATTACHMENTS.....	25
SECTION 8 – TERMS AND CONDITIONS	26

Section 1 – PROJECT DATA

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PROJECT Reverse Osmosis Unit for Beer Dealcoholization

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Section 2 – INTRODUCTION

2.1 GENERAL DESCRIPTION

This order confirmation covers a GEA beer dealcoholization (dealc) system consisting of a Reverse Osmosis (RO) membrane filtration plant.

The RO unit dealcoholizes beer by means of reverse osmosis spiral-wound membranes. The unit is operated in batch mode; a cleaning cycle (CIP) is to be performed between each batch. The production capacity is adjusted via the number of batch cycles so that a flexible production schedule is possible. The system is designed for processing a beer volume of 200 hl within a 24hr period.

The beer is fed out of the batch tank into the RO unit, where the alcohol is removed from the beer. The dealcoholization process takes place in three steps:

1. Pre-concentration of beer
2. Diafiltration (leaching of alcohol by addition of demineralized and deaerated water)
3. Blending with deaerated brewing water, wort, or beer to the initial volume (done outside GEA scope)

The RO unit is designed to process the specified batch quantity within the specified batch duration. Based on what has been seen in other units processing similar products, the batch duration may be different depending on the specific beer that is treated as well as processing conditions on site. The operation mode can change depending on operation duration and cleaning condition of the used membranes. Batch durations in between a CIP in range of one up to three days have been realized in other installations.

If the daily rate to be processed shall be increased at a later time, or if the installed membrane surface is not sufficient due to unpredictable fouling effects, the planned processing time will increase accordingly. Conversely, reducing the daily rate and limiting fouling should increase the effectiveness of the membrane system.

The customer will be expected to pre-treat the product to reduce particulates or other substances in the feed which could cause clogging or abrasion of the membranes used (centrifuge and/or beer filter). The pre-treatment of the product feed is not included in the quotation.

The operation is controlled by means of the installed volumetric flow meter and a concentrate control valve to a constant yield. The unit is prepared for operation with a third party dosing unit for CIP chemicals for membrane cleaning. The required CIP chemicals can be dosed either manually or optionally via an externally-supplied CIP dosing pump.

The RO unit is equipped with mixproof valves to isolate it from the customer's batch tank and external piping. This enables the membrane unit to be internally cleaned using specialized membrane cleaners while the external tank and piping is cleaned with the established brewery CIP.

2.2 TECHNICAL SUMMARY

General Utility Services Required

Power	910	kW-hr
CIP Water	5,370	gal (2-step CIP)

RO Services Required

Power Supply to Motors:	575/3/60	V / Phase/Hz
Power Supply to Control Panel:	110	V
Installed Motor:	65	kW
CIP Water/Sewer Capacity during CIP:	23.5	m3/h, maximum @50°C
Deaerated Water (DF Water):	24	hl/hr, maximum @ 10°C max
Cooling Water (Concentrate Chiller):	10	m3/h @ Inlet 2°C Outlet 9°C
Cooling Water (CIP):	10	m3/h @ Inlet 2°C Outlet 13°C
Cooling:	23	tons refrigeration

Theoretical Mass Balance

PRODUCT SPECIFICATION		
Alcohol content (start beer)	7.0	% ABV
Yeast cell count	≤ 3	Mio cells/ml
Suspended solids	≤ 300	ppm by volume, and pass through 40-micron sock
Temperature (start beer)	1-2	°C
PROCESS DESIGN		
Batch size	200	hl / batch
Size of batch tank (Volume min, net)	200	hl
Operation temperature	≤ 10	°C
Beer supply from/to batch tank	121	hl / hr
Beer supply from/to batch tank (max)	121	hl / hr
Beer supply pressure to the unit	3.0	barg
Filtrate volume per batch	440	hl
Production time per batch	21	hr
Diafiltration volume per batch	339	hl
Diafiltration supply to unit	24	hl / hr
Diafiltration supply to unit (max)	24	hl / hr
Diafiltration supply pressure to unit (min)	4.0	barg
Retentate volume (tank, end of batch)	100	hl
Target alcohol (end of batch)	0.90	% ABV
Blending volume per batch	100	hl
Target alcohol (after final blending)	0.45	% ABV
Retentate volume (tank, after blending)	199	hl

Approximate RO Skid Dimensions

7.5m L x 3.2m W x 2.6m H (including working room around the equipment)

2.3 PROCESS INFORMATION

There are two operating modes for the beer dealc plant:

1. Production
2. CIP of the RO unit

Production

The customer-supplied batch tank will be filled with feed beer from the existing plant. From the batch tank, the product is continuously fed into the membrane system via a feed pump (outside GEA scope). Connection of the various processes throughout the system is by the customer.

Inside the unit, the beer travels into the filtration loop. The separation of alcohol and beer takes place in the filtration loop at the RO membranes. After the initial pre-concentration, the resulting permeate is diafiltered (washed from the system) with deaerated water (DAW). This process dealcoholizes the product. When the target alcohol concentration is achieved, diafiltration will be completed.

During production, the mixproof valves are switched to external routing. In this position, the feed and the concentrate return are connected to the batch tank. Thus, the dealcoholized beer will be returned to the batch tank and the permeate will be sent to drain.

CIP of the RO unit

During the CIP of the system, the mixproof valves are switched to internal routing. In this position, the RO system is separated from the external piping and batch tank.

Both flush water and customer-supplied CIP chemicals can be dosed into the system via the internal CIP tank. During the flushing process, flush water is dosed into the CIP tank and sent through the filtration loop by the feed pump on the unit. The flush water purges the system of residual permeate and concentrate.

The CIP chemicals can be dosed directly into the CIP tank either manually by the operator or via a third party-supplied chemical dosing station. Once the chemicals have circulated through the system, the system is flushed again with water.

Depending on the designed CIP procedure, several CIP steps are repeated. Once the chemical cleaning cycle is completed, the plant is flushed with demineralized and deaerated water to prepare the system for the next batch.

CIP of external piping and of batch tank

The batch tank and piping to and from the RO unit will be cleaned via customer-supplied CIP

2.4 GENERAL DESIGN CRITERIA

The equipment will be designed to good engineering practice where all reasonable steps are taken to ensure safe plant operation. The equipment will be provided with adequate access for inspection, maintenance, and cleaning of the individual parts.

Materials of Construction

Unless otherwise specified under the individual items, all parts in contact including piping in contact with wet product are stainless steel except gaskets and flexible connections. The material for all other parts meets specified criteria provided by the customer or based on industry experience.

If used in contact with any materials containing corrosive agents, the corrosion resistance of this equipment is not the responsibility of GEA Systems North America LLC. without written acceptance based on a specific service.

The grade of the stainless-steel piping material basis is 316SS and based on normal water qualities. If a higher grade of stainless steel is required due to deviations from the normal water quality, especially due to high chloride content, GEA reserves the right to charge any additional costs incurred.

Surface Finish

Welds: Purged and welded in a sanitary fashion. Welds will be smooth, flush and free of crevices, pits or other defects. Welds will be clean to remove discoloration.

Codes and Standards

It is the responsibility of the Customer to communicate to GEA Process Engineering Inc. any regulatory requirements at the time of sale. GEA will meet the following standards for the listed equipment.

- Electrical components in accordance with applicable sections of the National Electrical Code (NEC)
- CRN for Quebec
- CSA
- OSHA

Regulatory requirements after the date of this contract are not included. Modifications required by state, local inspectors or agencies in excess of or in conflict with regulatory requirements are not included.

Once the Equipment/System specified herein is accepted and/or sealed by the applicable responsible regulatory authority, or is put into commercial production by the Customer, our liability shall be limited

to the sales agreement. After acceptance, any additional expenses resulting from changes thereafter requested by the customer, or any regulatory authority, will be the responsibility of the customer.

Seismic Design

Notwithstanding anything in the contract to the contrary, the proposed design, materials, and construction methods do not account for seismic zone requirements; compliance with such requirements, if requested by Customer, shall result in an adjustment to the quoted price and schedule.

Section 3 – SCOPE of SUPPLY

3.1 RO UNIT COMPONENT SPECIFICATIONS

All RO components are the following manufacturer unless otherwise noted:

Component	Make	Type	Comments
Valves			
Routing Valves:	Tuchenhagen	Type Varivent with 24V	
Process Valves:	Tuchenhagen	Type Ecovent and T-Smart Butterfly Valve	
Process Control Valves:	Waukesha	W68	
Sample Valves:	Tuchenhagen	Type Vesta	
Check Valves:	Waukesha		
Chemical Routing Valves:	Tuchenhagen	Type Ecovent	
Steam Valve:	Schubert and Salzer		
Steam Trap:	Spirax Sarco		
Cooling Media Control Valve:	Tuchenhagen	Butterfly Valve with Positioner	
Pressure reduction valve			
Pumps			
Feed Pumps	Grundfos		
Recirculation Pump	Fristam		
Permeate Pump	Grundfos		
Motors	WEG, TEFC, Painted, Premium Efficiency		
Instrumentation			
Flow Transmitters:	Endress + Hauser Model H100	Flow Transmitters	
Temperature Transmitters:	Endress + Hauser Model TM411	Temperature Transmitters	
Level Transmitters:	Endress + Hauser Model FMB50	Level Transmitters	
Pressure Transmitters:	Endress + Hauser Model PMP23	Pressure Transmitters	
Proximity Switch:	IFM	Proximity Switch	
Miscellaneous			
Plate heat exchanger	Thermaline		
Tubular heat exchanger	Wila Enerquip		
Security strainer	Nelson Jameson		
Steam trap	Spirax Sarco	FT14	
Sight glass	SPI		
Product contact material:	316 SS or better		
Product contact tubing finisher	32 Ra or better		
Tank sheet metal finish	2B		
Process connections	Tri-clamp		

3.2 RO FEED/CIP SECTION

- 1 CIP tank with manway including safety proximity switch
- 1 Level transmitter, balance tank
- 1 Water control valve
- 1 Feed control valve
- 1 Centrifugal Pre-Feed/CIP pump
- 1 Centrifugal Feed high pressure pump
- 1 Centrifugal Permeate transfer pump
- 1 Concentrate control valve
- 1 Concentrate chiller
- 1 Lot Mixproof valves
- 1 Safety pre-filter system (needle catcher), Feed
- 1 Pressure transmitter, Feed
- 1 Flow transmitter, Magnetic, Feed
- 1 Flow transmitter, Magnetic, Concentrate

Non sanitary control valves for cooling water
 On/off valves for heating
 Sample point
 Necessary pipes and valves including control valves

The Feed/CIP pump is controlled by variable speed drive
The high pressure pumps are controlled by variable speed drive

3.3 RO UNIT DIAFILTRATION (DF) SECTION

- 1 Flow transmitter, Magnetic
- 1 Regulating valve
- Necessary pipes and valves

3.4 RO UNIT REVERSE OSMOSIS STAGES

- 4 5-elements, stainless steel 8" membrane housing
- 20 RO8038 membrane elements

Misc. Loops

- 1 Loop pump
- 1 Multi tube heat exchanger
- 1 Temperature Transmitter
- 1 Pressure transmitter, loop
- 1 Flow measuring Permeate, Flow transmitter, Magnetic

The Loop pump is controlled by variable speed drive

3.5 RO UNIT FRAME

For mounting of system vessels, valves, solenoid boxes, etc., of at least AISI 304 stainless steel construction with bead blast finish.

3.6 PROCESS CONTROLS

The process control system is designed for standalone operations and controls of the dealc system with capability to control and monitor all essential process parameters.

The control system will be based on the Rockwell Logix 5000 platform with Rockwell FactoryTalk® ViewME HMI system.

24VDC Controls and Instruments

Mix proof valves will be supplied with control tops. The control tops will include solenoids and position feedbacks. Solenoid valves for all other valves will be mounted within the appropriate remote I/O panel.

All field devices, where possible, will be suitable for 24VDC power.

Main Control Panel (MCP)

The main control panel will be NEMA 4X 304 stainless steel and located on the skid. The panel will contain the main PLC and required communication for the HMI and remote I/O racks.

The main control panel will house the following components:

- AB CompactLogix Processor
- AB Panelview Plus
- AB 1734 Point I/O Modules
- N-Tron Switch
- 120VAC Line Filter
- 24VDC Power Supply
- SMC Pneumatic Solenoid Valves
- SMC I/P Transducers
- SMC filter/regulator
- Door mounted receptacle/programming port
- Internal Cabinet Light
- Miscellaneous components, e.g., circuit breakers, fuses, terminals, etc.
- VPN for remote assistance

Local communications to the MCC is via Ethernet.

An E-stop button is included on the MCP. The devices are disabled via MCR when the E-stop has been pushed. Safety PLC's/redundant safety circuits are not included in this proposal but can be added via change order if deemed required following a Hazop for the system.

Motor Control Cabinet (MCC)

One Motor Control Centre Panel with NEMA 4X 304 Stainless Steel enclosure has been included in this quotation.

The Control Centre Panel includes the following specifications:

- Voltage: 575VAC/60Hz
- SCCR rating: 35000A (higher rating can be achieved on customer request at additional cost)
- Incoming Connection: Main Circuit Breaker / Main Fused Disconnect
- Enclosure Type: NEMA 4X Stainless Steel
- Motor circuit protection
- Danfoss FC302 VFDs with Ethernet
- Door Mounted HIM for VFD's
- Ethernet Switch
- Transformer
- Air conditioner (required based on 82°F/28°C ambient temperature)
- Miscellaneous components, e.g., fuses, distribution block, etc.

Control System Programming

The PLC and SCADA systems will be programmed for automatic control sequences to be initiated and supervised by an operator. After selecting the desired operation (e.g., Production, CIP), the operator will start the control sequence. The control sequence will proceed automatically.

Fault monitoring will prevent the sequence from running if required interlocks are not present. The system will provide an indication of the fault to the operator. The fault monitor will also perform the necessary action in the event of a fault during the program sequence, and bring the system to a safe state, depending on the fault.

The program sequences are based on Rockwell's Phase Manager structure, which is a program control sequence model that complies with international standard ISA S88 (batch control).

In addition to automatic control, all devices will have the capability to be operated in Manual, Maintenance mode, and Simulation mode. Maintenance and Simulation modes require password-protected access.

The SCADA application will provide the operator with the following features:

- Main overview display for monitoring the overall process
- Detailed displays as required for close-up views
- Motor and valve pop-ups for Auto/Manual/Maintenance/Simulation functions
- PID loop control pop-ups
- Program start/stop/hold functions
- Process setpoint parameter entry (alarm levels, time delays, etc.)
- Recipe loading/saving
- Alarm annunciation and logging
- Historical data logging and trending

The standard GEA library of SCADA objects, faceplates and ControlLogix® AOI's will be used to meet the requirements of the project. The GEA designed AOI's are pretested and have been installed in many process

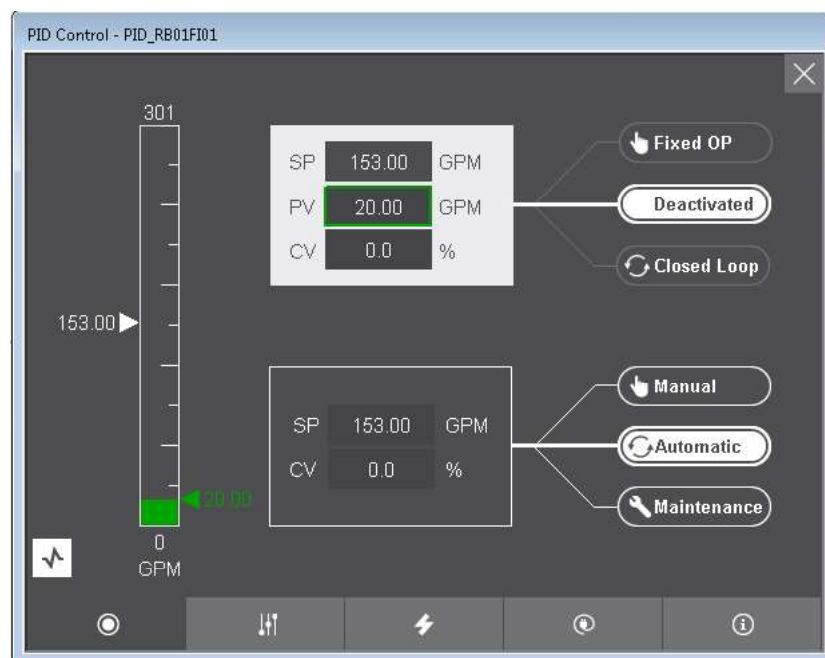
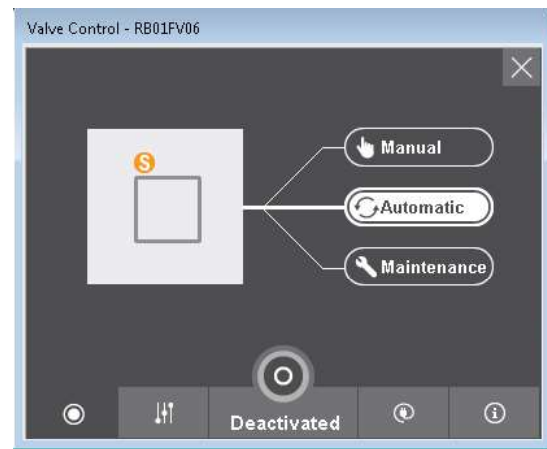
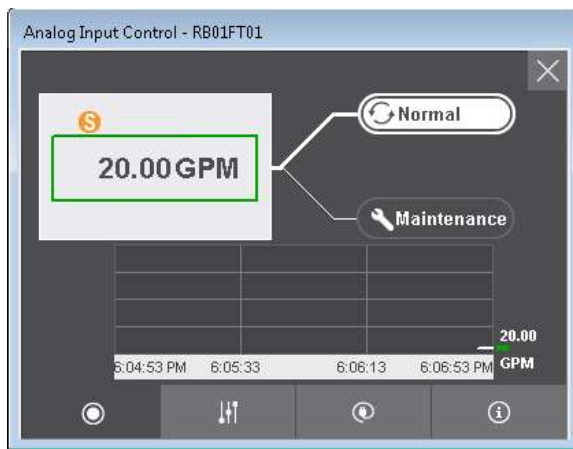
plants. The PLC code will be documented using the documentation tools of the programming package and maintainable by a qualified programmer.

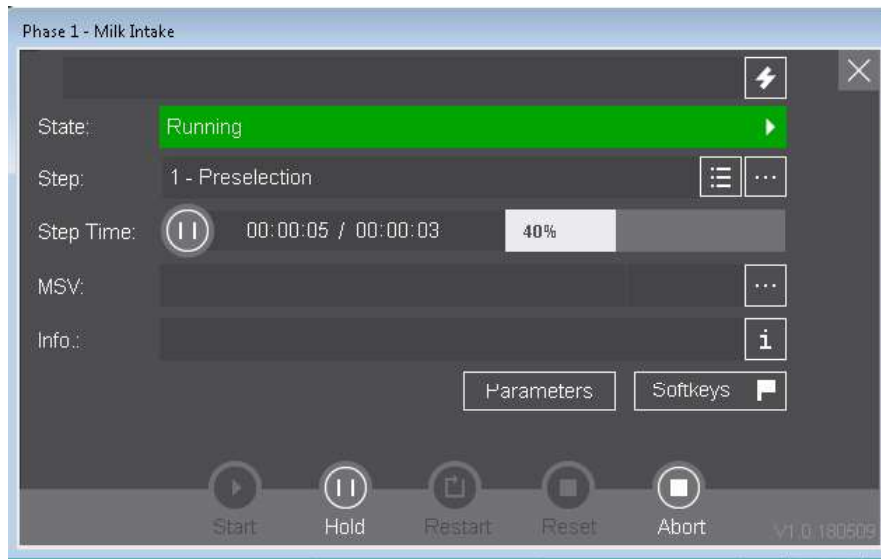
RSLogix5000 and SCADA programming software are not included.

RSLogix5000 Full or Professional Edition is required to enable editing of and online changes to the phase logic.

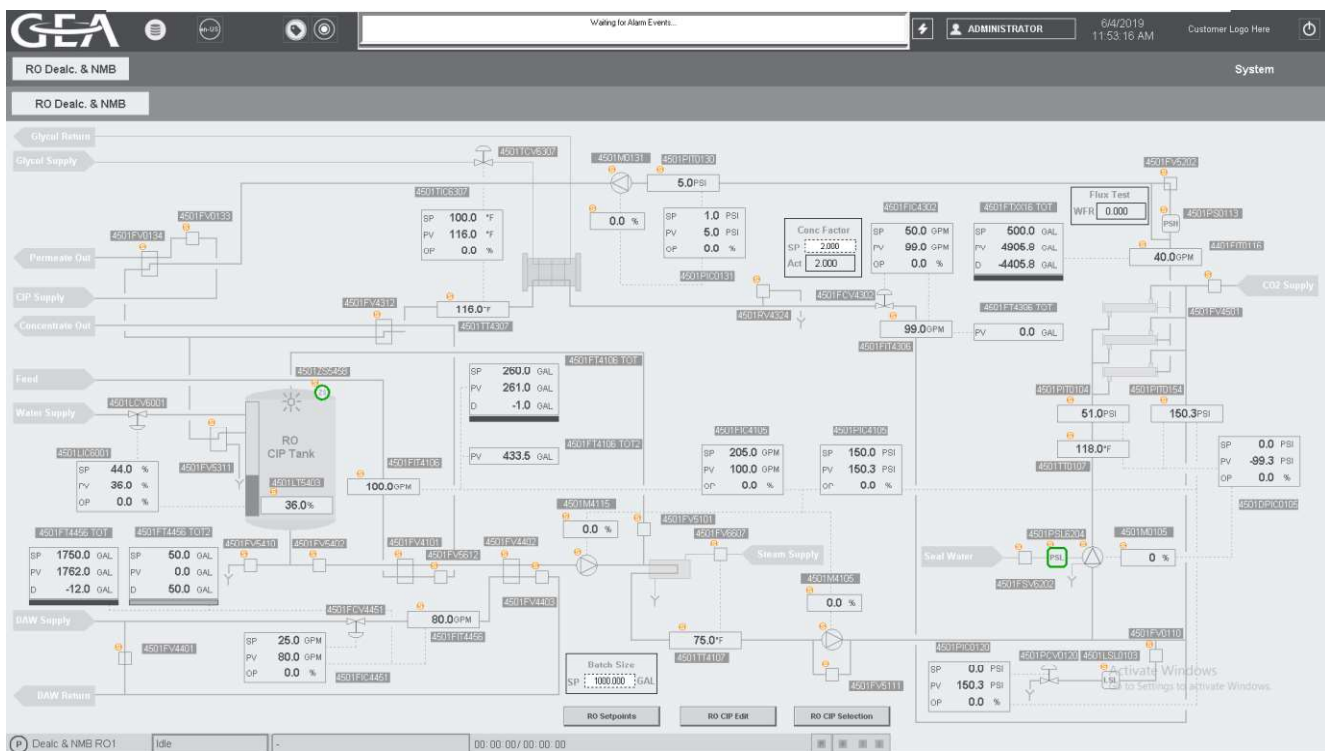
Control Module Faceplate, Symbols, and Typical Process Mimics

Typical Control Module Faceplates





Typical Equipment Mimics



PLC to PLC Communications

Ethernet communications will be used for communications with 3RD party systems, or if it is not technically feasible through discrete inputs and outputs.

Project Development

GEA Systems North America (GSNA) will incorporate lifecycle procedures and methodologies that will follow a structured way of developing and implementing the project, ensuring an optimized cooperation between the project technical team and other parties during the project.

Control System Software Development

GSNA will begin with the development of the functional description for the software design. Software development will commence after approval of the functional specifications. Any changes to these specifications after approval are a change of scope. Development of the PLC template will be based on the existing GSNA Standards.

Software Simulation

Module Testing

We have included for carrying out Module testing on the PLC Software prior to taking part in the overall integration testing and FAT of the control system. This Module testing involves the testing of each control module of code in isolation to each other. Customer personnel attendance is not required during this phase of testing.

Integration Testing

To fully integrate all the phases into the test platform and ensure that the functions of the phases operate according to the Functional Design Specification. A test protocol will be used here to record all tests conducted. Customer personnel attendance is not required during this phase of testing.

Start-Up

At this phase, the project team will begin the start-up of the control systems according to the project schedule.

GSNA will issue continuous reports throughout this phase until the installation is completed.

Skid Wiring

Wiring and pneumatics will be supported using open stainless steel basket style cable trays (Cablofil CF54 series 304 stainless steel or equivalent).

Control wiring, network data cabling, and pneumatics may be run in the same cable tray. All cables will be cable tray rated.

Skid Wiring will include the following scope:

- Wiring from the control panel to instruments and valves.
- Communications wiring from the MCP to the control panels and MCC

Power to the MCP and MCC, communications from any third party or plant systems to the MCP and instrument air to the control panels are not included

Some devices may need to be disconnected and wires rolled back for shipping purposes. Reconnection at the customer site is not included.

All electrical systems will be installed according to the applicable portions of the National Electric Code and by qualified electricians.

Section 4 – PROFESSIONAL SERVICES

4.1 ENGINEERING

GEA Systems North America LLC. will provide all process, mechanical, and control systems engineering required to design, specify and fabricate the proposed system. Engineering service will be continuous throughout the project including close cooperation with the customer's management and construction teams.

4.2 DOCUMENTATION

GEA will provide the required engineering and design for the following deliverables in GEA standard format and issued in the Turn-Over Package (in electronic format - PDF). All documentation will be in English and documents with asterisk also in French:

- Detailed P&ID
- Operating instructions for the unit(s)*
- 2D General arrangement drawings with overall dimensions and BOM (of GEA supplied scope)
- 3D drawings of the GEA supplied mechanically pre-assembled skids
- Equipment, Instrument, and Valve master lists
- MCP and MCC Panel Assembly Drawing with BOM
- Electrical Schematic Drawings
- Operation and Maintenance Manuals, as supplied by GEA's vendors*
- Spare parts lists*

4.3 PROCUREMENT SERVICES AND GENERAL PROJECT ADMINISTRATION

These items include services for the procurement of the system as a result of the engineering work, general administration and management of the project.

- Organizing, leading, coordinating, and follow-up of project work with stipulated time, cost and contract conditions
- Information to Customer regarding progress of project work and about necessary changes, additions and adjustments
- Time and activity plans for the project, revise them if required
- Prepare and coordinate the technical documentation
- Prepare delivery schedules and see to it that material, machinery, documentation, etc., is delivered in due time according to schedule
- Plan and arrange shipment, transportation, and insurance matters
- Invoicing

- Revise and update contract documentation if changes occur

4.5 INSTALLATION SERVICES

The RO unit will be delivered with mechanical and/or electrical pre-assembly (skid-mounting and skid wiring). The remainder of the scope will require field mechanical installation and then electrical/pneumatic installation, including the external batch tank as well as tank components. The field mechanical installation and electrical installation is not included in this proposal.

Skid wiring is inclusive of the following:

- Wiring from the skid-mounted MCP to skid-mounted valves and instruments
- Wiring from the skid-mounted MCC to skid-mounted pumps
- Wiring from the MCP to the MCC

Pre-wiring is exclusive of the following (customer responsibility):

- Wiring from the MCP to instruments off the skids
- Power to the MCP and MCC and air to the MCP
- Power and communications wiring between skids

The system will be shipped to site. Some signals will be disconnected and rolled back for shipping purposes. Mechanical and electrical field installation of the system is not included in this proposal.

Wiring and pneumatics will be supported using stainless steel basket-style cable trays (Cablofil CF54 series 304 stainless steel or equivalent).

Control wiring, network data cabling and pneumatics may be run in the same cable tray, power wiring (120V and above) will be run in a separate tray. All cables will be cable tray-rated.

Technical Field Advisory Services

For providing instruction to the customer’s mechanical contractors on the installation of the GEA-provided scope, the following technical field advisors have been included in this proposal.

At the customer’s request, additional site installation technical field advisors can be provided at GEA’s standard Labor Rates.

Engineer/Technician	Total Days/Weeks Included
One (1) Filtration Engineer	Two (2) days

Installation Materials

The consumables, piping materials and electrical cables for site installation are not included in this proposal. This material is often provided by the mechanical or electrical contractors completing the site work. GEA will provide the material specification for this where necessary.

Proposal Scope

Our scope of supply is exclusively limited to the items explicitly stated as supplied by GEA Systems North America LLC. in this proposal. Reference to equipment or services in this proposal which are not supplied by GEA Systems North America LLC. must be included by the customer, including the items listed below:

Item	Task	Description	GEA Scope	Not in GEA Scope
1		Offloading, positioning, and re-assembly of pre-assembled components		X
2		Forklifts, cherry pickers, scissor lifts and other lifting devices for installation		X
3		Material used for covering and protecting equipment during installation work		X
4		Cranage for tanks, skids etc. and truck unloading		X
5	Access Platforms	Access to tanks, ingredient handling, etc. except for those listed specifically in this proposal.		X
6	Installation	All building and architectural work, foundations, wall or floor penetrations, structural steel, flashing and counter-flashing, stair towers, supporting structures, monorails, hoists, lighting, heating, ventilation systems, hub drains, hose stations, heating and ventilation and fire protection connections, etc. except where specified in this document.		X
7		All site facilities such as, but not limited to, storage trailer, office trailer, restroom or break areas, etc.		X
8		General services including, but not limited to, acetylene, oxygen, argon, electrodes, electrical energy ladders, oil, lubricant, welding converters, pulley blocks, diesel generator, diesel oil, etc.		X
9		Scaffolding, including erection and removal of scaffolding		X
10		Floor Protection		X
11		Installation/use of power and installation of phone lines to trailers supplied by GEA Systems North America LLC		X
12		All field modifications to existing process lines, valves, tanks and/or other existing equipment.		X
13		Disassembly of demolished equipment		X
14		Mechanical and electrical installation of loose GEA-supplied equipment (valves, pumps, etc.)		X
15		Final grouting of floor		X
16		Final alignment of all pumps after system is installed		X
17		Fire watch personnel		X
18		All passivation, polishing, pickling, anti-rust treatment, painting, priming and other surface treatments		X
19		Manufacture of support structures and pipe routes to and from GEA-provided skids or equipment		X
20		Final painting of mild steel components supplied in this proposal as result of installation damage or field welding.		X
21	Installation of product and CIP pipes off-skid		X	

Item	Task	Description	GEA Scope	Not in GEA Scope
22		Installation of utility pipes off-skid(s)		X
23	Installation	Dismantling of equipment used for installation after installation is complete		X
24		Return shipment of equipment and installation material		X
25		Additional labor during installation, commissioning, performance tests, etc.		X
26	Installation Materials	Tools		X
27		Mechanical installation material for product and CIP pipes		X
28		Consumables and assembly-auxiliary material e.g., saw blades, tungsten electrode etc.		X
29		Mechanical installation material for utility connections		X
30	Drainage	Drip pans for collection of double seat valve leakage (not installed in pre-assembled manifolds)		X
31		Seal water drain collection		X
32		Collection and drainage of leakage and flush-out liquids to drain		X
33	CIP Chemicals	CIP Chemical storage		X
34		CIP chemical dosing pumps		X
35		Piping/tubing between chemical dosing pumps and dosing point		X
36		Tubing between Main Control Panel and chemical dosing pumps		X
37	Utilities	Plant and Culinary Steam Generation conditioning and distribution piping		NA
38		Condensate collection and distribution piping		NA
39		Chilled water, glycol, or ammonia generation system and distribution piping		X
40		Instrument air compressor to supply dry, oil-free air		X
41		Instrument air piping to a mutually agreed point		X
42		All potable / treated water generation and distribution warm and cold		X
43		Shutoff, reducing and control valves for utility supplies (unless specifically listed in proposal)		X
44	Control Wiring & Pneumatics	Main Control Panels (MCP)	X	
45		Wiring between MCC and MCP	X	
46		Wiring between MCP and skid mounted equipment (on separate skids)		X
47		Wiring between skid components and same-skid mounted panels/junction boxes	X	
48		Pneumatic tubing between MCP and skids equipment (on separate skid than main control panel)		X
49	Electrical & Power	Electrical distribution equipment (main supply and local distribution)		X
50		Connection of distribution panels to main power supply		X
51		Motor Controls Center (MCC)	X	
52		Power to MCC		X
53		Motor wiring from MCC to skid-mounted motors	X	
54		Power to MCP		X
55		Provisions for grounding		X
56		Lightning protection		X
57	Defects	Repair or replacement of defective parts of equipment	X	
58		Disassembly of defective parts	X	
59		Transport from the site of defective parts	X	

Item	Task	Description	GEA Scope	Not in GEA Scope
60		Transport to the site of repaired or replaced parts	X	
61		Installation of replaced or repaired parts	X	
62		Travel, lodging, and per diem for GEA personnel	X	
63		Equipment and supplies necessary for installation of replaced or repaired parts		X
64		Inspection and testing as required by independent inspectors and/or Customer		X
65		Material required for testing		X
66	Insulation	Insulation of GEA-provided piping		X
67		Insulation of GEA-provided vessels, as specified in proposal		X
68		Noise Insulation		
69	Miscellaneous	First aid and medical facilities		X
70		Spare parts		X
71		Inspection of site and Customer's preparatory work (e.g. painting) as required by statutory law, regulations or directives		X
72		Testing of equipment as required by statutory law, regulations or directives		X
73		*X-Ray of welding seams for piping.		X
74		*Validation documentation associated with welding (welding maps, weld inspection logs, etc.) 100% Boroscope / Visual inspection of hand welds.		X
75		Upkeep of site, including, but not limited to, cleaning of plant, (prior to painting, product testing takeover, etc.), offices, sanitary facilities, breakrooms, removal of scrap material and snow from roads, storage areas, installation sites, etc.		X
76		Equipment for manual cleaning and COP (brooms, brushes, sponges, pails, detergents, etc.)		X

***Non-standard GEA QC documentation available for additional cost.**

Delays

All delays caused solely by Customer will be at Customer's inconvenience and potentially expense. In such cases, GEA Systems North America LLC. will make all reasonable efforts to minimize the cost of rescheduling labor and services. Customer will be responsible to pay all unavoidable costs associated with the delay. This includes, but is not limited to travel and stay expenses for personnel, extra labor costs, (including overtime) and any related installation expenses. GEA Systems North America LLC. will provide documentation for all added costs, and invoice such costs promptly as they are incurred.

Commissioning Services

GEA has included the costs for travel and expenses for each of the following engineers/technicians to provide technical consultation during the installation of and start-up the installed equipment by others. This entails supervision of commissioning on both water and product. The below is a summary of the total person-weeks, not the specific duration

Engineer/Technician	Total Days/Weeks Included
One (1) Filtration Engineer	Eight (8) days

The commissioning assumed to be continuously, without prolonged breaks. Scheduling of the above personnel will be in accordance with the mutually agreed project timeline including mutually agreed schedule revisions. It is a condition that the necessary plant technical and operational personnel (including plant operators) will be available throughout the start-up period. Time off during a 24-hour period must be a minimum of twelve consecutive hours. A commissioning week consists of up to 50 hours Monday through Friday.

It is a condition that all materials, equipment services (water, light, power, steam, air) and product are available as required. These must be available during both start-up and performance testing without cost to GEA Systems North America LLC.

If the start-up delays for reasons within the control of GEA Systems North America LLC., we will be responsible for additional costs of keeping staff at the customer’s site.

However, in case the assembly, pre-commissioning, start-up or post-commissioning engineering is delayed for reasons beyond the control of GEA Systems North America LLC., after the arrival of our engineer at site, Customer will be responsible for additional services as noted below.

Optional Services – Reimbursable

The cost of additional services will be charged based on the GEA standard Schedule of Rates and payment terms.

Rate	Billing Time-Frame	Service Technician	Consulting Engineer
Hourly	8:00 AM – 5:00 PM Monday thru Friday	\$150 / hour	\$250 / hour
Overtime	5:00 PM – 8:00 AM And Saturdays	\$225 / hour	\$250 / hour
Sundays	Midnight Saturday To 8:00 AM Monday	\$300 / hour	\$375 / hour

Holidays	Midnight before the Holiday until 8:00 AM the next	\$300 / hour	\$375 / hour
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A. Time Off

- i. Time off during a twenty-four (24) hour period must be minimally twelve (12) consecutive hours.
- ii. Unless otherwise specified, assignments shall not exceed eleven (11) consecutive days. All charges for employee rotation expenses shall be invoiced to customer in accordance with applicable rate.

B. Minimum Billing

- i. The minimum charge shall be four (4) working hours at the applicable base rate, plus travel time and expenses.
- ii. A fee of \$500 per site visit shall be charged to Customer for preparation time ahead of visit.

C. Standby Time

- i. Standby time shall be charged in accordance with the applicable workday rate unless due to GEA personnel's sickness or injury.
- ii. A fee of \$400 per day plus additional expense shall be charged for weekend layovers.

D. Travel and Living Expense and Travel Time

- i. All travel and living expenses shall be charged to Customer at cost. Automobile usage will be charged in accordance with the IRS standard rate.
- ii. Travel time will be charged in accordance with the applicable rates. This time is defined at time when leaving base of operation until time of return.

E. Escalation

- i. Above rates are subject to change.

F. Terms and Conditions

- i. GEA Terms and Conditions apply.

Delays caused by GEA will result in day for day movement of the 7-month backstop. **Shipment released upon payment of invoice.**

- 10% Shall be paid against presentation of Seller's invoice together with Completion Certificate, indicating that the Equipment/System serves its basic intended purpose, but in no event later than three (3) months after delivery of Equipment/System. Delays caused by GEA will result in day for day movement of the 3-month backstop.

GEA Systems North America LLC. reserves the rights to let the quoted delivery time for the equipment commence at the date when the first installment has been received, and sufficient technical details have been clarified to enable us to proceed with the order.

Reimbursable Services shall be paid bi-weekly in accordance with the progress of services. Payment will be made against presentation of each invoice.

Down payment due against invoice. All remaining progress payments due 30 days from date of invoice.

Unauthorized delays by Customer may result in reasonable price adjustments by Seller to reflect increased costs. Late payments will incur a penalty at the rate of 1.5% per month but shall not exceed the highest rate allowable by law. If the Seller is required to place a claim for amounts past due from the Customer with an attorney for collection, Customer will be liable for the reasonable attorney's fee and costs incurred by Seller.

Remit to Address:

GEA Systems North America LLC

Mail Payments:

PO Box 13385
Newark, NJ 07101-2285

Preferred method of payment is wire transfer to GEA Systems North America LLC. bank account. Confirming documentation will be sent out as soon as funds are received. Wire transfer information:

Account Holder: GEA Systems North America LLC, **formerly known as** GEA Process Engineering, Inc.

Deutsche Bank & Trust Americas
60 Wall Street
New York, NY 10005

Routing Number: 021001033
Checking Account: 00416751
SWIFT Code: BKTRUS33

If wire transfers cannot be accommodated, then we can accept payments sent by overnight delivery.

GEA Systems North America LLC.
Lockbox Processing
Reference: Lockbox #13385
400A Commerce Boulevard Carlstadt, NJ 07072

Section 6 – PROCESS GUARANTEES

Performance Warranty

GEA Systems North America LLC warrants that the RO system will process a 60 bbl batch of Weiss beer in ≤ 12 hours of operation, not including CIP and final blending. Starting beer $\leq 7.0\%$ abv with RO dealc retentate $\leq 0.8\%$ abv.

Performance Acceptance Test (PAT)

A performance acceptance test will be conducted to demonstrate that the system meets the performance criteria listed above. The PAT will be conducted during the same visit as commissioning. Failure to perform the PAT within this timeframe, excluding delays caused by GEA, is equivalent to accepting the system. The performance criteria for the PAT are:

- The PAT will consist of a up to but not to exceed 60 barrel batch.
- Beer has been treated with centrifuge and/or beer filter
- Feed specifications called out in Section 2.2 must be met

If the system fails to meet the PAT performance criteria, then GEA and Bockale will cooperate to determine a remedy for a second PAT attempt as follows:

- a) Bockale, at its cost, will provide to GEA all requested operating data; and two (2) analyses of the feed concentrate & permeate streams, including (but not limited to) ethanol content, color, pH, conductivity, dissolved solids, and analysis for other major and pertinent components (inorganic and organic), etc.
- b) The customer will make the system available for inspection by GEA's agents and employees, the system and its operation.

Section 7 – ATTACHMENTS

The following attachments provide further information on the scope of supply. This proposal remains the primary basis of design.

- No attachments

Section 8 – TERMS and CONDITIONS

GEA Systems North America LLC. Terms and Conditions for Supply

DEFINITIONS

Term	Meaning
Acceptance Certificate	a certificate that is issued when the Scope of Supply (or section thereof, if applicable) is deemed to have passed the Acceptance Tests according to these Terms.
Acceptance Tests	tests (if any) for the acceptance of the Scope of Supply, as stipulated in the Contract.
Base Date	the date of Seller's Offer.
Buyer	the party who contracts to buy the Scope of Supply.
Buyer Scope	all works relevant to the Scope of Supply which are not expressly included in the Scope of Supply, including any works specified in these Terms or Seller's Offer as being the responsibility of Buyer.
Change Order	a written document signed by a representative of Buyer and Seller implementing a Change Request.
Change Request	a request for a change in the Scope of Supply, including Seller's means or methods of executing the Scope of Supply.
Changed Law	changes in or enactments of directives, laws, rules, regulations, codes or standards or new or different interpretations thereof.
Contract	the contract formed between Buyer and Seller for purchase and sale of the Scope of Supply.
Contract Price	the price set out in Seller's Offer or, in case of binding contract, in the Contract.
Costs	all costs and expenses incurred or to be incurred by Seller, including overhead, insurance, financing costs and similar charges and a reasonable profit; when calculating Costs, the costs of Seller's personnel shall be based on Seller's periodic rates as set forth in Seller's Offer or, if not contained therein, according to its rates prevailing when the work is performed.
Day	a calendar day.
Defect	a defect, including omission, at the time of delivery in the workmanship or materials of the Goods or a failure to prepare documentation or provide Site Services according to commercially reasonable skill and care.
Export Control Event	a situation where the Export Control Regulations may require an Export License or may cause additional costs, delay, prohibit Seller's performance and/or render the Contract not reasonable to perform.
Export Control Regulations	all applicable national and international laws, regulations, orders, embargoes, administrative practices or resolutions that may prohibit or restrict the trade of the Goods.
Export License	license or an equivalent formal approval by the competent authorities for the supply of the Goods under this Contract which is required to be obtained by Seller under the Export Control Regulations.
Force Majeure	acts of war or terrorism, riots, civil commotion, embargoes, export/import permit delays or refusals, epidemics, strikes, fires, delays in transport or customs clearance, earthquakes, floods, hurricanes, typhoons, storms, other acts of God or government or any other circumstances beyond the reasonable control of a party.
Goods	the plant, equipment, parts and materials to be delivered by or on behalf of Seller, as expressly listed in Seller's Offer or, in case of binding contract, the Contract.
Including	including without limitation.
Incoterm	the series of pre-defined commercial terms published under the name Incoterm® by the International Chamber of Commerce (Paris) as in force at the Base Date.
Process Warranties	the warranties given by Seller in the Contract that the Goods will meet certain requirements in respect of process, performance or functionality; provided that each such warranty is expressly set out and labelled "Process" or "Performance" warranty in Seller's Offer or, in case of binding contract, the Contract.
Schedule	the time schedule for the Scope of Supply as set out in Seller's Offer or, in case of binding contract, in the Contract, as such schedule may be modified according to Clause 6 of these Terms.
Seller	GEA Systems North America LLC.
Seller's Offer	Seller's quotation, proposal or offer for the Scope of Supply.
Scope of Supply	the Goods, documentation and services (including Site Services, if any) expressly listed as Seller's responsibility in Seller's Offer or, in case of binding contract, the Contract.
Site	the place at which the Goods are to be installed.
Site Services	the services provided by Seller at the Site expressly listed as Seller's responsibility in Seller's Offer or, in case of binding contract, the Contract.
Testing Protocol	has the meaning set forth in paragraph 2 of Annex A.

Term	Meaning
Terms	these Terms and Conditions – Equipment Sales, including Annex A (where applicable).
Warranty Conditions	has the meaning set out in Clause 8.1.5.
Warranty Period	Twelve (12) months from Buyer’s first commercial use of the Goods, but not more than eighteen (18) months from delivery (or notice of readiness to ship if Buyer delays delivery).

GENERAL PROVISIONS

These Terms shall apply to and form an integral part of any Seller’s Offer and any Contract.

Any provision of Buyer’s purchase order, offer, acceptance or other document or requirement of Buyer which forms a part of the Contract and is in conflict or inconsistent with these Terms or which imposes on Seller liabilities that are additional to or different from those set forth in the Terms shall not apply to the Contract and is of no force or effect. Buyer’s terms of purchase, if any, shall not apply to the Contract and are of no force or effect.

These Terms shall prevail over any inconsistent or conflicting provision of the Contract (including Seller’s Offer), except only where (i) Seller has by way of Seller’s Offer or a duly signed document expressly amended a provision of these Terms and has referenced the specific provision of these Terms being amended or (ii) these Terms expressly provide for an option to deviate from the respective provision in Seller’s Offer or, as the case may be, in the Contract.

1. Scope of Supply

- 1.1 Seller’s works shall be limited to the Scope of Supply. Buyer shall be responsible for the Buyer Scope.
- 1.2 Where the Scope of Supply is required to interface with other equipment of Buyer or Buyer’s other contractors, Buyer shall be responsible for such interface, including its dimensions and compatibility.

2. Change Orders / Contract Execution / Documents

- 2.1. Buyer may propose Change Requests. In case of a Change Request, Seller will notify Buyer of how the proposed Change Request can be carried out and which modifications to the Contract (including contract price, schedules, etc.) are required. If Buyer wishes to proceed with a proposed Change Request, the Parties will agree to a Change Order. Seller shall have no obligation to carry out any Change Request until a written Change Order has been signed by both parties; however, if Buyer requests that Seller proceeds with the Change Request (without a written Change Order) and Seller does so, Seller shall be entitled to reimbursement of its resulting Costs and to an extension of time for any resulting delay. Seller may request Change Requests to be executed at its expense; such Change Requests will be granted by Buyer absent material reasons.
- 2.2 Pre-delivery inspections and tests, if any, shall be stipulated in and limited to those set out in the Contract. Any pre-delivery inspections and/or tests not provided for in the Contract shall be subject to the change order procedure in Clause 2.1. If not stated otherwise, such pre-delivery inspections and tests shall be performed in accordance with Seller’s standard inspection procedures.
- 2.3 Where Seller issues documents for approval, these must be approved (with comments, if any) and returned to Seller without undue delay but in any event no later than 7 days after their respective submittal; otherwise such documents will be deemed approved. Buyer may refrain from giving its approval only if and to the extent it can show that the document in question is contrary to the requirements of the Contract.

- 2.4 Seller reserves the right to substitute items of the Scope of Supply provided that any such substitution shall be with an item of equal or better standard. Seller may execute the Contract pursuant to its own plans, procedures, and working methods, except to the extent they conflict with any express provision of the Contract.
- 2.5 Buyer shall ensure that each delivery and other activity of the Buyer Scope is commenced, performed and completed in a timely and sufficient manner so Seller is able to commence, perform and complete its Scope of Supply (including Site Services) in accordance with the Schedule and without delay, disruption, hindrance or obstruction of any kind.
- 2.6 Seller reserves the right to adjust the Contract Price for any escalation in the cost of materials or any surcharge (a) due to tax, tariff, or other price change in material supply that occurs prior to the formation of the Contract, or (b) due solely to tariff changes, that occur after formation of the Contract, but prior to completion of the Scope of Work ((a) and (b) each a "Contract Price Adjustment"). Any Contract Price Adjustment shall be based solely on an escalation of Seller's direct cost for (x) material purchased to produce the Scope of Work, or (y) equipment supplied by a subsupplier, whichever is applicable.

3. Site Services

- 3.1 If Site Services are included in the Scope of Supply, Buyer shall ensure that Seller has safe and appropriate access to the Site at all times required by Seller. Any failure by Buyer to perform this obligation and any failure as regards readiness of the civil works or equipment outside the Scope of Supply at the Site will entitle Seller to suspend its Site Services.
- 3.2 In case the Scope of Supply is to be installed by Seller or under its supervision within any building or other civil works not provided by Seller, the civil works (including the ceilings, walls, floors and related penetrations) shall be ready by such time and in such condition as may be required by the Contract and/or Seller in writing. Any failure by Buyer to perform this obligation will entitle Seller to suspend its Site Services.
- 3.3 For the purpose of Seller carrying out the Site Services, Buyer shall be responsible for providing all of the following: (i) civil works; (ii) feed and other raw materials for making product; consumables and utilities, each in strict conformity with all requirements of the Contract; (iii) communications connections; (iv) trained and qualified laborers, operators and other personnel required by Seller; (v) safe and reliable equipment to assist in the transport of the Goods at the Site, including cranes and other lifting and transport equipment (to be operated and maintained by Buyer's personnel); (vi) a secure lock-up dry room for keeping tools and small machine parts; (vii) security; (viii) sufficient lighting; (ix) heating or cooling of the buildings at the Site to ensure reasonable climate and required ambient conditions for performing Site Services; (x) office space and facilities and welfare, messing, changing and washing facilities; (xi) any drawings or information which Seller may require for the purposes of carrying out the Site Services; (xii) special tools required for commissioning of the Goods; and (xiii) analyses of feed, utilities and product according to Seller's requirements.
- 3.4 Under no circumstances will Seller be responsible for the acts and/or omissions of any other contractor or person provided or made available by Buyer or for works or any equipment supplied by them, either by way of a deemed employer or otherwise, or for their payment, welfare, provision of safety equipment or safe means of working, or for their work, productivity or workmanship. Buyer shall be solely responsible for any failure of such persons or contractors to strictly comply with the instructions and requirements of Seller. Buyer shall indemnify, defend and hold Seller harmless from any resulting claims and liability for loss or damage to any property or for bodily injury or death in any way arising out of the acts or omissions of any such persons and contractors, save in each case to the extent directly caused by the negligence of Seller.

4. Payment

- 4.1 Buyer shall pay Seller the Contract Price pursuant to the milestone schedule set forth in Seller's Offer or the Contract.
- 4.2 All payments are to be made by electronic transfer, net cash without any deduction, in United States Dollars unless a different currency is stated in Seller's Offer and within 30 days of the date of Seller's applicable invoice.
- 4.3 Payment shall not be deemed effected until irrevocably available funds have been received in full by Seller in its nominated bank account.

- 4.4 Buyer shall notify Seller in writing of any objection to the validity of any invoice within 5 days of receipt, absent which the invoice shall be deemed valid and payable.
- 4.5 Buyer shall have no right of set-off or right to make any form of withholding or retention against any payment of the Contract Price.
- 4.6 Seller shall have no obligation to commence any Scope of Supply until the first instalment of the Contract Price has been received by Seller according to Clause 4.3.
- 4.7 If any payment is not received by the applicable date for payment, Seller shall be entitled to interest thereon at 2.5% per month and pro rata for any part thereof, without formal demand being made. In addition and upon 7 days' written notice to that effect, Seller may suspend all or part of its performance under the Contract until the payment and any due interest is received in full.
- 4.8 In the event of any delay in the commencement of the Scope of Supply for reasons attributable in whole or in part to Buyer and/or any suspension by Seller pursuant to Clause 4.7 or other provision of these Terms, Clause 6.6 shall apply. If any payment has still not been received in full by Seller 21 days after the applicable due date, then, irrespective of whether or not Seller has commenced any portion of the Scope of Supply and/or suspended its works, Seller shall be entitled by written notice with immediate effect to terminate the Contract pursuant to Clause 10.3.
- 4.9 Where the achievement by Seller of a certain milestone or activity that is necessary for Seller to become entitled to all or a portion of the Contract Price is delayed by Buyer or third persons for whom Buyer is responsible, then without prejudice to any other right or remedy which Seller may have, Seller shall for payment entitlement purposes be deemed to have achieved the milestone or activity by latest 14 days after the date on which it would have been achieved had there been no delay.
- 4.10 The due date for payment of sums payable to Seller under the Contract other than the Contract Price shall be 30 days after receipt by Buyer of the applicable Seller's invoice and the foregoing provisions of this Clause 4 shall equally apply to such sums.

5. Taxes

- 5.1 The Contract Price and any other amounts to be paid to Seller are exclusive of, and Buyer shall be responsible for, all federal, state, local, or municipal duties, taxes (including value added, sales, use, business, excise, gross receipts, contractor's, withholding, or similar taxes), assessments or charges of any kind, except to the extent any taxes or other charges that are assessed on the profits of Seller or which under the applicable Incoterm relating to delivery of the Scope of Supply are payable by Seller. The payment of all such duties, taxes, assessments, or charges are the responsibility of Buyer. Seller must receive appropriate tax exemption certificates from Buyer; otherwise, applicable taxes will be charged by Seller on each invoice.
- 5.2 If any duties, taxes, assessments or charges are imposed on Seller by authorities in the country where the Scope of Supply will be installed in connection with any Site Services and/or in connection with the Contract itself, Buyer shall reimburse Seller all such amounts.
- 5.3 Where Buyer is obliged by applicable law to make a deduction from any payment due to Seller in relation to any such duties, taxes, assessments or charges, Buyer shall increase the payment to be made such that the net payment received by Seller is without any such deduction.

6. Delivery / Risk of Loss / Delays

- 6.1 Seller shall deliver the Goods according to the applicable Incoterms by the date specified in the Schedule. If no Incoterm is stipulated, delivery shall be Ex Works manufacturer plant as specified by Seller. If no manufacturer plant is specified, then delivery shall be Ex Works Seller's premises. In case the respective stipulated Incoterm obliges Seller to perform any import formalities for the import into the country of delivery, Buyer at its cost is obliged to support Seller in any way reasonably required by Seller. Any delay (other than a delay by Seller) in completion of import formalities shall be an event entitling Seller to an extension of time and compensation of Costs according to Clause 6.6.
- 6.2 Transfer of risk of loss and damage to the Scope of Supply shall be in accordance with the stipulated Incoterm applicable at the date of Seller's Offer. The inclusion of any Site Services within Seller's Scope of Supply shall not alter this transfer of risk of loss and damage and shall not create any assumption by Seller of any form of care, custody and control over any Buyer Scope and/or the Site.

- 6.3 Statements of packing, measurements and gross weight are an approximate guide and not binding on Seller.
- 6.4 Seller may deliver the Scope of Supply from multiple locations, including different countries and may use different types of transport. Partial deliveries and trans-shipments are allowed.
- 6.5 Upon delivery or the provision of any Scope of Supply, Buyer will inspect the relevant Scope of Supply and promptly (but in no event more than 7 days) inform Seller in writing of any Defect under Clause 8.1.1. Seller will thereupon remedy any such omission or Defect. If Buyer fails to accept any Scope of Supply when tendered at the point of delivery, Seller may deliver the same to a bonded warehouse, at Buyer's cost and risk, including insurance and storage costs, and shall be deemed to have fulfilled its delivery obligations under the Contract and be entitled to payment of any amounts contingent upon delivery. Except where an Acceptance Test is stipulated and governed by Clause 8.1 or 8.2 and where Buyer has given written notice pursuant to the first sentence of this Clause 6.5, the Goods and documents included in the Scope of Supply shall be deemed accepted for all purposes at their respective delivery and Site Services shall be deemed accepted for all purposes at their respective completion, provided such acceptance shall not be with prejudice to Buyer's warranty entitlements under Clause 8.1 or Clause 8.2.
- 6.6 In case of (i) any variation pursuant to Clause 2.1; (ii) any suspension; (iii) exceptionally adverse climatic conditions; (iv) unforeseeable shortages in the availability of personnel or goods attributable in whole or in part to Force Majeure; (iv) any delay, disruption, impediment or prevention of Seller or any breach of contract caused by or attributable in whole or in part to Buyer (including third parties for whom it is responsible), or (v) any other event or circumstance for which these Terms or the Contract gives Seller an entitlement under this Clause, Seller shall be entitled to payment by Buyer of its additional Costs and to an extension of time for any delay incurred. Seller shall give written notice to Buyer of any event giving it an entitlement under this Clause within a reasonable time after becoming aware of the event.
- 6.7 If Seller is more than 2 weeks late in delivering the Scope of Supply according to the applicable Incoterms for reasons attributable to the fault of Seller (and not for any reasons attributable in whole or in part to Buyer), Buyer shall be entitled to liquidated damages (and not a penalty) in an amount equal to 0.5% of the portion of the Contract Price attributable to the value of the delayed portion of the Scope of Supply for each full week of delay up to an overall aggregate maximum delay liquidated damages of 2.5% of the Contract Price. Such liquidated damages shall not be due where Seller has failed to deliver only minor portions of the Scope of Supply that do not delay implementation of the Scope of Supply or where Buyer has not incurred any resulting loss or damage. Payment of the liquidated damages shall constitute full and complete satisfaction of any claim of Buyer, and Buyer's sole and exclusive remedy, against Seller for delayed performance by Seller or claims that Seller delayed or disrupted the work of Buyer or others. Any and all other claims for delay or late performance, including any delay in meeting any intermediate or other dates or milestones, shall be excluded.
- 6.8 Each party shall be released from the performance of its obligations under the Contract to the extent such performance is delayed, disrupted, hindered or obstructed by Force Majeure. A party shall give written notice of the occurrence of any Force Majeure within 14 days of becoming aware of its occurrence. In case such Force Majeure delays should exceed 3 months in the aggregate, each party shall be entitled, to terminate the Contract by notice with immediate effect. In case of such termination, Seller shall be entitled to all payments then due but unpaid on the date of termination and to all costs and expenses incurred in respect of the following (i) performing the Contract to date; (ii) ceasing its obligations under the Contract; (iii) in contemplation of carrying out all of its obligations under the Contract; (iv) demobilization; and (v) cancelling any related subcontract (including reasonable cancellation fees), and in each case to the extent not covered by the Contract Price as paid to Seller on the date of termination. Save for the obligations under Clause 9, neither party shall have upon termination of the Contract any other or further liability or obligation to the other party under or arising out of the Contract to the maximum extent permitted by applicable law.

7. Ownership

- 7.1 Title in the Scope of Supply will transfer to Buyer upon Seller's receipt of 90% of Contract Price. Until payment of the Contract Price is received in full, the Scope of Supply shall not be sold, pledged or otherwise encumbered or (unless otherwise specified in the payment terms) used for commercial production without Seller's prior written consent. By accepting delivery of the Goods, Buyer grants to Seller a security interest in such Goods to secure the full and prompt payment of the Contract Price. In the event of default in payment, Seller has all rights of repossession and other rights available to a secured party under the Uniform Commercial Code or other applicable law. Buyer agrees that no part of the Goods is considered a fixture or a part of any realty by reason of its being attached to real estate, and any Goods may be separated from real estate for purpose of repossession by Seller.

8. Warranties

- 8.1 Warranties Regarding Goods, Documentation and Site Services:
- 8.1.1 Subject to the provisions of this Clause 8.1 and Clause 8.3, Seller warrants that the Scope of Supply shall be free of Defects. This warranty shall expire on the last day of the Warranty Period.
- 8.1.2 Seller shall be responsible for remedying any Defect under Clause 8.1.1 provided that Buyer promptly gives detailed written notice to Seller of the Defect and in any event within 7 days of discovery and before the end of the Warranty Period.
- 8.1.3 To the maximum extent permitted by applicable law, Seller shall have no liability for any form of Defect under Clause 8.1.1, latent or otherwise, for which it received written notification after the Warranty Period. For the avoidance of doubt, the warranty period of any Scope of Supply that has been rectified by Seller during the Warranty Period shall expire at the expiry of the Warranty Period.
- 8.1.4 Where Seller is responsible for a Defect under Clause 8.1.1, Seller shall investigate and rectify the same as soon as reasonably practicable (taking into consideration the nature of the Defect, lead-time for replacement parts, etc.). Rectification of a Defect under Clause 8.1.1 relating to Goods included in the Scope of Supply shall be by way of repair or replacement, at Seller's option, of the relevant part of the Goods that is defective. Rectification of a Defect under Clause 8.1.1 relating to services (including Site Services) and documentation included in the Scope of Supply shall be by way of re-performance by Seller of the relevant part of the service or documentation that is defective. Buyer shall in each case give Seller all necessary and safe access to and possession of the Site. Where Seller fails to carry out its obligations within a reasonable time, Buyer shall be entitled, upon giving not less than 7 days' prior written notice to that effect, to have the Defect in question rectified by a third party at the cost of Seller, to the extent Seller would have been responsible for such cost under Clause 8.1, Buyer has reasonably mitigated its costs, and Seller has not commenced rectification within the noticed period and diligently pursued rectification thereafter. Seller shall have no responsibility for any such works performed by a third party. Any replacement parts shall be delivered according to the same delivery (Incoterms) terms as specified in the Contract. Buyer shall be responsible for all labor, equipment, costs used or incurred in the disassembly, removal, transport, installation and commissioning of repaired or replaced defective parts. Seller shall not be deemed to have breached any of its warranty obligations where it has rectified a Defect according to this Clause.
- 8.1.5 Seller's responsibility for any Defect under Clause 8.1.1 is subject to the condition that it is not caused by one or more of the following: (i) normal wear and tear of parts; (ii) use of non-original spare parts; (iii) use of feed, consumables or utilities not in strict conformity with the specifications stated in the Contract or in Seller's written manuals; (iv) any failure of upstream and/or downstream equipment; (v) modifications without Seller's express prior written consent; (vi) use of corrosive or abrasive substances; (vii) the storage, handling, use, operation or maintenance of any Goods which is not in strict conformity with good engineering practice, the Contract or any written requirements of Seller, including any failure to comply with Seller's written manuals and instructions and Buyer's own quality assurance requirements; (viii) information, services, personnel, equipment or other items supplied by or for Buyer; (ix) failure to permit Seller to perform Acceptance Tests, supervision of installation and/or installation; (x) improper installation; (xi) chemical reversion or reaction to Buyer's product; (xii) Buyer failing to provide suitable premises in which the Goods are to be located; and/or (xiii) other conditions or circumstances not due to the fault of Seller (collectively, "Warranty Conditions").
- 8.1.6 If the Contract provides for Acceptance Tests for purposes other than those stipulated in Clause 8.2, such tests shall be performed to verify whether the Goods are free of material Defects under the warranty stated in Clause 8.1.1. In such case, these Acceptance Tests will be subject to the provisions of paragraphs 1, 2 and 4 of Annex A. Seller's obligations in respect of these Acceptance Tests will be discharged in full and Buyer shall be deemed for all purposes to have accepted the Scope of Supply upon the earliest of: (i) Buyer takes the Goods into commercial production; (ii) the Acceptance Tests have not been delayed for reasons attributable in whole or in part to Buyer within 1 month from completion of commissioning, 3 months from completion of installation or 4 months from readiness of delivery of the main Goods, whichever is earliest; or (iii) a material Defect is identified during the tests and Seller has rectified the Defect according to the provisions of Clause 8.1.4.
- 8.1.7 Used Goods included in the Scope of Supply are sold as-is with no warranty, express or implied.

8.2 Process Warranties:

- 8.2.1 Subject to the provisions of this Clause 8.2, Clause 8.3 and Annex A, Seller warrants that the Goods will meet the Process Warranties (if any). This warranty expires when the Process Warranties are discharged according to paragraph 3 of Annex A.
- 8.2.2 Technical figures, data and other descriptions of any kind concerning or relating to the process, performance or functionality of the Scope of Supply, including its individual parts, which are not expressly and specifically labelled "Process" or "Performance" warranty shall not constitute a Process Warranty as that term is used in these Terms. Such figures, data and descriptions shall be indicative only and non-binding.
- 8.2.3 All Process Warranties, if any, are subject to: i) a steady and constant stream of feed, materials and utilities in strict conformity with the specifications stated in the Contract; ii) the furnishing by Buyer of trained, qualified and sufficient personnel as required by Seller during the Acceptance Tests; iii) Seller is given access to all operating and maintenance records and data and Buyer undertakes all analyses of product, utilities and feed as required by Seller in writing; iv) Seller performs or technically directs the performance of the Acceptance Tests; v) any Warranty Conditions to the extent not stated in the foregoing; and vi) the conditions and other provisions of Annex A.

8.3 Disclaimer and Limitations:

To the fullest extent permitted by applicable law, (i) SELLER HEREBY EXCLUDES AND DISCLAIMS ALL CONDITIONS, WARRANTIES, GUARANTEES AND REPRESENTATIONS THAT ARE NOT EXPRESSLY SET OUT IN CLAUSES 8.1 AND 8.2 OR WHICH ARE IMPLIED, STATUTORY, CUSTOMARY OR OTHERWISE AND WHICH, BUT FOR THIS EXCLUSION AND DISCLAIMER, WOULD OR MIGHT SUBSIST IN FAVOR OF BUYER, INCLUDING ANY WARRANTIES AS TO FITNESS FOR SPECIFIC PURPOSE OR MERCHANTABILITY; (ii) Buyer's remedies as set forth in Clause 8.1.4 above and in paragraph 5 of Annex A shall be Buyer's sole and exclusive remedies in respect of any defect in the Scope of Supply, including any Defect covered by Clause 8.1 or any failure to achieve any Process Warranty covered by Clause 8.2; and (iii) Seller shall not be liable for any loss or damage, including any loss or damages described in Clause 10.5 below, caused by or resulting from any breach of warranty or any defect, including any Defect covered by Clause 8.1 or any failure to achieve any Process Warranty covered by Clause 8.2. If it is ultimately determined that this remedy fails of its essential purpose, then Seller's maximum liability is limited to the Contract Price attributable to the portion of the Scope of Supply for which the exclusive remedy has failed.

9. Confidentiality and IP

- 9.1 Buyer shall treat all information, drawings and data of any kind made available or provided by Seller in Seller's Offer or under the Contract whether orally, electronically, in writing, visually (such as through site visits, tests or audits) or otherwise and regardless of whether marked "confidential" ("Confidential Information") as private and confidential. Buyer shall not publish or disclose Confidential Information or any particulars thereof (except as may be necessary for the purposes of the Contract, including disclosure to its and its affiliates' officers, directors and employees, and/or as required by the rules of a public stock exchange or by applicable law), without the previous written consent of Seller. Buyer may use Confidential Information only for the work covered by the Contract and not for any other project. Nothing in this Clause 9 shall prevent the publication or disclosure of any Confidential Information which either has come within the public domain otherwise than by breach of this provision or was already in the possession of Buyer with a right to disclose and use such information.
- 9.2 Any disclosure for the purposes of the Contract shall be made against an undertaking of non-use and confidentiality from Buyer on terms at least as stringent as set out in this Clause 9. In respect of any disclosure required by a stock exchange or by applicable law, Buyer shall disclose only that portion of the Confidential Information it is legally required to disclose and to exercise all reasonable efforts to obtain confidential treatment for such Confidential Information.
- 9.3 Intellectual property or patent rights which may be obtained on the basis of the information given or made available to Buyer in Seller's Offer or under the Contract or with respect to Seller's Goods, including, without limitation, any discovery, invention, improvement or enhancement to Seller's Goods or the process, operating parameters, or controls associated with such Goods will remain the exclusive property of Seller or its subcontractors and/or sub-suppliers, respectively. Buyer shall not, nor shall Buyer permit any third party to, reverse engineer or otherwise technically examine, measure or test Seller's Goods (except for the purposes of maintaining and operating the Goods) without Seller's prior written consent.
- 9.4 Subject to payment in full by Buyer of the Contract Price, Buyer shall have a non-exclusive, non-transferable and royalty free license to use the intellectual property rights in the Scope of Supply and any Confidential Information provided by Seller for the sole purpose of operating and maintaining the Goods provided under the Contract and strictly for the application and use set

out in the Contract, subject at all times to subsisting third party rights and the obligation of confidentiality. Buyer may transfer the intellectual property rights in the Scope of Supply only together with the title in the Scope of Supply.

- 9.5 Seller will defend and indemnify Buyer and hold Buyer harmless from and against any liability arising out of any claim that the method of manufacture or design of the Goods infringes any United States design or apparatus patent. The foregoing indemnity for any infringement claims does not apply to the extent that any such claims result from: (i) the interconnection, combination or use of the Goods with equipment, services, systems or software not supplied by Seller; (ii) specifications, including designs and instructions, prepared by Buyer or third parties on its behalf; (iii) modification of the Scope of Supply without Seller's prior written consent; (iv) any process, method, product or by product process patent claim; (v) the use of the Scope of Supply as part of a Buyer process, including any product thereby produced or processed; (vi) any patent issued outside the country where Seller has its registered offices; or (vii) any patents owned or acquired by Buyer or by any holding company and subsidiary of Buyer. In each of the foregoing cases (i) through (vii), Buyer will defend, indemnify and hold Seller harmless for any infringement claims. In all cases of either party's indemnity provided in this paragraph, the party seeking indemnity must promptly notify the other party in writing of such claim of infringement; the defense of any legal action relating to such claim will be under the direction and control of the indemnifying party; the indemnified party shall cooperate with the indemnifying party in making such defense; and the indemnifying party will have complete control of the litigation or proceeding, including the amount of any settlement (provided the indemnified party has no monetary contribution obligation with regard to such settlement) and the choice in retention of counsel, and shall bear all expenses of such defense; provided, however, that the indemnified party may be represented in such action by its own counsel at its own expense. In the event that the Goods or any portion thereof is held to infringe the intellectual property rights of any third party such that Seller would be required to indemnify Buyer hereunder, Seller will, at its option and at its sole cost and expense: (a) procure for Buyer the right to continue the use of the Goods; (b) replace the Goods or any portion of the Goods with non-infringing goods of similar quality and utility; or (c) modify the Goods to the extent necessary to become non-infringing. Indemnity under this paragraph is Buyer's sole and exclusive remedy for the infringement provided for in this paragraph.

10. Remedies and Limitations of Liability

10.1 Reasons for Termination:

- 10.1.1 A party may terminate the Contract by giving written notice thereof to the other party if:
- (i) a provision of these Terms gives the party an express entitlement to terminate the Contract,
 - (ii) the other party fails to perform any material obligation under the Contract and has not commenced a cure of the failure within 30 days of receipt of written notice of such failure from the non-defaulting party and does not diligently pursue the cure thereafter, (iii) the other party becomes the subject of liquidation, bankruptcy or other insolvency proceedings, has a receiver appointed over any of its assets or undertakings, makes any arrangement or composition with its creditors, (excluding a scheme of arrangement as a solvent company for the purposes of amalgamation or reconstruction) or is the subject of any similar arrangement, event or proceedings. Notwithstanding the foregoing, where Seller's default is based on a failure of the Scope of Supply to meet a material requirement of the Contract, the time period to within which Seller must complete the cure will be agreed to by the parties based on the reasonable time required for material re-supply, re-fabrication and/or re-manufacture of any replacement of, or any repair or modification to the Scope of Supply and Buyer must permit Seller to have reasonable access and opportunity to investigate and cure any alleged default with a minimum of 3 opportunities to complete the cure before taking any action to terminate the Contract.

10.2 Termination by Buyer:

- 10.2.1 Where Buyer has a right to terminate the Contract pursuant to Clause 10.1.1 and Buyer has terminated the Contract by giving timely written notice thereof, the liability of Seller to Buyer upon such termination shall be to pay either the reasonable additional costs in excess of the Contract Price that are required to complete the Scope of Supply or the difference between the fair market value of the Scope of Supply as delivered and the Contract Price, whichever is less. To the maximum extent permitted by applicable law, such rights of Buyer upon termination shall be to the exclusion of any other remedies that may be available to Buyer in case of termination or rescission / withdrawal.
- 10.2.2 Seller shall have no liability for any other cost and expense, loss or damages howsoever incurred by Buyer and, save for the obligations under Clause 9 and Clause 10.2.1 above, neither party shall have any further liability or obligation to the other party under or arising out of the Contract, to the maximum extent permitted by applicable law.

10.2.3 In case expressly stated in Seller's Offer or the Contract that Buyer may be entitled to terminate the Contract for convenience or in case Buyer may be entitled to such right under the applicable statutory law and where Buyer exercises such right Seller shall be entitled to payment of the Contract Price equivalent to the portion of the Scope of Supply completed together with reimbursements for any direct costs arising from Buyer's termination with a 20% markup on such costs.

10.3 Termination by Seller:

Where Seller has a right to terminate the Contract pursuant to Clause 10.1 and Seller terminates the Contract by giving timely written notice thereof, Seller shall be entitled to compensation as if the Contract had been terminated due to an event of Force Majeure according to Clause 6.8 above save that Seller shall also be entitled to payment in full of the profit that Seller expected under the Contract.

10.4 Exclusive Remedies:

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, BUYER'S RIGHTS AND REMEDIES AS EXPRESSLY STATED IN THE CONTRACT (WHETHER BY WAY OF DAMAGES, PAYMENT OR REIMBURSEMENT OF COSTS, LIQUIDATED DAMAGES, PRICE REDUCTION, MAKE GOOD OR REMEDIATION, TERMINATION OR OTHERWISE) SHALL BE ITS SOLE AND EXCLUSIVE RIGHTS AND REMEDIES REGARDLESS OF THE EVENTS, CIRCUMSTANCES OR THEORY ON WHICH A CLAIM MAY BE BASED (INCLUDING TERMINATION, BREACH OF CONTRACT OR STATUTORY DUTY, NEGLIGENCE OR OTHER TORT, STRICT LIABILITY, INDEMNITY, RESCISSION / WITHDRAWAL OR OTHERWISE).

10.5 Exclusion of Certain Damages:

NOTWITHSTANDING ANY OTHER PROVISION TO THE CONTRARY OR THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY EXCLUSIVE OR LIMITED REMEDY, EXCEPT ONLY (i) TO THE EXTENT OF ANY LIQUIDATED DAMAGES PROVIDED FOR IN THE CONTRACT AND (ii) TO THE EXTENT THE EXCLUSION OF SELLER'S LIABILITY IS PROHIBITED BY APPLICABLE LAW (IN WHICH CIRCUMSTANCES SELLER'S LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY APPLICABLE LAW:

SELLER SHALL IN NO CASE WHATSOEVER BE LIABLE FOR ANY (A) LOSS OF REVENUES OR PROFITS; LOSS OF OPPORTUNITY, PRODUCTION OR CONTRACTS; LOSS OF USE; STANDBY COSTS; LOSS OF OR DAMAGE TO FEED, RAW MATERIALS, UTILITIES OR PRODUCT; PLANT DOWNTIME OR DELAYS; LOSS OF GOODWILL; LIQUIDATED DAMAGES OR PENALTIES IMPOSED ON BUYER BY ITS CUSTOMERS OR THIRD PARTIES; BUYER'S CONTRACTUAL LIABILITY TOWARDS ANY THIRD PARTY; COSTS TO RECALL BUYER'S PRODUCT; ANY DAMAGES FINES OR PENALTIES PAYABLE BY BUYER; OR OTHERWISE FOR ANY FINANCIAL OR ECONOMIC LOSSES OR DAMAGES, AND IN EACH CASE IRRESPECTIVE WHETHER THE LOSSES OR DAMAGES IN QUESTION ARE DEEMED OR CLAIMED TO BE DIRECT, CONSEQUENTIAL, INDIRECT OR OTHERWISE, OR (B) FOR ANY CONSEQUENTIAL, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY, LOSSES OR DAMAGES HOWSOEVER CAUSED OR ARISING; OR (C) FOR ANY LOSS OR DAMAGE TO THE EXTENT ARISING OUT OF THE SOLE OR CONTRIBUTORY NEGLIGENCE OF BUYER, ITS EMPLOYEES OR AGENTS OR ANY THIRD PARTY.

10.6 Maximum Aggregate Liability:

NOTWITHSTANDING ANY OTHER PROVISION TO THE CONTRARY OR THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY EXCLUSIVE OR LIMITED REMEDY, EXCEPT ONLY TO THE EXTENT THE EXCLUSION OR LIMITATION OF SELLER'S LIABILITY IS PROHIBITED BY APPLICABLE LAW (IN WHICH CIRCUMSTANCES SELLER'S LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY APPLICABLE LAW), SELLER'S MAXIMUM AGGREGATE LIABILITY TO BUYER UNDER OR IN CONNECTION WITH THE CONTRACT SHALL IN NO CASE EXCEED THE CONTRACT PRICE AS RECEIVED BY SELLER, IRRESPECTIVE WHETHER SUCH LIABILITY ARISES BY WAY OF BREACH OF CONTRACT (INCLUDING TERMINATION) OR OF STATUTORY DUTY, NEGLIGENCE OR OTHER TORT, STRICT LIABILITY, INDEMNITY, CONTRACT PRICE REDUCTION OR REPAYMENT, TERMINATION, RESCISSION/WITHDRAWAL, MAKE GOOD OR REMEDIATION OR OTHERWISE.

10.7 The expiry of the Warranty Period shall, to the maximum extent permitted by applicable law, constitute conclusive evidence for all purposes and in all proceedings whatsoever between the parties that Seller has completed its obligations under or arising out of the Contract and performed the Scope of Supply and made good all Defects therein in accordance with its obligations under the Contract. After the expiry of the Warranty Period, all claims of any nature whatsoever Buyer may have against Seller, whether known or not, under or arising out of the Contract and the use of the Scope of Supply, and any right, cause of action and or remedy shall be deemed to be barred and extinguished.

Provided always that this provision shall not apply in case of fraud or to the extent any proceedings were commenced and served in writing on Seller within the Warranty Period.

- 10.8 TO THE EXTENT THAT BUYER MAKES ANY CLAIM UNDER ANY FRAUD OR TORT THEORY FOR THE PURPOSE OF CIRCUMVENTING THE LIMITATIONS AND DISCLAIMERS SET FORTH ABOVE AND IS UNSUCCESSFUL IN PREVAILING ON THOSE CLAIMS, BUYER HEREBY AGREES TO REIMBURSE AND INDEMNIFY SELLER FOR ALL ATTORNEYS' FEES AND EXPENSES AND COSTS INCURRED BY SELLER IN DEFENDING THOSE CLAIMS.

11. Directives / Changed Laws / Permits / Safety

- 11.1 The Goods shall comply with governmental directives, laws, rules, regulations, codes and standards, if any, that are expressly stated in Seller's Offer, as the same are in effect on the Base Date. If after the Base Date any Changed Law affects the Scope of Supply and/or Seller's means or manner of executing its works and which Seller is required by such Changed Law to comply with and implement, Seller shall be entitled to an equitable adjustment, including the remedies set out in Clause 6.6. Seller shall have no responsibility for compliance with any emission, discharge or other environmental requirements, except to the extent set out in any Process Warranties. Seller shall have no responsibility for any other Changed Law.
- 11.2 Buyer shall be responsible for (i) all permissions, consents and permits in connection with the Site; (ii) maintaining the Site in a safe working condition and as a safe place of work for all personnel at the Site at any time, providing safe means of access to the Scope of Supply at all times, conducting all activities on the Site in a safe manner and as prescribed by applicable directives, laws, rules, regulations, codes and standards and as set forth in the operating and maintenance manuals and instruction sheets furnished by Seller; (iii) not removing or modifying any safety device, guard or warning sign provided as part of the Scope of Supply. If Buyer fails to strictly observe any of the obligations in this Clause, Buyer shall indemnify, defend and hold Seller harmless from any resulting claims and liability arising out of loss or damage to any property or out of bodily injury or death, save to the extent directly caused by the negligence of Seller.

12. Amendment to the Contract

- 12.1 No change in, addition to, or waiver of the provisions of the Contract shall be binding upon Seller or Buyer, unless contained within an identified written formal amendment to the Contract and signed by both parties.

13. Export Control

- 13.1 Buyer acknowledges that the Goods to be provided by Seller are or may be controlled by Export Control Regulations which may result in an Export Control Event. In case of an Export Control Event, Seller shall be entitled to all additional costs and expenses which may be needed for Seller to fulfill its obligations under Seller's Offer or, in case of binding contract, the Contract, including costs and expenses needed to obtain an Export License. Buyer agrees to promptly provide to Seller all necessary information that may be requested to obtain an Export License, such as end-user certificates. Seller will promptly inform Buyer about material delay to obtain an Export License, a revoked license or any prohibition to execute the contract.
- 13.2 If an Export License is denied or revoked or if an embargo prohibits the execution of the contract or if any other Export Control Event will hinder Seller to fulfill one or more of its contractual obligations Seller shall be excused from the performance of its obligations under Seller's Offer or, in case of binding contract, the Contract, with immediate effect. This shall, without limitation, also apply in case that Seller may be hindered to fulfill its contractual obligations due to the fact that any of Seller's suppliers or subcontractors are hindered by an Export Control Event to supply the Goods all or in part. In any case Seller shall not be liable or accountable to Buyer for any claims for delay, loss or damage in connection with an Export Control Event.
- 13.3 Subject to Clause 13.2, if Seller gives notice to Buyer that its performance of Seller's Offer or, in case of binding contract, the Contract will be hindered by Export Control Regulations and/or Export License or embargos, each party shall be entitled to terminate Seller's Offer or, in case of binding contract, the Contract, by giving one week prior written notice. In the event of such termination Seller shall be entitled to all costs and expenses for all work in progress under the contract or for which Seller

is liable to pay to any supplier or subcontractor due to the termination, as well as to all losses and damages arising from or related to the termination.

- 13.4 Buyer shall implement and follow all necessary procedures to comply with Export Control Regulations related to the Goods to be provided by Seller, and guarantees not to engage in any activity which it or Seller reasonably believes could be subject to civil, criminal or administrative liability, including but not limited to the sale, lease, transfer, or sublicensing of any Goods without appropriate authorization. Buyer shall indemnify and hold harmless Seller from and against any claim, proceeding action, fine, cost, loss and damage arising from or related to the breach of this warranty.

14. Data Processing

- 14.1 Buyer agrees that Seller will collect, process and use personal data and other data disclosed by Buyer in the course of the business relation with Seller for the purpose of (1) managing and performing the Contract with Buyer (which includes the creation and processing of invoices), (2) advertising and/or offering further goods and services to Buyer and/or (3) managing the business relationship with Buyer through e.g. a customer relationship management system. Such data may include the following data categories of persons being employed or retained by Buyer *inter alia* name, title, company, function within the company, business contact details (phone- and fax-number, email-address, mail address), history of orders, history of issues (e.g. warranty claims or disputes). Within the limitation of the above described purpose, Seller can collect, process and use the above described data (i) by itself and/or through the use of affiliates or other external subcontractors and (ii) from countries within and/or outside the European Union or European Economic Area. Buyer will ensure (e.g., if necessary, through consent declaration of the data subjects or other appropriate means available under the law) that Seller can use the above described data for the above described purposes.

15. Miscellaneous

- 15.1 If any provision of the Contract is determined to be invalid or unenforceable, this shall not affect the validity or enforceability of the remaining provisions and the parties will substitute the invalid or unenforceable provision by a valid provision that achieves as closely as possible the same economic effect
- 15.2 Any clause or paragraph headings or other headings appearing in the Terms are for reference only and shall not affect the construction of those clauses or paragraphs. Words importing the singular shall include the plural and vice versa where the context requires.
- 15.3 Any reference to a statute or to regulations (whether or not specifically named herein) shall, but without prejudice to Clause 11 above, include any amendment or re-enactment thereof for the time being in force and shall include all instruments, orders, plans, regulations, bye-laws, permissions and directions for the time being made, issued or given thereunder or deriving validity therefrom.
- 15.4 All communications, verbal or written, notices, documents and drawings given by one party to the other or exchanged or made available between the parties, and including in the course of any Site related activities where applicable, shall be in English in a fluent, correct and intelligible manner.
- 15.5 The Contract shall not be construed or interpreted against or to the disadvantage of either Buyer or Seller whether on the grounds that the Contract represents Buyer's or Seller's standard or customary terms and conditions of business and/or that the Contract and or any particular recital, article, clause and or annex or appendix thereof may have originated from Buyer or Seller or other similar grounds.
- 15.6 The Contract sets forth the entire agreement between Seller and Buyer with respect to the subject matter thereof and supersedes any previous agreement or arrangement between the parties. Except to the extent expressly and specifically set forth in the Contract, all oral representations, warranties, undertakings and other statements of any kind and all documents given or exchanged on or prior to the date of Contract (including any brochures or sales material of Seller) are expressly excluded and disclaimed by Seller. Buyer acknowledges that it has not relied on and is not relying on any such representations, warranties, undertakings, statements or documents when entering into the Contract.
- 15.7 The Contract may not be assigned by either party without the other party's prior written consent, except that no consent is required for a party to assign the Contract to an affiliate as part of a corporate reorganization. This Clause 15.7 shall not require Seller to obtain any consent to subcontract any part of its obligations under the Contract. The Contract shall be binding upon and inure to the benefit of each of the parties and to their respective legal successors and

assigns. Seller may assign receivables under the Contract to a financial entity financing Seller's performance and Seller may provide to such financial entity copies of the invoices to which those receivables relate.

- 15.8 No delay or omission by either party to exercise any right or power accruing upon any default will impair any such right or power or will be construed as a waiver thereof, but any such right or power may be exercised from time to time and as often as may be deemed expedient.

16. Disputes/Applicable Law

- 16.1 Any dispute arising out of or in connection with this Contract, including any question regarding its existence, validity or termination, shall first be submitted to a senior executive dispute resolution process and mediation prior to the institution of litigation; provided that the settlement negotiation process can be completed within the statute of limitations. Either party may notify the other party in writing of the nature of the claim or dispute with as much detail as possible about the alleged deficient performance of the other party (the "Dispute Notice"). Within 14 days after delivery of a Dispute Notice, a senior executive (a President or Executive Vice President level) of each party shall meet in person or by telephone at a mutually acceptable time and place in an attempt to resolve the dispute. They shall negotiate in good faith attempting to reach a resolution satisfactory to both parties. If the senior executives have not resolved the matter, or agree upon a written plan of corrective action, within 45 days of delivery of a Dispute Notice, or if they fail to meet within 30 days after delivery of a Dispute Notice, either party may initiate mediation with a mediator and mediation location acceptable to both parties. All settlement negotiations shall be confidential and will be treated as compromise and settlement negotiations for purposes of applicable rules of evidence.
- 16.2 Any dispute arising out of or in connection with this Contract, including any question regarding its existence, validity or termination, shall exclusively be referred to and finally resolved by the competent courts in Maryland. The governing law of the Contract shall be the substantive laws of Maryland. The United Nations Convention on Contracts for the International Sale of Goods shall not apply.
- 16.3 EACH PARTY IRREVOCABLY WAIVES ANY RIGHT TO A TRIAL BY JURY IN ANY ACTION BROUGHT TO ENFORCE THE TERMS OF THE CONTRACT.
- 16.4 EACH PARTY IRREVOCABLY WAIVES ANY RIGHT TO THE RECOVERY OF ATTORNEY'S FEES EXCEPT AS PROVIDED IN THE TERMS.

17. Insurance

- 17.1 Seller shall, upon execution of the Contract and throughout the performance of its obligations hereunder, maintain in effect and shall furnish certificates of insurance upon Buyer's request evidencing the insurance coverage based on the amounts and limits as follows: (i) Comprehensive General Liability Insurance including contractual liability coverage with specific reference to liability assumed herein and including coverage for products liability and completed operations which includes coverage for bodily injury and property damage with limits of \$2,000,000 for each occurrence, and \$4,000,000 in the aggregate; (ii) Comprehensive Automobile Liability Insurance including coverage for owned, non-owned and hired vehicles with limits of \$2,000,000 for each occurrence for bodily injury and death, and property damage; and (iii) Workmen's Compensation Insurance as required by statute in the specific jurisdiction where the work is to be performed.
- 17.2 Buyer shall ensure that Seller and its subcontractors carrying out the Site Services (if applicable) are covered under an all-risk insurance policy applicable to the Scope of Supply and the Site. Such cover shall be primary and name Seller as an additional insured. Seller shall be entitled upon request to a copy of the policy in question. The deductible, if any, shall be at Buyer's cost.
- 17.3 Neither Seller nor Buyer will be liable to any insurance company (by way of subrogation or otherwise) for, and Seller and Buyer each waive and shall each cause their respective insurers to waive, any rights of subrogation or contribution with respect to, any and all claims covered by insurance. To the extent required by each party's applicable insurance policies, each party shall promptly give its insurance company written notice of the waivers contained in this paragraph and shall cause its insurance policies to be properly endorsed to effectuate the same, if necessary, to prevent the invalidation of any insurance coverage by reason of the waivers of subrogation. Each party represents that its current insurance policies allow such waiver.

ANNEX A

ACCEPTANCE TESTS AND PROCESS WARRANTIES

1. Acceptance Tests / Conditions

Acceptance Tests will be conducted promptly after the Goods have been commissioned and the Goods have, in the reasonable opinion of Seller, achieved stable operation. Acceptance Tests shall be conducted with such trained and qualified personnel of Buyer as are required by Seller. In addition to any other obligations it has under the Contract, Buyer shall ensure during the Acceptance Tests that (i) all feed and utilities conform strictly to the specifications of the Contract (or if no such specifications are stated, according to the Testing Protocol provided by Seller pursuant to paragraph 2 below), (ii) all analyses of the feed, utilities and product are timely provided as required by Seller, and (iii) that all upstream and downstream equipment from the Goods operates properly. Unless otherwise specified in the Contract or the Testing Protocol, the party that will be responsible for conducting the Acceptance Tests will give at least 14 days' advance written notice to the other of the period in which the Acceptance Tests shall commence. Where the Acceptance Tests are not supervised or conducted by Seller, Buyer shall allow Seller to attend and witness the Acceptance Tests and Seller shall be entitled to a copy of all related inspection reports and records.

2. Testing Protocol

Except to the extent detailed in the Contract, the procedures and requirements for the Acceptance Tests shall be in accordance with Seller's test procedures and requirements. These procedures and requirements, as adapted to the Scope of Supply and the Contract, shall be provided by Seller to Buyer in the form of a "Testing Protocol" latest 30 days prior to the expected start of any Acceptance Tests. The Testing Protocol will specify, among other things, any pre-conditions, any Process Warranties not previously discharged and the subject of the Acceptance Tests, length of the relevant Acceptance Tests, measurement tolerances and the procedures and methods for conducting the Acceptance Tests.

3. Plant Acceptance

The Process Warranties and Seller's obligations in respect of any Acceptance Tests shall be discharged in full and Buyer shall be deemed for all purposes to have accepted the Scope of Supply if any one or more of the following applies:

- (i) the Goods have on average performed in accordance with the Process Warranties; or
- (ii) any part of the Goods is taken into commercial use by Buyer prior to completion of the Acceptance Tests; or
- (iii) the Goods have not passed the Acceptance Tests for reasons attributable in whole or in part to Buyer within 1 month from completion of commissioning, 3 months from completion of installation, or 4 months from readiness of delivery of the main Goods, whichever is the earliest; or
- (iv) Seller has paid any liquidated damages or price reduction as may be applicable to the Process Warranties under paragraph 5 below.

4. Acceptance Certificate

When the Scope of Supply (or section thereof, if applicable) is deemed to have passed the Acceptance Tests according to paragraph 3 above, Seller shall submit to Buyer and Buyer shall immediately sign an acceptance certificate for the Scope of Supply ("Acceptance Certificate"). The Acceptance Certificate shall state the date when the Performance Tests were deemed to have been passed.

Buyer shall not be entitled to delay or refuse to issue the Acceptance Certificate due to the existence of defects or omissions that do not adversely and materially affect the operation of the Goods; such defects and omissions shall be noted by Buyer on the Acceptance Certificate and are to be completed by Seller as soon as reasonably practical, but without in any way affecting the validity or effect of the Acceptance Certificate.

If Buyer fails to issue the Acceptance Certificate within 14 days of when Buyer is obliged to do so under this paragraph 4, Buyer shall be nonetheless deemed to have issued the Acceptance Certificate effective as of the date when the Scope of Supply is deemed to have passed the Performance Tests under paragraph 3 above without any conditions or qualifications.

Buyer may take the Scope of Supply (or relevant section) into use only after issuance of an Acceptance Certificate. On the issuance or deemed issuance of the Acceptance Certificate, Buyer shall perform all its obligations, including payment, which then become due.

5. Failure to pass the Acceptance Tests

If during the Acceptance Tests the Goods fail to achieve the Process Warranties, Seller shall as soon as possible investigate the reasons for such failure and inform Buyer of the results of its investigation. Buyer shall, at its cost, fully co-operate with Seller in such investigation and shall provide Seller with all access, resources, information and documentation required by Seller to determine the cause of the failure. If it is determined that the cause of such failure is due to reasons attributable to the fault of Seller (and not to any fault attributable in whole or in part to Buyer), Seller shall without delay and at its own cost undertake all reasonable actions to remedy the cause of the failure and, unless the failure was insignificant, the relevant part of the Acceptance Tests shall be repeated.

If, notwithstanding such efforts, the Goods still fail to pass one or more repeats of the relevant part of the Acceptance Tests, for reasons attributable to the fault of Seller (and not to any fault attributable in whole or in part to Buyer), Seller may, after consultation with Buyer and after at least three attempts to remedy the failure, elect either to carry out further remedial actions or to pay as liquidated damages (and not as a penalty) the applicable Process Warranty liquidated damages as may be specified in the Contract (provided that if no liquidated damages are specified, the parties shall agree on a reduction in the Contract Price). The price reduction shall reflect the difference between the fair market value of the Goods as sold and the fair market value of the Goods as delivered, installed and commissioned. The payment of liquidated damages or, as the case may be, an agreed price reduction shall be Buyer's sole and exclusive remedy for any failure of the Goods to achieve the Process Warranties and other criteria applicable to the Acceptance Tests. The amount of all payments or price reductions shall not, in any event, exceed in the aggregate 5% of the Contract Price (or in case the Scope of Supply is comprised of different sections, the portion of the Contract Price attributable to the section failing the test).

If Seller is prevented, for more than 14 days, from carrying out an Acceptance Test or an Acceptance Test fails to pass in each case for reasons attributable in whole or in part to Buyer, the Acceptance Tests shall be deemed passed and Seller shall be entitled to payment by Buyer for its additional Seller costs.

6. Delay in Acceptance

If the Acceptance Tests are delayed or prolonged due to reasons not attributable in whole or in part to Seller, Seller shall be entitled to payment by Buyer for its additional Costs.

7. Sections

Where stipulated in the Contract or as reasonably requested by Seller, the Scope of Supply will be tested in sections, in which case the provisions of this Annex A shall apply to each section.

VARIATIONS AND CHANGE ORDERS

If further assistance is needed or requested, all details must be agreed by the Customer and GEA and shall be put in writing as a Change Order, including the price of such further assistance and the necessary extension of the original time schedule and milestones, before the additional work can be initiated or executed.

SEISMIC TERRITORY AND LOCAL REGULATIONS

It is the Customer's full responsibility to inform GEA if any local regulations (e. g. seismic conditions and special specifications forwarded by the end-user) have to be considered by GEA. Any changes given later than this Quotation may result in price changes.



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