FEAT
Adresse
Centinje
Montenegro

Priceinformation-No. 27557391
Date: 19.09.2019

SUMMARY OF PRICE

MALTBREW PLANT

Scope of supply - Revision

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0.1 DESIGN-PARAMETER

0.1.1 DESIGN-DATA PRODUCTION

Annual capacity sellable product:	1.000.000	hl
Working weeks per year:	50	weeks

0.1.2 DESIGN-DATA BREWHOUSE

Proposed brew volume – hot wort:	271	hl
Proposed brew volume – cold wort:	260	hl
No. of brews per day and brew line:	12	brews
No. of brew lines:	1	
No. of brewing days per week:	5,5	days
No. of days for BH-CIP per week:	0,5	days
Working hours per day:	24	hrs
No. of brews per week:	66	brews
Original gravity - Sales beer:	12,00	°Plato
Effective blending factor:	1,25	
Effective gravity hot wort:	15,00	°Plato

0.1.3 RECIPE-OVERVIEW BREWHOUSE

Brand name:	Maltbrew	
Brew volume – hot wort:	271	hl
Brew volume – cold wort:	260	hl
No. of brews per day and brew line:	12	
Cast out concentration:	15,0	°Plato
Extract per brew:	4.131	kg
Malt charge:	5.429	78 % extract
First wort concentration:	20,2	°Plato
Total mash:	187	hl
Heating rate - Total mash:	0,8	K/min
Specific false bottom load:	192,0	kg/m²
Temperature - Lauter wort heater:	92	°C
Transfer time - Lauter wort heater:	25	min
Cleanings of lauter wort heater after ... brews:	4-6	
Boiling time:	60	min
Total evaporation:	4,0	%
Time - Wort cooling:	50	min
Production stop for CIP:	12	h

0.1.4 DESIGN-DATA FERMENTATION & MATURATION PLANT

Occupation time for fermentation - real:	7,00	days	(incl. filling, empying & CIP)
(these times match with number and size of tanks shown below)			
Uni - tanks 1 - number:	9	for 12	brews

0.1.5 DESIGN-DATA DAW PLANT

No. of DAW-plants:	1		
DAW production capacity:	35	hl/h	(all lines)
Operation hours per day:	24,0	hrs.	
Amount of DAW for blending:	675	hl/h	(max. at all fliter lines)
DAW tanks 1 - number:	1		
DAW tanks 1 - total volume:	140	hl	
DAW tanks 1 - net. volume:	131	hl	

0.1.6 DESIGN-DATA BRIGHT BEER PLANT

BBT filling lines:	1	
BBT filling capacity max.:	150	hl/h
BBT emptying lines:	1	
BBT emptying capacity max.:	200	hl/h
Bright Beer tanks 1 - number:	4	
Bright Beer tanks 1 - total volume:	2129	hl
Bright Beer tanks 1 - net. volume:	1950	hl

0.1.7 DESIGN-DATA UTILITY PLANT

Capacity water treatment:	60	m³/h
Steam capacity:	9	t/h
Fuel:	Diesel	
Steam pressure - Boiler:	10	bar
Steam pressure – Plant:	8	bar
Cooling medium:	Glycol	
Temperature pre-run:	-3	°C
Temperature return:	4	°C
Refrigeration capacity:	700	kW
Compressed air capacity:	1.050	m³/h
Supply voltage:	400	V
Frequency:	50	Hz

0.1.8 GENERAL EQUIPMENT DATA

Atex:
Our quotation does not include any additional costs for approvals acc. to the European Guidelines 2014/34/EU (general ATEX regulations) and 94/9/EG (ATEX95), unless the ATEX-Categories have already been mentioned specifically in a tender or any other guideline from our customer, which has been handed over during the offer phase. In case certificates beyond the typical ATEX documentation are required this has to be mentioned explicitly. KRONES recommends that future operators should know about the customer-related regulations within the European Guideline 99/92/EG.

Additionally the equipment for malt storage and handling will be designed by keeping the following specifications, unless the ATEX-Categories have already been mentioned specifically in a tender or any other guideline from our customer, which has been handed over during the offer phase. Local and country-specific laws and laws and regulations have to be kept and considered, therefore the customer has to indicate all kind of regulations have to be kept and considered, therefore the customer has to indicate all kind of rules beyond ATEX and non-according to general technical knowledge.

Pressure equipment:
The pressure equipment is calculated, designed and manufactured according the requirements of the directive 97/23/EC. EC unit verification Module G by AD-Sheets-2000. The pressure equipment carries the mark CE. The Certificate of conformity, the test report and the technical passport of the pressure equipment will be delivered 1 fold. The inspection of the pressure vessel is carried out by Notified Body (e.g. TÜV).

Fittings and piping equipment:
The fittings and piping equipment is calculated, designed and manufactured according the European Standard. Piping and fittings delivered in DIN.

Suppliers:
Mechanical, electrical, control equipment and suppliers for units and utilities according Krones list of standard suppliers. See separate document.

PRICE SUMMARY - OVERVIEW

SCOPE OF SUPPLY - INCLUDING MAIN OPTIONS

1	BREWHOUSE PLANT	3.038.252 €
2	STORAGE & TREATMENT PLANT	2.386.600 €
4	WATERDEGASSING PLANT	195.569 €
5	BRIGHT BEER PLANT	623.028 €
6	CIP PLANT	194.394 €
7	CONTROL SYSTEM PLANT	1.108.742 €
8	CO2 PLANT	166.420 €
9	REFRIGERATION PLANT	392.890 €
10	BOILER HOUSE PLANT	472.652 €
11	AIR SUPPLY PLANT	137.000 €
12	WATER SUPPLY PLANT - NOT INCLUDED	
13	WASTE WATER PLANT - NOT INCLUDED	
14	ADDITIONAL EQUIPMENT	1.931.047 €
15	CANNING LINE 60.000 B/H	5.231.000 €
EX WORKS		15.877.594 €
16	SHIPPING & FREIGHT	
17	ON-SITE SERVICES & ADDITIONAL COSTS	
TOTAL COSTS		15.877.594 €

Optional Scope:

Additionals Z_1: Filtration plant *632.739 €*

EX WORKS - SUMMARY OF PRICES

1 BREWHOUSE PLANT	3.038.252 €
1.1 MALT PLANT	750.310 €
1.1.1 MALT INTAKE 40 T/H	
1.1.2 ASPIRATION FOR MLAT INTAKE	
1.1.3 SILO PLANT	
1.1.4 MALT TRANSFER & CLEANING 4 T/H	
1.1.5 ASPIRATION FOR MALT CLEANING	
1.1.6 ERECTION MATERIAL & ENGINEERING	
1.2 MASH PRODUCER PLANT	225.976 €
1.2.1 MALT HOPPER gross volume: 147 hl (up to top edge of shell) outer surface: pickled	
1.2.2 MASH PRODUCER variomill type: 20.2 grist type: conditioned wet-milled grist nominal capacity: 20 t/h malt with sound absorbing cladding with mounting crane for disassembly and assemply of crushing rools	
1.2.3 FITTINGS Included in scope of supply: All necessary pumps, fittings and internal pipework.	
1.2.4 FIELD INSTRUMENTS Included in scope of supply: All necessary measurements and field instruments.	

1.3 MASH VESSEL PLANT 175.013 €

1.3.1 MASH... / CEREAL COOKER "SHAKESBEER ECOPLUS" - EQUITHERM
inside diameter: 3250 mm
gross volume: 273 hl
with shell & bottom heating zone
outer surface: ground (visible surface)
insulation / cladding: welded - ground (visible surface)

1.3.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.3.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.4 LAUTER TUN PLANT 391.143 €

1.4.1 LAUTER TUN "PEGASUS C"
inside diameter: 6000 mm
gross volume: 495 hl
outer surface: ground (visible surface)
insulation / cladding: welded - ground (visible surface)

1.4.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.4.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.4.4 SPINDLE STATION
execution: lauter desk for floor installation
outer surface: ground

1.5 SPENT GRAINS PLANT — 205.531 €

1.5.1 SPENT GRAINS BIN & CONVEYOR
1.5.1.1 SPENT GRAINS BIN
net volume: 10 m³
material: mild steel, primed
1.5.1.2 WET SPENT GRAINS CONVEYOR
capacity: 100 kg/min
material: mild steel, primed
1.5.1.3 WET SPENT GRAINS PIPE
material: mild steel, primed
length/diameter: 30 m DN 100

1.5.2 WET SPENT GRAINS SILO
inside diameter: 3500 mm
net volume: 108 m³
material: mild steel, primed
accessories: rinsing device CIP/water, railing, ladder, inlet dome, ball discharging device, wet spent grains discharge device, electrical switching device - "on/off"

1.5.3 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.5.4 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.6 WEAK WORT PLANT — 28.229 €

1.6.1 WEAK WORT TANK
number: 1 piece
design: vertical arragement
gross volume: 61 hl (up to top edge of shell)
inside diameter: 1589 mm
material: CNS - 1.4301
outer surface: pickled

The vessel will be insulated:
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.6.2 FITTINGS

Included in scope of supply:

All necessary pumps, fittings and internal pipework.

1.6.3 FIELD INSTRUMENTS

Included in scope of supply:

All necessary measurements and field instruments.

1.7 HOLDING VESSEL PLANT 63.478 €

1.7.1 HOLDING VESSEL

number: 1 piece

design: vertical arragement

gross volume: 303 hl (up to top edge of shell)

inside diameter: 2536 mm

material: CNS - 1.4301

outer surface: pickled

The vessel will be insulated:

insulating installation: on site

insulating material mineral wool mats

insulating cladding stainless steel - screwed / riveted - surface 2B finish

1.7.2 FITTINGS

Included in scope of supply:

All necessary pumps, fittings and internal pipework.

1.7.3 FIELD INSTRUMENTS

Included in scope of supply:

All necessary measurements and field instruments.

1.8 LAUTER WORT HEATER PLANT 40.875 €

1.8.1 LAUTER WORT HEATER

Plate heat exchanger

capacity: 68 m³/h (medium 1)

for heating of: lauter wort (medium 1)

heating medium: warm water (medium 2)

support frame: mild steel

1.8.2 FITTINGS

Included in scope of supply:

All necessary pumps, fittings and internal pipework.

1.8.3 FIELD INSTRUMENTS

Included in scope of supply:

All necessary measurements and field instruments.

1.9 ENERGY STORAGE TANK PLANT 90.215 €

1.9.1 ENERGY STORAGE TANK - EQUITHERM

gross volume: 488 hl (up to top edge of shell)
inside diameter: 2695 mm
height of shell: 8500 mm
medium: water
temperature: max.: 96 °C

with stratify charge pipe for equitherm

The vessel will be insulated.
insulating installation: on site
insulating material mineral wool mats
insulating cladding stainless steel - screwed / riveted - surface 2B finish

1.9.2 FITTINGS - EQUITHERM

Included in scope of supply:

All necessary pumps, fittings and internal pipework.

1.9.3 FIELD INSTRUMENTS - EQUITHERM

Included in scope of supply:

All necessary measurements and field instruments.

1.10 WORT KETTLE PLANT 112.119 €

1.10.1 WORT KETTLE

inside diameter: 3500 mm
gross volume: 358 hl
outer surface: ground (visible surface)
insulation / cladding: welded - ground (visible surface)
with insulation of cover
with insulation of vent pipe

1.10.2 FITTINGS

Included in scope of supply:

All necessary pumps, fittings and internal pipework.

1.10.3 FIELD INSTRUMENTS

Included in scope of supply:

All necessary measurements and field instruments.

1.11 INTERNAL WORT BOILER PLANT 42.589 €

1.11.1 INTERNAL WORT BOILER "STROMBOLI"
evaporation rate: 8 %/h
diameter: 900 mm
heating surface: 25,36 m²
heating media - type: steam

1.11.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.11.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.12 HOP ADDING PLANT 33.893 €

1.12.1 HOP ADDING VESSEL
number: 2 piece
max. load 12 kg pellets
inside diameter: 400 mm
inside diameter: 400 mm
gross volume: 76 l (up to top edge of shell)
outer surface: glass bead blasted
Support for block installation

1.12.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.12.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.13 VAPOUR CONDENSOR PLANT — 68.678 €

1.13.1 VAPOUR CONDENSOR PLANT
Tubular heat exchanger
referred to 271 hl/brew cast-wort quantity
heating capacity: 1505 kW
with vent pipe and insulation
with surge chamber

1.13.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.13.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.14 CONDENSATE COOLER PLANT — 10.900 €

1.14.1 CONDENSATE COOLER
Plate heat exchanger
for cooling of: condesate (medium 1)
cooling medium: water (medium 2)
capacity: 2,2 m³/h (medium 1)
support frame: mild steel

1.14.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.14.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.15 WHIRLPOOL PLANT — 108.865 €

1.15.1 WHIRLPOOL
inside diameter: 4500 mm
gross volume: 352 hl
outer surface: ground (visible surface)
insulation / cladding: welded - ground (visible surface)
with insulation of cover

1.15.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.15.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.16 TRUBTANK PLANT — 17.619 €

1.16.1 TRUB TANK
design: vertical arragement
gross volume: 23,2 hl (up to top edge of shell)
material: CNS - 1.4301
outer surface: pickled

The vessel will be insulated:
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.16.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.16.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.17 WORT COOLING PLANT 76.753 €

1.17.1 WORT COOLER
Plate heat exchanger
for cooling of: wort (medium 1)
cooling medium: water (medium 2)
capacity: 33 m³/h (medium 1)
support frame: mild steel

1.17.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.17.3 WORT AERATION SYSTEM
Included in scope of supply:
All necessary pumps, fittings and internal pipework.
The plant will be preassembled on a frame made of stainless steel.
Valued length of pipes of different sizes, complete with bends, flanges,
pipe holders, reducers and small items, made of material stainless steel.

1.17.4 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.18 ADDING DEVICE PLANT 1 11.566 €

1.18.1 DOSING TANK
For dosing of the concentrates into the process flow.
number: 1 piece(s)
medium: CaSO4
material: thermoplastics material (PE, PP, PVC, PVDF, etc.)
volume/diameter: 250 / 800 mm

1.18.2 COLLECTING TRAY NOT INCLUDED / BY CUSTOMER
Collecting trays or basins have to be provided by the customer or are part of civil works.

1.18.3 DOSING STATION
number: 1 piece(s)
medium: CaSO4
capacity: max. 830 l/h 4 bar

1.19 ADDING DEVICE PLANT 2 — 12.005 €

1.19.1 DOSING STATION
number: 1 piece(s)
medium: H3PO4
capacity: max. 830 l/h 4 bar

1.19.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.19.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.19.4 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.19.5 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.20 BREWING LIQUOR PLANT - WARM — 126.681 €

1.20.1 WATER TANK - WARM
gross volume: 851 hl (up to top edge of shell)
inside diameter: 3800 mm
height of shell: 7500 mm
medium: water
temperature: max.: 85 °C

The vessel will be insulated.
insulating installation: on site
insulating material mineral wool mats
insulating cladding stainless steel - screwed / riveted - surface 2B finish

1.20.2 HEAT EXCHANGER
heat exchange capacity: 466 kW

1.20.3 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.20.4 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.21 BREWING LIQUOR PLANT - COLD 89.697 €

1.21.1 WATER TANK - COLD
gross volume: 556 hl (up to top edge of shell)
inside diameter: 3300 mm
height of shell: 6500 mm
medium: water
temperature: max.: 40 °C

The vessel will be insulated.
insulating installation: on site
insulating material: PUR / PIR foam
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.21.2 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.21.3 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.22 ICE WATER PLANT 83.491 €

1.22.1 ICE WATER TANK
gross volume: 415 hl (up to top edge of shell)
height of shell: 6500 mm
medium: water
temperature: max.: 3 °C

The vessel will be insulated.
insulating installation: on site
insulating material: PUR / PIR foam
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.22.2 ICE WATER COOLER - GLYCOL
Plate heat exchanger
for cooling of: water (medium 1)
cooling medium: glycol (medium 2)
capacity: 24 m³/h (medium 1)

1.22.3 FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.22.4 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.23 CIP PLANT 162.257 €

1.23.1 CIP TANK - CAUSTIC
design: vertical arragement
gross volume: 33 hl (up to top edge of shell)
inside diameter: 1400 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will be insulated at shell and lower & upper bottom.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.23.2 CIP TANK - AICD
design: vertical arragement
gross volume: 33 hl (up to top edge of shell)
inside diameter: 1400 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

1.23.3 CIP TANK - RECOVERED WATER
design: vertical arragement
gross volume: 33 hl (up to top edge of shell)
inside diameter: 1400 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will be insulated at shell and lower & upper bottom.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.23.4 HEAT EXCHANGER 1
Tubular heat exchanger
heat exchange capacity: 698 kW

1.23.5 FITTINGS - TANK
Scope of supply:
All necessary tank-fittings are included.

1.23.6 FIELD INSTRUMENTS - TANK

Included in scope of supply:

All necessary measurements and field instruments.

1.23.7 FITTINGS

Included in scope of supply:

Dampf-& Kondensatarmaturen

Valve block - CIP

All necessary pumps, fittings and internal pipework.

1.23.8 DOSING STATION 1 -- CAUSTIC

number: 1 piece(s)

medium: CAUSTIC

capacity: max. 830 l/h 4 bar

1.23.9 DOSING STATION 2 -- ACID

number: 1 piece(s)

medium: ACID

capacity: max. 830 l/h 4 bar

1.23.10 DOSING STATION 3 -- DESINFECTANT

number: 1 piece(s)

medium: DESINFECTANT

capacity: max. 830 l/h 4 bar

1.23.11 DOSING STATION 4 -- CLEANING ADDITIVE

number: 1 piece(s)

medium: ADDITIVE

capacity: max. 830 l/h 4 bar

1.23.12 FIELD INSTRUMENTS

Included in scope of supply:

All necessary measurements and field instruments.

1.24 STEAM REDUCING STATION & CONDENSATE PLANT — 23.919 €

1.24.1 STEAM REDUCING STATION
condensate 5000 kg/h
Included in scope of supply:
All necessary fittings.

1.24.2 CONDENSATE TANK
inside diameter: 1100 mm
gross volume: 7,1 hl (up to top edge of shell)

The vessel will be insulated.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

1.24.3 PUMPS & FITTINGS
Included in scope of supply:
All necessary pumps, fittings and internal pipework.

1.24.4 FIELD INSTRUMENTS
Included in scope of supply:
All necessary measurements and field instruments.

1.25 EQUIPMENT ENGINEERING — 86.450 €

1.25.1 EQUIPMENT ENGINEERING - MECHANIC

2 STORAGE & TREATMENT PLANT — 2.386.600 €

2.1 MEDIA SUPPLY — 9.083 €

2.1.1 PUMPS & FITTINGS

Plant design:
Manual operation
All operations are manually started, stopped, controlled, monitored and logged by the operator!
All necessary changes of process-connections have to be provided manually before by the operator (i.e. hose-connections, swingbend-connections on pipe-fences or panels).

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

2.2 STORAGE TANK PLANT — 1.895.310 €

2.2.1 TANK - SIZE 1

number: 9 piece(s)
design: vertical arragement

Manufacturing & delivery
vessel manufacturing: workshop-assembly
vessel delivery: on-piece

Main dimensions & operational data
net volume: 3120 hl
total volume: 3427 hl
inside diameter: 5200 mm
outside diameter: 5500 mm (final installation)
total height: 20020 mm (with vessel-support)
working pressure: max.: 1 bar
design code: DGR 97 / 23 / EG - AD-2000
material: stainless steel
execution upper bottom: dished
execution lower bottom: conical
opening angle: 70°
inner surface: welding seams ground/brushed
cone cooling zone: dimple plates / stainless steel
shell cooling zone 1: dimple plates / stainless steel

Execution insulation:
insulating material: PUR/PIR-foam
insulating cladding: stainless steel - welded - untreated - welded seams brushed
insulating cladding shell: stainless steel - screwed/riveted - trapezoidal surface

2.2.2 TANK - WORKING PLATFORMS

Tank-platform
for mounting on the upper bottom of the vessel.
according to DIN ISO 14122 - with railings - handrail, knee bar and footer.
material: hot dip galvanized steel

Connecting catwalk
catwalk to connect the tank-platforms.
with railings - handrail, knee bar and footer.
material: hot dip galvanized steel

Ladder with safety cage
fixed-mounted ladder (with safety cage) for tank-platform access.
design: with safety cage and rest platforms

2.2.3 TANK - FITTINGS & FIELD INSTRUMENTS

cooling medium: glycol

Scope of supply:
All necessary fittings and field instruments are included.
Provided are a cone cooling zone and a shell cooling zone.
All glycol valves are without feedback signal.

2.3 STORAGE CELLAR PLANT 265.000 €

2.3.1 PUMPS & FITTINGS

Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

2.3.2 FIELD INSTRUMENTS

Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

2.4 DRY HOPPING PLANT 85.693 €

2.4.1 DRY HOPPING TANK

inside diameter: 1750 mm
gross volume: 60 hl

2.4.2 PUMPS AND FITTINGS

2.4.3 FIELD INSTRUMENTS

2.5 GREEN BEER COOLING PLANT — 20.135 €

2.5.1 GREEN BEER COOLER - PLATE HEAT EXCHANGER
number: 1 piece
cooling media: glycol
capacity: 15 m³/h

Included in scope of supply:
Pulling bolt, Chuck key, dome-shaped base-plates for ground installation and all necessary sealings

Not included in scope of supply:
Cladding, Protection Cover, Insulation

2.5.2 PUMPS & FITTINGS
Plant design:
Manual operation
All operations are manually started, stopped, controlled, monitored and logged by the operator!
All necessary changes of process-connections have to be provided manually before by the operator (i.e. hose-connections, swingbend-connections on pipe-fences or panels).

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

2.5.3 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

2.6 CENTRIFUGE PLANT — 330.479 €

2.6.1 CENTRIFUGE / SEPARATOR
selected capacity: 150 hl/h

2.6.2 PUMPS & FITTINGS

2.6.3 FIELD INSTRUMENTS

2.7 EQUIPMENT ENGINEERING — 21.300 €

2.7.1 EQUIPMENT ENGINEERING - MECHANIC

3 Additional: Z_1 FILTRATION PLANT 587.165 €

3.1 Additional: Z_1 BEER COOLER PLANT 18.469 €

3.1.1 Additional: Z_1 BEER COOLER

number: 1 piece
cooling media: glycol
capacity: 15 m³/h

Included in scope of supply:
Pulling bolt, Chuck key, dome-shaped base-plates for ground installation and all necessary sealings

Not included in scope of supply:
Cladding, Protection Cover, Insulation

3.1.2 Additional: Z_1 PUMPS & FITTINGS

Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled, monitored and logged by the control system!
All process-connections are automatically provided (i.e. valve-blocks).
Processes are executed after request from control system and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

3.1.3 Additional: Z_1 FIELD INSTRUMENTS

Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.2 Additional: Z_1 BUFFER TANK PLANT - UNFILTRATE *110.122 €*

3.2.1 Additional: Z_1 BUFFER TANK - UNFILTRATE
number: 1 piece
design: vertical arragement

gross volume: 51 hl
working pressure: max.: 3 bar
design code: PED 97 / 23 / EG - AD-2000
material: stainless steel
outer surface: glass bead blasted (visible outside surface)
inner surface: welding seams ground - Ra < 0.6 µm
vessel support: pipe-feet, stainless steel
ladders & platforms: not included

The vessel will be insulated at shell and lower bottom.
insulating installation: pre-assembled
insulating material: PUR/PIR-foam
insulating cladding: stainless steel - welded - glass bead blasted

3.2.2 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.2.3 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.3 Additional: Z_1 KIESELGUHR CANDLE FILTER TFS *233.695 €*

3.3.1 Additional: Z_1 KIESELGUHR CANDLE FILTER TFS - TWIN FLOW SYSTEM
number: 1 piece
TFS type: 1200 1800
capacity: 150 hl/h
inside diameter: 1200 mm
gross volume: 28,9 hl
total height: 3646 mm (with support)
design code: DGR 97 / 23 / EG - AD-2000
material: stainless steel
outer surface: glass bead blasted (visible outside surface)
number of filter elements: 121
Mounting & working platform: stainless steel, with floor covering and railing
Crane: not included
Rail for crane: not included

3.3.2 Additional: Z_1 WORKSHOP ASSEMBLY CANDLE FILTER
The plant will be preassembled on a frame made of stainless steel.
Valued length of pipes of different sizes, complete with bends, flanges,
pipe holders, reducers and small items, made of material stainless steel.

3.3.3 Additional: Z_1 KIESELGUHR DOSING VESSEL
number: 1 piece
design: vertical arragement
gross volume: 4 hl
material: stainless steel
outer surface: glass bead blasted (visible outside surface)
agitator with gear box: agitator with mixing blades / with flat gear box
vessel support: pipe-feet, stainless steel
ladders & platforms: not included
insulation: not included

3.3.4 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.3.5 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.4 Additional: Z_1 KIESELGUHR DISCHARGE PLANT *38.636 €*

3.4.1 Additional: Z_1 KIESELGUHR DISCHARGE TANK
number: 1 piece
design: vertical arragement

gross volume: 55 hl
execution lower bottom: conical 60°
material: stainless steel
outer surface: pickled
vessel support: pipe-feet, stainless steel
ladders & platforms: not included
insulation: not included

3.4.2 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.4.3 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.5 Additional: Z_1 BUFFER TANK PLANT - FILTRATE *38.963 €*

3.5.1 Additional: Z_1 BUFFER TANK - FILTRATE
number: 1 piece
design: vertical arragement

gross volume: 13 hl
working pressure: max.: 3 bar
design code: PED 97 / 23 / EG - AD-2000
material: stainless steel
outer surface: glass bead blasted (visible outside surface)
inner surface: welding seams ground - Ra < 0.6 µm
vessel support: pipe-feet, stainless steel
ladders & platforms: not included

The vessel will not be insulated.

3.5.2 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled, monitored and logged by the control system!
All process-connections are automatically provided (i.e. valve-blocks).
Processes are executed after request from control system and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

3.5.3 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.6 Additional: Z_1 BLENDING UNIT PLANT *12.792 €*

3.6.1 Additional: Z_1 BLENDING UNIT

Dilution water dosing for automatic determination
of gravity- / alcohol concentration and regulation of deaerated water dosing.

number: 1 piece

Operating data
undiluted beer flow (HG): 150 hl/h
dilution water dosing: max: 40 hl/h

3.6.2 Additional: Z_1 PUMPS & FITTINGS

Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.6.3 Additional: Z_1 FIELD INSTRUMENTS

Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.7 Additional: Z_1 TRAP FILTER PLANT *10.627 €*

3.7.1 Additional: Z_1 TRAP FILTER
number: 1 piece

type: candle filter
capacity: 190 hl/h
material: stainless steel
design code: DGR 97 / 23 / EG - AD-2000
filter candle(s) retentionrate: 8 µm absolut
filter candle(s) number: 8 piece(s)

3.7.2 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled, monitored and logged by the control system!
All process-connections are automatically provided (i.e. valve-blocks).
Processes are executed after request from control system and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

3.7.3 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.8 Additional: Z_1 CARBONISATION PLANT *66.811 €*

3.8.1 Additional: Z_1 CO2 MEASURING & DOSING PLANT

number: 1 piece
capacity: 190 hl/h
carbonisation nozzle: DN 65
with static mixer
with holding tube

3.8.2 Additional: Z_1 WORKSHOP ASSEMBLY CO2 MEASURING & DOSING SYSTEM

The plant will be preassembled on a frame made of stainless steel.
Valued length of pipes of different sizes, complete with bends, flanges,
pipe holders, reducers and small items, made of material stainless steel.

3.8.3 Additional: Z_1 PUMPS & FITTINGS

Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.8.4 Additional: Z_1 FIELD INSTRUMENTS

Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.9 Additional: Z_1 HEAD & TAIL TANK PLANT *57.049 €*

3.9.1 Additional: Z_1 HEAD & TAIL TANK
number: 1 piece
design: vertical arragement

gross volume: 76 hl
working pressure: max.: 3 bar
design code: PED 97 / 23 / EG - AD-2000
material: stainless steel
outer surface: glass bead blasted (visible outside surface)
inner surface: welding seams ground - Ra < 0.6 µm
vessel support: pipe-feet, stainless steel
ladders & platforms: not included

The vessel will be insulated at shell and lower bottom.
insulating installation: pre-assembled
insulating material: PUR/PIR-foam
insulating cladding: stainless steel - welded - glass bead blasted

3.9.2 Additional: Z_1 PUMPS & FITTINGS
Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

3.9.3 Additional: Z_1 FIELD INSTRUMENTS
Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements are included.

3.10 EQUIPMENT ENGINEERING 24.600 €

3.10.1 EQUIPMENT ENGINEERING - MECHANIC

4 WATERDEGASSING PLANT	195.569 €
4.1 DEAERATION PLANT	117.719 €
4.1.1 WATER DEAERATION - HOT selected capacity: 35 hl/h	
4.1.2 PUMPS & FITTINGS	
4.1.3 FIELD INSTRUMENTS	
4.2 DEAERATION BUFFER TANK PLANT	65.420 €
4.2.1 BUFFER TANK - DEAERATED WATER number: 1 piece inside diameter: 2300 mm gross volume: 158 hl	
4.2.2 PUMPS & FITTINGS	
4.2.3 FIELD INSTRUMENTS	
4.3 EQUIPMENT ENGINEERING	12.430 €
4.3.1 EQUIPMENT ENGINEERING - MECHANIC	

5 BRIGHT BEER PLANT 623.028 €

5.1 MEDIA SUPPLY 9.083 €

5.1.1 PUMPS & FITTINGS

Plant design:
Manual operation
All operations are manually started, stopped, controlled, monitored and logged by the operator!
All necessary changes of process-connections have to be provided manually before by the operator (i.e. hose-connections, swingbend-connections on pipe-fences or panels).

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

5.2 BRIGHT BEER TANK PLANT 412.600 €

5.2.1 TANK - SIZE 1

number: 4 piece(s)
design: vertical arragement

vessel manufacturing: workshop-assembly
vessel delivery: on-piece
net volume: 1950 hl
total volume: 2129 hl
inside diameter: 4900 mm
outside diameter: 5200 mm (final installation)
total height: 13396 mm (with vessel-support)
working pressure: max.: 2 bar
design code: DGR 97 / 23 / EG - AD-2000
material: stainless steel
execution lower bottom: dished
inner surface: welding seams ground/brushed
cooling: not provided

Execution insulation:
insulating material: PUR/PIR-foam
insulating cladding: stainless steel - welded - untreated - welded seams brushed
insulating cladding shell: stainless steel - screwed/riveted - trapezoidal surface

5.2.2 TANK - WORKING PLATFORMS

Tank-platform
for mounting on the upper bottom of the vessel.
according to DIN ISO 14122 - with railings - handrail, knee bar and footer.
material: hot dip galvanized steel

Connecting catwalk
catwalk to connect the tank-platforms.
with railings - handrail, knee bar and footer.
material: hot dip galvanized steel

Ladder with safety cage
fixed-mounted ladder (with safety cage) for tank-platform access.
design: with safety cage and rest platforms

5.2.3 TANK - FITTINGS & FIELD INSTRUMENTS

Scope of supply:
All necessary fittings and field instruments are included.

5.3 BRIGHT BEER CELLAR PLANT 201.345 €

5.3.1 PUMPS & FITTINGS

Plant design:
Full-automatic operation
All operations are automatcally started, stopped, controlled,
monitored and logged by the control system!
All process-connections are automatically provided
(i.e. valve-blocks).
Processes are executed after request from control system
and operator-confirmation.

Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

5.3.2 FIELD INSTRUMENTS

Plant design:
See description pumps & fittings.

Scope of supply:
All necessary measurements, field instruments & control elements
are included.

5.4 EQUIPMENT ENGINEERING 12.430 €

5.4.1 EQUIPMENT ENGINEERING - MECHANIC

6 CIP PLANT	194.394 €
6.1 CIP PLANT	194.394 €

6.1.1 CIP TANK - HOT WATER
design: vertical arragement
gross volume: 53 hl (up to top edge of shell)
inside diameter: 1589 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will be insulated at shell and lower & upper bottom.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

6.1.2 CIP TANK - ACID
design: vertical arragement
gross volume: 106 hl (up to top edge of shell)
inside diameter: 2060 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

6.1.3 CIP TANK - COLD CAUSTIC
design: vertical arragement
gross volume: 41 hl (up to top edge of shell)
inside diameter: 1400 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

6.1.4 CIP TANK - COMBI
design: vertical arragement
gross volume: 33 hl (up to top edge of shell)
inside diameter: 1400 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

6.1.5 CIP TANK - HOT CAUSTIC
design: vertical arragement
gross volume: 8 hl (up to top edge of shell)
inside diameter: 952 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will be insulated at shell and lower & upper bottom.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

6.1.6 CIP TANK - REC. WATER
design: vertical arragement
gross volume: 85 hl (up to top edge of shell)
inside diameter: 1850 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

6.1.7 CIP TANK - HOT CAUSTIC
design: vertical arragement
gross volume: 11 hl (up to top edge of shell)
inside diameter: 952 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will not be insulated.

6.1.8 HEAT EXCHANGER 1
Tubular heat exchanger
heat exchange capacity: 279 kW

6.1.9 HEAT EXCHANGER 2
Tubular heat exchanger
heat exchange capacity: 419 kW

6.1.10 FITTINGS - TANK
Scope of supply:
All necessary tank-fittings are included.

6.1.11 FIELD INSTRUMENTS - TANK
Included in scope of supply:
All necessary measurements and field instruments.

6.1.12 PUMPS & FITTINGS - CIP-HOT
Scope of supply:
All necessary pumps, fittings and other piping- &
equipment-components are included

6.1.13 FIELD INSTRUMENTS - CIP-HOT

Included in scope of supply:
All necessary measurements and field instruments.

6.1.14 PUMPS & FITTINGS - CIP-COLD

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

6.1.15 FIELD INSTRUMENTS - CIP-COLD

Included in scope of supply:
All necessary measurements and field instruments.

6.2 Additional: Z_1 CIP PLANT FILTER *45.574 €*

6.2.1 Additional: Z_1 CIP TANK - HOT CAUSTIC FILTER

design: vertical arragement
gross volume: 53 hl (up to top edge of shell)
inside diameter: 1589 mm
material: CNS - 1.4301
outer surface: pickled
The vessel will be insulated at shell and lower & upper bottom.
insulating installation: on site
insulating material: mineral wool mats
insulating cladding: stainless steel - screwed / riveted - surface 2B finish

6.2.2 Additional: Z_1 HEAT EXCHANGER 1

Tubular heat exchanger
heat exchange capacity: 279 kW

6.2.3 Additional: Z_1 FITTINGS - TANK

Scope of supply:
All necessary tank-fittings are included.

6.2.4 Additional: Z_1 FIELD INSTRUMENTS - TANK

Included in scope of supply:
All necessary measurements and field instruments.

6.2.5 Additional: Z_1 PUMPS & FITTINGS - CIP-HOT

Scope of supply:
All necessary pumps, fittings and other piping- & equipment-components are included

6.2.6 Additional: Z_1 FIELD INSTRUMENTS - CIP-HOT

Included in scope of supply:
All necessary measurements and field instruments.

6.3 EQUIPMENT ENGINEERING

0 €

6.3.1 EQUIPMENT ENGINEERING - MECHANIC

7 CONTROL SYSTEM PLANT	1.108.742 €
7.1 OPERATOR STATION & VISUALISATION	181.070 €
7.1.1 FULL GRAPHIC SYSTEM BOTEC F1	
7.2 PLC - HARDWARE	90.828 €
7.2.1 ETHERNET BUS VERBINDUNG	
7.2.2 SIEMENS SIMATIC S7-400 PLC	
7.2.3 DECENTRAL I/O – LEVEL WITH SIEMENS ET 200S	
7.3 ELECTRICAL HARDWARE	241.394 €
7.3.1 FIELD BOXES FOR I/O-LEVEL - MALT HANDLING	
7.3.2 PNEUMATIC CONTROL - BREWHOUSE	
7.3.3 PNEUMATIC CONTROL - COLDBLOCK	
7.3.4 POWER SUPPLY LOADING PART - MALT HANDLING	
7.3.5 POWER SUPPLY LOADING PART - BREWHOUSE	
7.3.6 POWER SUPPLY LOADING PART - COLDBLOCK	
7.3.7 MOTOR CONTROL CABINET - MALT HANDLING	
7.3.8 MOTOR CONTROL CABINET - BREWHOUSE	
7.3.9 MOTOR CONTROL CABINET - COLDBLOCK	
7.3.10 FREQUENCY CONVERTER CABINET - MALT HANDLING	
7.3.11 FREQUENCY CONVERTER CABINET - BREWHOUSE	
7.3.12 FREQUENCY CONVERTER CABINET - COLDBLOCK	
7.3.13 PLC-CABINET - BREWHOUSE	
7.3.14 PLC-CABINET - COLDBLOCK	

7.4 INSTALLATION MATERIAL	237.419 €
7.4.1 AIR SUPPLY PIPES	
7.4.2 ELECTRICAL INSTALLATION MATERIAL	
7.5 ENGINEERING	199.831 €
7.5.1 HARDWARE & EQUIPMENT ENGINEERING	
7.6 SOFTWARE	133.221 €
7.6.1 SOFTWARE	
7.7 TECHNICAL CLARIFICATION & PROJECT COORDINATION	16.653 €
7.8 FAT (FACTORY ACCEPTANCE TEST)	8.326 €
7.8.1 INTERNAL FAT	

8	CO2 PLANT	166.420 €
8.1	CO2 STORAGE PLANT	156.020 €
8.1.1	CO2 STORAGE TANK	
8.1.2	CO2 EVAPORATOR	
8.1.3	BACK PRESSURE - REDUCING STATION	
8.1.4	INSTALLATION MATERIAL	
8.1.5	DESIGN APPROVALS, CERTIFICATION RUSSIA	
8.2	EQUIPMENT ENGINEERING	10.400 €
8.2.1	EQUIPMENT ENGINEERING - MECHANIC	
9	REFRIGERATION PLANT	392.890 €
9.1	FRIGEN COMPACT COOLING UNIT 690 KW	
9.2	GLYCOL BUFFER TANK 10 M³	
9.3	SET OF GLYCOL/WATER PUMPS	
9.4	COOLING TOWER	
9.5	WATER BASIN FOR COOLING TOWER	
9.6	SET OF WATER PUMPS FOR COOLING TOWER	
9.7	INSTALLATION MATERIAL & ENGINEERING	

10	BOILER HOUSE PLANT	472.652 €
10.1	STEAM BOILER 10 T/H	
10.2	FLUE GAS HEAT EXCHANGER	
10.3	BOILER CONTROL PANEL	
10.4	OIL BURNER FULLY AUTOMATIC	
10.5	PUMP MODULE	
10.6	FLOW MEASUREMENT UNIT	
10.7	HEATING DEVICE HD	
10.8	FEED WATER PREHEATER	
10.9	INSULATION OF OIL PREHEATER	
10.10	FEEDWATER SUPPLY UNIT	
10.11	MAKE UP WATER MONITORING	
10.12	WATER SOFTENING UNIT	
10.13	BLOW DOWN COOLER	
10.14	SYSTEM CONTROL SCO	
10.15	ENGINEERING	

11	AIR SUPPLY PLANT	137.000 €
11.1	AIRCOOLED AIRCOMPRESSOR 700 M³/H	
11.2	AIRCOOLED AIR COMPRESSOR 500 M³/H	
11.3	AIR BUFFER TANK 10 M³	
11.4	FILTRATION KIT	
11.5	ENGINEERING	
12	WATER SUPPLY PLANT - NOT INCLUDED	
13	WASTE WATER PLANT - NOT INCLUDED	
14	ADDITIONAL EQUIPMENT	1.931.047 €
14.1	PIPEWORK & INSULATION	317.297 €
14.1.1	PIPING MATERIAL / PIPEWORK	
14.1.2	PIPING INSULATION	
14.2	PIPE RACKS & PIPE SUPPORT STRUCTURE	20.273 €
14.3	CIVILWORKS REQUIREMENT DESIGN SERVICES	87.763 €
14.3.1	ESTABLISHING THE BASIS OF THE PROJECT	
14.3.2	CONCEPT DESIGN	
14.3.3	TECHNICAL DESIGN	
14.3.4	FOR CONSTRUCTION DESIGN	
14.4	INSTALLATION MATERIAL	7.714 €

14.5 MEDIUM AND LOW-VOLTAGE POWER SUPPLY	1.357.000 €
14.5.1 MEDIUM VOLTAGE SWITCHGEAR	
14.5.2 TRANSFORMERS	
14.5.3 LOW-VOLTAGE SUBDISTRIBUTION CABINETS	
14.5.4 CABLES FOR LOW-VOLTAGE SUBDISTRIBUTION SYSTEM	
14.6 PROJECT MANAGEMENT - INCLUDED IN SCOPE	56.000 €
14.7 DOCUMENTATION	85.000 €
14.7.1 DESCRIPTION	
14.7.2 GENERAL PART / PLANT OVERVIEW DOCUMENTS	
14.7.3 OPERATING MANUALS	
14.7.4 ELECTRICAL DOCUMENTATION	
14.7.5 COMPONENT DOCUMENTATION	
14.7.6 CONTROL SYSTEM DOCUMENTATION	
14.7.7 DOCUMENTATION FOR PLANTS OF SUBSUPPLIERS	

15	CANNING LINE 60.000 B/H	5.231.000 €
15.1	CAN FILLER	
15.2	CAN CAPPER	
15.3	TRANSPORT	
15.4	TUNNEL PASTEURIZOR	
15.5	CARTON PACKING	
15.6	PALETTIZING	

Price - ex works: 15.877.594 €

SHIPPING COSTS - OVERVIEW

16 SHIPPING & FREIGHT - NOT INCLUDED

16.1 PACKING & LOADING

FCA - Free carrier - Freising / Neutraubling - Germany
All equipment will be checked, packed, labeled & loaded at point of origin.

16.2 FREIGHT & INSURANCE

SHIPPING COSTS - SUMMARY OF PRICES

16 SHIPPING & FREIGHT - NOTINCLUDED	
16.1 PACKING & LOADING	
16.2 FREIGHT & INSURANCE	

Price - incl. shipping costs:

SERVICE COSTS - OVERVIEW

17 ON-SITE SERVICES & ADDITIONAL COSTS

17.1 INSTALLATION SERVICES & ADDITIONAL COSTS

Costs for installation engineers:
The calculated weekly rates for our personnel are based on 50 hours working time/week
resp. 10 hours working time/day (between 6.00 a.m. and 8.00 p.m.) if not stated differently.

Additional costs such as overtime, work on Saturdays, Sundays, holidays as well as waiting times for reasons which are not caused by Krones will be charged separately.

Not included are taxes and charges such as local VAT or withholding taxes.

Installation times are estimated values and are founded on experience values.
Seperately arising installation times can additionally be charged.
The installation time is valued according to actual working hours (50 per week),
not according to total weeks on site.

17.1.1 HEALTH & SAFETY CONSULTANT - NOT INCLUDED

17.1.2 ON-SITE MANAGER - NOT INCLUDED

17.1.3 LOGISTIC MANAGER - NOT INCLUDED

17.1.4 SUPERVISOR (KRONES) - ON-SITE OPERATION

The Supervisor will instruct and coordinate skilled labour and helpers and secure the adequate quality of work.
During the test- and commissioning phase the supervisor guarantees the correct function of the delivered equipment parts.

The supervisor is responsible for and carries out the following works:
- site preparation
- instruction of installation staff
- adjustment and dry test of all equipmentparts
- finalising of installation work on site
- support of commissioning engineer
- handing-over of the plant - confirmation in writing by the customer.

The connection of all cables to consumers, transmitters, valves, boxes, etc.
is part of the electrical installation.

17.1.4.1 TRAVELLING COSTS INSTALLATION - NOT INCLUDED

17.1.4.2 TRAVELLING COSTS AT PLACE OF INSTALLATION - NOT INCLUDED

17.1.5 INSTALLATION PERSONNEL - MECHANIC - NOT INCLUDED

Installation personnel on site - mechanical part

Installation personnel such as welders, pipe fitters, insulation fitters and helpers are provided by the customer equipped with required installation tools.
The qualification of the operating personnel must comply with the Krones guidelines.

The qualification and amount of local labour as well as the quality of tools is inspected by Krones prior to installation start.

The site manager / supervisor is authorized to issue directives to local personnel!

17.1.6 INSTALLATION PERSONNEL - ELECTRIC - NOT INCLUDED

Installation personnel on site - electrical part

The customer will be contracting a local company that will carry out all works necessary for the installation and mounting of the electrical system such as:

- fixing of cable supports and cable ducts,
- the laying of motor control cables, signal cables, measuring cables,
- the laying of pneumatic pipes,
- the bringing-in and setting up of switching cabinets in the switching cabinet room,
- the mounting on site of pneumatic boxes and junction boxes,
- connections of both ends of the cables in the switch cabinets, pneumatic boxes, junction boxes and the consumers,
- the labeling of the cables as well as correction of connections after the test.

The works will be carried out according to the locally applicable regulations.
The respective technical prescriptions are to be observed.

A competent and responsible supervisor from Krones
will instruct the installation staff.

17.1.7 INSTALLATION EQUIPMENT & AUXILIARY ITEMS

17.1.7.1 SITE EQUIPMENT - NOT INCLUDED

17.1.7.2 RENTAL FEE FOR INSTALLATION TOOLS - NOT INCLUDED

17.1.7.3 FORK LIFTERS / OTHER MEANS OF TRANSPORT - NOT INCLUDED

17.1.7.4 CRANES - NOT INCLUDED

17.1.7.5 WELDING- & FORMING GAS - NOT INCLUDED

17.1.7.6 SCAFFOLDINGS - NOT INCLUDED

17.1.7.7 COSTS FOR TELEPHONE, FAX AND HIGH SPEED INTERNET - NOT INCLUDED

17.1.7.8 UNLOADING AT PLACE OF INSTALLATION - NOT INCLUDED

17.2 TECHNOLOGICAL COMMISSIONING - NOT INCLUDED

17.3 ACCEPTANCE TEST TECHNOLOGY - NOT INCLUDED

17.4 SOFTWARE COMMISSIONING - NOT INCLUDED

17.5 ACCEPTANCE TEST SOFTWARE - NOT INCLUDED

17.6 TRAINING TECHNOLOGY / SOFTWARE

17.6.1 TECHNOLOGICAL TRAINING ON-SITE - NOT INCLUDED

17.6.2 SOFTWARE TRAINING ON-SITE - NOT INCLUDED

17.6.3 KRONES TRAINING-CENTER - NOT INCLUDED

17.7 WITHHOLDING TAX - NOT INCLUDED

Withholding tax and lokal duties for services on site are not included

17.8 FINANCING EXPENSES - NOT INCLUDED

SERVICE COSTS - SUMMARY OF PRICES

17 ON-SITE SERVICES & ADDITIONAL COSTS - NOT INCLUDED

17.1 INSTALLATION SERVICES & ADDITIONAL COSTS

17.1.1 HEALTH & SAFETY CONSULTANT - NOT INCLUDED

17.1.2 ON-SITE MANAGER - NOT INCLUDED

17.1.3 LOGISTIC MANAGER - NOT INCLUDED

17.1.4 SUPERVISOR (KRONES) - ON-SITE OPERATION

17.1.5 INSTALLATION PERSONNEL - MECHANIC - NOT INCLUDED

17.1.6 INSTALLATION PERSONNEL - ELECTRIC - NOT INCLUDED

17.1.7 INSTALLATION EQUIPMENT & AUXILIARY ITEMS

17.2 TECHNOLOGICAL COMMISSIONING - NOT INCLUDED

17.3 ACCEPTANCE TEST TECHNOLOGY - NOT INCLUDED

17.4 SOFTWARE COMMISSIONING - NOT INCLUDED

17.5 ACCEPTANCE TEST SOFTWARE - NOT INCLUDED

17.6 TRAINING TECHNOLOGY / SOFTWARE

17.6.1 TECHNOLOGICAL TRAINING ON-SITE - NOT INCLUDED

17.6.2 SOFTWARE TRAINING ON-SITE - NOT INCLUDED

17.6.3 KRONES TRAINING-CENTER - NOT INCLUDED

17.7 WITHHOLDING TAX - NOT INCLUDED

17.8 FINANCING EXPENSES - NOT INCLUDED

Price - incl. shipping- & service costs

OPTIONS & ADDITONALS - PRICE OVERVIEW

Additionals Z_1 : Filtration plant	*632.739 €*
3 Additionals Z_1 FILTRATION PLANT	*587.165 €*
3.1 Additionals Z_1 BEER COOLER PLANT	*18.469 €*
3.1.1 Additionals Z_1 BEER COOLER	
3.1.2 Additionals Z_1 PUMPS & FITTINGS	
3.1.3 Additionals Z_1 FIELD INSTRUMENTS	
3.2 Additionals Z_1 BUFFER TANK PLANT - UNFILTRATE	*110.122 €*
3.2.1 Additionals Z_1 BUFFER TANK - UNFILTRATE	
3.2.2 Additionals Z_1 PUMPS & FITTINGS	
3.2.3 Additionals Z_1 FIELD INSTRUMENTS	
3.3 Additionals Z_1 KIESELGUHR CANDLE FILTER TFS	*233.695 €*
3.3.1 Additionals Z_1 KIESELGUHR CANDLE FILTER TFS - TWIN FLOW SYSTEM	
3.3.2 Additionals Z_1 WORKSHOP ASSEMBLY CANDLE FILTER	
3.3.3 Additionals Z_1 KIESELGUHR DOSING VESSEL	
3.3.4 Additionals Z_1 PUMPS & FITTINGS	
3.3.5 Additionals Z_1 FIELD INSTRUMENTS	
3.4 Additionals Z_1 KIESELGUHR DISCHARGE PLANT	*38.636 €*
3.4.1 Additionals Z_1 KIESELGUHR DISCHARGE TANK	
3.4.2 Additionals Z_1 PUMPS & FITTINGS	
3.4.3 Additionals Z_1 FIELD INSTRUMENTS	
3.5 Additionals Z_1 BUFFER TANK PLANT - FILTRATE	*38.963 €*
3.5.1 Additionals Z_1 BUFFER TANK - FILTRATE	
3.5.2 Additionals Z_1 PUMPS & FITTINGS	
3.5.3 Additionals Z_1 FIELD INSTRUMENTS	
3.6 Additionals Z_1 BLENDING UNIT PLANT	*12.792 €*
3.6.1 Additionals Z_1 BLENDING UNIT	
3.6.2 Additionals Z_1 PUMPS & FITTINGS	
3.6.3 Additionals Z_1 FIELD INSTRUMENTS	
3.7 Additionals Z_1 TRAP FILTER PLANT	*10.627 €*
3.7.1 Additionals Z_1 TRAP FILTER	
3.7.2 Additionals Z_1 PUMPS & FITTINGS	
3.7.3 Additionals Z_1 FIELD INSTRUMENTS	
3.8 Additionals Z_1 CARBONISATION PLANT	*66.811 €*
3.8.1 Additionals Z_1 CO2 MEASURING & DOSING PLANT	
3.8.2 Additionals Z_1 WORKSHOP ASSEMBLY CO2 MEASURING & DOSING SYSTEM	
3.8.3 Additionals Z_1 PUMPS & FITTINGS	
3.8.4 Additionals Z_1 FIELD INSTRUMENTS	
3.9 Additionals Z_1 HEAD & TAIL TANK PLANT	*57.049 €*
3.9.1 Additionals Z_1 HEAD & TAIL TANK	

3.9.2 Additionals Z_1 PUMPS & FITTINGS

3.9.3 Additionals Z_1 FIELD INSTRUMENTS

6.2 Additionals Z_1 CIP PLANT FILTER *45.574 €*

6.2.1 Additionals Z_1 CIP TANK - HOT CAUSTIC FILTER

6.2.2 Additionals Z_1 HEAT EXCHANGER 1

6.2.3 Additionals Z_1 FITTINGS - TANK

6.2.4 Additionals Z_1 FIELD INSTRUMENTS - TANK

6.2.5 Additionals Z_1 PUMPS & FITTINGS - CIP-HOT

6.2.6 Additionals Z_1 FIELD INSTRUMENTS - CIP-HOT

GENERAL INFORMATION

18 GENERAL INFORMATION

18.1 TERMS & CONDITIONS

Validity of prices / price basis

Our quoted prices are valid for 3 months.
We reserve the right to amend our prices due to exchange rate adjustment in case of an offer in foreign currency until the date the contract is concluded.
We also reserve the right to amend our prices in the event of any increase in material and labour costs as well as any technical improvements that may be made between the date of this quotation and the date of delivery.

Time of delivery

ex works: 20 weeks after clarification of all technical details and receipt of down-payment.

Terms of payment

30% down payment
30% against presentation of the shipping documents
30% on start-up, and the latest 4 months following delivery ex works
10% following completion of acceptance, and at the latest 6 months following delivery ex works

Warranty

We give a warranty for defects of 12 months for the plant starting with the commissioning (start of production).
However not exceeding 18 months after delivery of the equipment.
Not included in this warranty are wear parts.

Guarantees

Provided that no other agreement has been reached, the guarantees made are only valid, if the raw material used or the products to be treated fulfill the quality requirements of MEBAK.
Measuring criterions for a performance test are based on DIN 8777.

Non-Disclosure Agreement

The recipient of this quotation undertakes to hold the content of the quotation confidential. This agreement explicitly prohibits the receiving party from using, exploiting or circulating any information or data this quotation contains, directly or indirectly, for other purposes than the conclusion of the contract with KRONES. The same applies to all information and data the receiving party may obtain from KRONES after receipt of this quotation. The quotation as well as the information and data it contains may only be disclosed to employees or other commissioned persons if and to the extent this is appropriate to the conclusion of the contract.

KRONES remains the sole owner, proprietor and party entitled to dispose of all intangible property rights in respect of the information and data the recipient of this quotation has obtained from KRONES.

Extent of supply

All items not specifically mentioned and quoted for, together with services, are excluded from our supply.

Alterations/Deviations/Changes

Krones and its suppliers continuously pursue product developments. For this reason, a product offered in this quotation may be replaced by a newly developed product until delivery. In such a case, Krones reserves the right to supply the newly developed product instead of the originally quoted product.

Brands of Krones' suppliers and product types, which are mentioned in this quotation, are for general information purpose only. The actual source of supplies depends on the state of the art, the detailed technological solution, the supply availability and the purchase conditions at the date Krones places its order with its suppliers.

General conditions

Our general conditions of contract and installation form a part of this quotation, unless otherwise stated herein.

18.2 LIST OF OBLIGATIONS

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1	Logistic			
1.1	Basic logistic agreement			
1.1.1	Delay of shipment	Where shipment is **delayed due to reasons beyond KRONES' control**, the customer shall be liable for any additional costs that arise during transport or storage, including but not limited to the costs of container detention, truck waiting time, demurrage, dead freight and storage charges		X

1.2	Packing and preparation of transport			
1.2.1	Applicable for overseas transport	Containers are deemed to be shipping line containers (COC à carriers own containers), if not otherwise agreed in writing. Containers shall be returned in empty condition within the agreed maximum time of 7 calendar days after arrival of the ocean vessel in the port of destination. In the event that the agreed maximum time of 7 calendar days is exceeded any additional costs for demurrage (storage) and/or container detention (container overtime) are to be borne and paid by CUSTOMER		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1.2	Packing and preparation of transport			
1.2.2	Applicable for land transport	The agreed maximum time for truck detention during customs clearance and unloading on CUSTOMER's site: until 12 hours after arrival In the event that the agreed maximum time of 24 hours is exceeded due to reasons beyond KRONES' control, the CUSTOMER shall be liable for any additional costs that arise during transport and/or storage, including but not limited to truck waiting time (detention) and storage charges		X
1.2.3	Issuing of packing lists	Printout as per KRONES standards	X	
1.2.4	Special requirements with regard to marking of packages and packing of packages	These need to be advised 8 weeks prior to EXW (ex works) date of the first delivery at latest		X
1.2.5	Export formalities	Special requirements such as pre-inspection need to be named. The corresponding date has to be 8 weeks prior to EXW (ex works) date of the first delivery at latest		X
1.2.6	Shipping instructions	Shipping instructions, such as but not limited to: supplementary instructions with regard to Incoterm®, CMR / Bill of Lading / AWB instructions, jobsite access, safety and delivery regulations, shall be notified to KRONES 6 weeks prior to EXW (ex works) date of the first delivery at the latest		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1.2	Packing and preparation of transport			
1.2.7	Delivery of subsequent items, subsequent delivery	Taxes, customs clearance, handling fees, etc.		X
1.2.8	Definition of laydown area at the final place of delivery Storage place for containers and break bulk in flood protected and secured area at site on solid ground, easy accessible during installation	The definition needs to be defined and communicated 4 weeks before EXW (ex works)	X	

1.3	Transport			
1.3.1	Applicable for land transport	Deviations from the agreed Incoterm® have to be named and the additional costs shall be deemed by customer, such as, but not limited to: convoy routing, importation requirements, multistop delivery	according to Incoterm®	
1.3.2	Applicable for airfreight transport	Deviations to the agreed Incoterm® to be named	according to Incoterm®	
1.3.3	Applicable for overseas transport	KRONES shall be authorized to designate the port of departure and port of destination	according to Incoterm®	
1.3.4	Import customs clearance, including import licenses	Special requirements which are important for the CUSTOMER for importation, shall be notified to KRONES 6 weeks prior to EXW (ex works) date of the first delivery at latest		X
1.3.5	Import execution according to Incoterm®	CUSTOMER has to do the customs clearance according to the Incoterm® In the event that the specified time of customs clearance is exceeded (as agreed with project schedule), the CUSTOMER shall be liable for any additional demurrage costs		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1.3	Transport			
1.3.6	Execution of the temporary import of equipment, tools and other items required on site	CUSTOMER has to do the customs clearance for temporary import. After close-up at jobsite, CUSTOMER has to re-export the equipment to KRONES Germany according to the "Guidelines for creating pro-forma invoices". The original delivery number by KRONES has to be mentioned as reference No. on the proforma invoice		X
1.3.7	Import customs clearance of the material shipped to CUSTOMER's site in fulfillment of KRONES obligations within the Defects Liability Period	In cases, the CUSTOMER cannot do the customs clearance, the obligations to issue a power of attorney has to be given from the CUSTOMER to the forwarding company or the customs broker - in order to authorize them to execute the customs clearance on behalf of the CUSTOMER. If the CUSTOMER is entitled for pre-tax deduction, the VAT has to be billed to the customer. Fees and duties can be covered by KRONES Germany. This will only be happen in exceptional cases and has to be discussed with KRONES AG before delivery. In the event that the power of attorney authorizing to execute the customs clearance on behalf of the CUSTOMER is not issued by the CUSTOMER, it is the responsibility of the CUSTOMER to execute the customs clearance. KRONES Germany is not available to do the customs clearance in the country of destination!		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1.4	On-site			
1.4.1	Access to the final installation position and/or laydown area on site / or to be defined temporary buffer areas or warehouse	To grant free and unrestricted access to the final installation position and/or laydown area on site in accordance with the valid shipping schedule and from the first delivery for all applied means of transportation (including but not limited to low-bed-truck, truck, container) and logistics personnel. Gates wide enough to pass with delivered goods, prepared surface of the jobsite roads, prepared and accessible roads from the laydown areas to the final installation position		X
1.4.2	Provision of laydown area at the final place of destination in accordance with KRONES requirements and/or to be defined temporary buffer areas	Sufficiently equipped as per KRONES request, laydown area at the final place of destination on site suitable for low-bed-truck, truck, crane and fork lift traffic). In particular: storage place for containers, break bulk or any packages in flood protected and secure area at site on solid ground, easy accessible during installation, incl. insurance, securing and guarding of the goods after arrival		X
1.4.3	Applicable for break bulk and truck cargo and/or shippers owned containers (SOC): Off-loading of arriving goods from means of transportation (e.g. truck) at the laydown area and as required off-site of the jobsite	Provision of crane equipment, fork lift trucks, labor force for unloading, safety process		X
1.4.4	Applicable for shipping line containers (COC). Unstuffing and handling of containers	Provision of crane equipment, fork lift trucks, labor force for unloading, safety process		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
1.4	On-site			
1.4.5	Examination of the delivered goods upon arrival for visible faults and deviations	Visible damage of the delivered goods shall be notified to KRONES immediately upon delivery. Hidden damage of the delivered goods shall be notified to KRONES upon their discovery, however not later than within 7 calendar days after delivery		X
1.4.6	Return of recyclable packaging, according to packaging category		X	
1.4.7	Return (re-transport) of temporarily imported equipment, tools and other items required on site		X	
1.4.8	Re-exportation of temporarily imported equipment, tools and other items required on site			X
1.4.9	Return (re-transport) of surplus material after installation		X	
1.4.10	Re-exportation of surplus material after installation			X
1.4.11	Costs for visa	Customer to assist (autorities, relationship)	X	
1.4.12	Work permits	Customer to assist (autorities, relationship)	X	
1.4.13	Local licenses/authorization of any kind	General obligation of customer		X

2	Security			
2.1	General site security			X
2.2	Security of goods and containers/stores before/during commencement of installation			X
2.3	For countries with travel warnings issued by German ministries: Guarded transport to / from site (personnel and material)	In case of unsafe conditions daily transportation guarded by armed security must be provided		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
2	Security			
2.4	For countries with travel warnings issued by German ministries: Accommodation on site	In case of guarded transportation (see 2.3) cannot be ensured safe, guarded accommodation on site must be provided (European standard)		X
3	Insurance			
3.1	EAR / Erection all risk insurance CAR insurance	need detailed clarification		X
3.2	Customs duties of any kind			X
3.3	Insurance for product or profit loss	other insurances to be clarified		X
4	Site			
4.1	Offices and meeting rooms on site for KRONES managers and KRONES supervisors (incl. furniture)		X	
4.2	Welfare facilities (canteen) availability of drinking water (bottled water)			X
4.3	Telephone/fax lines and Internet facilities (high speed internet connection)	availability by customer cost by KRONES		X
4.4	Sanitary facilities (toilets, washing room, showers, changing room), according to European standard			X
4.5	Habitable rooms/rest rooms			X
4.6	Fire extinguisher and fire protection during installation and commissioning			X
4.7	First Aid organization on site			X
4.8	Main electrical supply to construction/ installation distribution boards including all cabling			X
4.9	Water supply and waste water disposal for installation and commissioning			X
4.10	Temporary power supply during installation			X
4.11	Temporary water supply during installation			X
4.12	Illumination and heating of site and work areas			X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
4	Site			
4.13	Waste disposal of any kind	detailed specific clarification required		X
4.14	Cleaning of buildings	minimum weekly		X
4.15	Top to bottom cleaning	cleaning of KRONES equipment before commissioning and during ramp-up		X
4.16	Application and management of operational licenses			X
4.17	Spare parts	to be quoted separately		X
4.18	Documentation as built	for KRONES scope	X	
4.19	Interpreter			X
4.20	Local taxes and duties			X
4.21	Building site (civil works)	pre-conditioning for start installation (see civil pre-condition sheet)		X
4.22	Earth works of any kind			X
4.23	Road works of any kind			X
4.24	Building materials of any kind			X
4.25	Tank fabrication working area	specification to be provided by KRONES		X
4.26	Climate control of buildings, MCCs and control rooms			X
4.27	Ground compactions (incl. temporary roads and cranage area			X
4.28	Operation platforms	others than quoted		X
4.29	Maintenance platforms	maintenance platforms can only be quoted separately after completion of installation and commissioning. Will need CUSTOMER's maintainability concept		X
4.30	Furniture and fixtures for computer, printer, cabinets of control system			X
4.31	Water hose connections for cleaning	water connection points and hoses		X
4.32	Pipe bridge support	need detailed clarification		X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
4	Site			
4.33	Site drainage and site roads (heavy duty traffic)			X
4.34	Covered site walk ways according to union requirements	other facilities especially required		X
4.35	Rails for cranes / lifting devices	e.g. for open top fermenters, TFS filter etc.		X
4.36	Control air supply according to DIN ISO 8573-1 quality class 2.4.1			X
4.37	Quality of electrical power supply acc. to EN 50160			X
4.38	Risk Analysis for emergency stop, equipment risks, human risk	detailed clarification required		X
4.39	Process data network digram, process control system PCS diagram			X
4.40	Technical documentation, functional design and user requirements specification (URS) of third party equipment to be integrated			X
4.41	Communication interface specification to third party equipment and areas			X
4.42	Specification of required recipes for raw material (malt, rice, ...) wort, beer, cleaning, etc.			X
4.43	Specification of values to be prepared for a data acquisition system, if applicable			X
4.44	Testing and inspection procedures/ specification (FAT, SAT, ...)	if deviation from KRONES Standard		X
4.45	Training specification	if deviation from KRONES Standard		X
4.46	Maintenance specification	if deviation from KRONES Standard		X
4.47	Remote control to PCs			X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
4	Site			
4.48	As built documentation of existing applicable plant: Layout and sections of: - layers incl. panel room and cable tray route - cable area incl. panel room and cable tray route - PID with tag-number - electrical wiring diagram - process data network diagram, PCSdiagram - backup of control system PCS - process description and functional design specification - technical design specification - material specification			X

5	Installation			
5.1	Special scaffoldings and platforms for bringing-in procedure	quality according to KRONES specification		X
5.2	Special allowances due to union requirements			X
5.3	Installation of ceiling duct rings	material as per offer		X
5.4	Tie-Ins	downtimes and time-slot to be clarified		X
5.5	Pipe labelling	execution to be defined	X	
5.6	Endoscopic test	see topic quality assurance		X
5.7	Repairs to buildings			X
5.8	Temporary closing of building during installation Protection against: rain, snow, water, wind, sand, etc.			X
5.9	Temporary protection for all KRONES equipment			X
5.10	Temporary building protection to carry out installation works			X
5.11	Any other temporary provisions	such as separating walls, hose connections, supporting structures, etc.		X
5.12	Dis-, and re-assembly of existing equipment			X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
5	Installation			
5.13	Supply and positioning of safety signs and safety equipment			X
5.14	Health and safety management for the whole site			X

6	Commissioning, acceptance and other			
6.1	Raw materials for start-up (up to saleable product)			X
6.2	Production planning during commissioning and ramp-up	A draft production plan will be provided by KRONES and is basis of the calculated quote. Will be mutually agreed before start of commissioning	X	X
6.3	Independent and certified institute for evaluation of acceptance tests			X
6.4	First fillings	e.g. ammonia, glycol, oil, grease, a list can be provided by KRONES with all required quantities and quality		X
6.5	Start-up chemicals	e.g. caustic, acid, cleaning agents, information can be provided by KRONES		X

7	Local provisions and duties			
7.1	Costs arising from certificates which are due for the country of installation			X
7.2	VAT (value added tax)			X
7.3	Withholding tax			X
7.4	Application of permits of any kind (supply license of water, gas, fresh water, waste water, waste disposal)			X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
8	Permanent power supply			
8.1	Cabling of medium/low voltage to the transformers			X
8.2	Network transformers and installation			X
8.3	High voltage distribution and installation	need detailed clarification		X
8.4	Cables to domestic boards including installation			X
8.5	Electric cables from low voltage distribution to consumers			X
8.6	MCC and control room double floor with support and climate control			X
8.7	Discharge middle voltage power station e.g. 35KV/22 KV	Connection point: middle voltage power station		X
8.8	Detail engineering of electrical middle voltage equipment			X
8.9	Electrical power generation supply and equipment installation			X
8.10	Main earthing sytem incl. measuring and certificate			X
8.11	Requirement planning and detail engineering of energy power supply and distribution (e.g. ground cabling routing)			X
8.12	Realizing of the electrical clarification and operational license for electrical power generation and for the plant			X
9	Utilities			
9.1	Gas warning devices			X
9.2	Laboratory system incl. data interface			X
10	Civil work design			
10.1	Verification of the KRONES design considering customer layout			X
10.2	Checking of layout collisions with customer layout			X
10.3	Alignment of KRONES planning with local regulations and norms			X
10.4	Installation of embedded steel plates for foundations into concrete with anchors and bolts			X

	Item	Comments	RESPONSIBILITY / COSTS	
			KRONES	CUSTOMER
10	Civil work design			
10.5	Provison of necessary data for detailed static calculation of civil/structural works for foundations: - local building classification data - wind-/snow loads - horizontal acceleration			X
10.6	Structural design, calculation and dimensions of foundations according to local regulations			X
10.7	Indication of gutters and spot drains with drainage load according to DIN table and chemical loads (e.g. containing acid ...%)	by layout	X	
10.8	Dimensioning and routing of drainage system			X
10.9	Indication of required installation openings	by drawing	X	
10.10	Providing of any openings			X
10.11	Air-tight closing of any building openings	in case of any seal air-tight building cladding requirements (Energy saving ordinance)		X
10.12	Indication of position of grounding strips		X	
10.13	Proposal of details regarding earthing		X	
10.14	Delivery of grounding system			X
10.15	Lightning protection of any building and equipment			X

18.3 LIST OF SUPPLIERS

The „list of suppliers“ contents the standard suppliers used by KRONES AG
This List is not limited to those suppliers.
KRONES AG reserves the right to select the suppliers in its own discretion.
Also the customer can ask for alternative suppliers, under consideration of influence on price by a specific nominated sub-contractor.

No.	Item	(Sub-)supplier	
		Standard	Alternative
1.0	Mechanical equipment		
1.1	Product-/Water fittings		
	Butterfly valves (stainless steel)	Krones Evoguard	
	Double seat valves	Krones Evoguard	
	Seat valves	Krones Evoguard	
	Double seal valves	Krones Evoguard	
	Control valves (pneum., hygienic)	Krones Evoguard	APV, Samson
	Butterfly valves (cast iron)	Keystone	KSB, GEFA, Bray, Ebro
	Slide valves (cast iron)	Erhard, Wey	
	Positioner of control valves	Arca, Samson, Keystone	Siemens, IC-Eckard, Yokogava, Kieselmann
	Solenoid valves	Bürkert	
	Non return valves	Gestra	
	Non return valves (hygienic)	Krones Evoguard	Kieselmann, Alfa Laval, Südmo, Handtmann, GEA
	Pressure reducing valve for air, CO2	Niezgodka (Subklew)	
	Pressure holding valve (hygienic)	Krones Evoguard	APV, Kieselmann, Handtmann
	Pressure relief valve (hygienic)	Krones Evoguard	APV, Kieselmann, Handtm.
	Safety valve (hygienic)	Leser	Kieselmann, Handtmann
	Sample cocks (hygienic)	Krones Evoguard	Keofit, Scandi Brew, Guth, Kieselmann
	Sample cocks	Guth, Rieger	
	Spray balls	Hake	GEA, Handtmann
	Tank cleaning machines	Alfa Laval	GEA, Dunos, USE
	Tank tops (fermenters, yeast, . .)	Krones Evoguard	APV, Alfa Laval, Südmo, Handtmann, GEA, Kieselmann
	Trap filter	Sartorius	Hayward, Domink Hunter, Pall, Eaton, Donaldson
	Pressure gauges	Armaturenbau	WIKA

	Thermometer	Armaturenbau	WIKA
	Sight glasses	Südmo, Guth	Guth, Kieselm., APV, GEA

1.2	Steam-/Condensate fittings		
	Control valves	Samson	Schubert&Salzer, Spirax Sarco, ARI
	Valves, flaps (pneumatical operated)	Keystone	KSB, Ebro
	Stop valves	KSB	Gestra, Spirax Sarco, ARI
	Strainer	KSB	Gestra, Spirax Sarco, ARI
	Non return valves	Gestra	Spirax Sarco
	Condensate fittings	Gestra	Spirax Sarco
	Safety relief valve	Leser	
	Pressure gauges	Armaturenbau	WIKA
	Thermometer	Armaturenbau	WIKA

1.3	Pumps, Geared motors, Drives		
	Pumps for product, water, CIP	Krones Evoguard	GEA-Hilge, KSB, APV, Sterling-SIHI, Alfa Laval, Fristam
	Dosing pumps and accessories	Prominent, Sera	Henkel Ecolab, Johnson Diversey, ARO
	Hose pumps	Bredel	
	Yeast pumps	Inoxpa, Bredel	KSB, Fristam, GEA-Hilge
	Dosing pumps for Kieselguhr, PVPP	Bredel	
	Pumps for spent kieselguhr	Bredel	Netsch
	Agitator for KG/PVPP mixing tanks	Promitec	
	Agitator for mash vessel	Flender	SEW, Bauer
	Gear box for lauter tun	Nord, SEW	Flender
	Electrical motors	EU-Standard	

1.4	Heat exchanger		
	Plate heat exchangers	Kelvion, Sondex	APV, Alfa Laval, Fischer
	Tube & shell heat exchangers	IGEFA Weinbrenner	Krones

2.0	Electrical and control equipment Brewhouse & Cellar		
2.1	MCC, Control Cabinets		
	Control cabinets	Rittal RAL7035, Baader V2A	
	Main switch	Siemens	Rockwell
	Selector switches	Eaton	
	Ammeter, voltmeter	Siemens	
	Indication lights	Eaton	
	Contactors	Siemens	Rockwell
	Overload protection	Siemens	Rockwell
	Time relays	Siemens	Rockwell
	Coupling relays	Finder	
	Terminals	Phönix, Weidmüller	
	Pushbuttons	Eaton	
	Wire marking	Krones	
	Transformer	Schmidbauer	Siemens
	DC power supplies	Siemens	
	Battery pack	Siemens	
	Terminal boxes	Krones	
	Cable trays, ladders	Nidax	

2.2	Control equipment		
	PLC	Siemens S7	Rockwell
	PC-Hardware	HP	
	Touch Client	B&R	
	Monitor 24"	HP	
	Printer	HP	

2.3	Pneumatic control equipment		
	Solenoid valves	Festo	
	Pressure controllers	Festo	
	Filters	Festo	
	Pneumatic boxes	Krones	

2.4	Measurement and control equipment		
	Proximity switches	Pepperl & Fuchs, Krones	IFM
	Electronic pressure transmitter	Endress & Hauser	
	Inductive flow-meter	Endress & Hauser	
	Pressure switch	Endress & Hauser	
	Conductivity measurement	Endress & Hauser, Baumer, Negele	
	Level switches	Endress & Hauser, Negele	
	Limit switches	Schmersal	
	Flow switch	IFM	
	Pt 100 temperature probe with sensor head transmitter	Endress & Hauser	
	pH measuring system	Endress & Hauser	
	Density measuring system	Anton Paar, Centec	
	Density measuring system - hot wort	Centec	
	Thermostat	Eberle, Endress & Hauser	
	Frequency converter	Danfoss	Rockwell
	Softstarter	Siemens	Danfoss
	Amplifier (for level probes)	Endress & Hauser, Turk	
	Turbidity (brewhouse)	Monitec, Negele	
	Load cells	HKM	
	Turbidity (fermenting cellar)	Optek, Negele	
	Turbidity (filter plant)	Sigrist,	
	O2 measuring equipment	Centec	
	CO2 measuring equipment	Anton Paar	
	Dry run protection, empty level probes	Endress & Hauser, Negele	
	Cell density (yeast)	ABER	

3.0	Units & Utilities	Prices will be calculated specifically to each order	
	Grist handing system (malt, adjunct...)	Künzel, Bühler	Romberger, Asnong, Horstkötter, Anhui
	Silos for malt and adjunct	Symaga	Brice Backer, Lipp, Bentall
	Mash filter	Krones	
	Fermenting tanks, BBT´s	Krones, KPS	Edel, Biomashin, Nordhausen, Landaluce
	Tanks (CIP, BBT, Water...)	Krones, KPS	Nordhausen, VTP (Tenez), Edel, Elber, Möschle, Erreson, Meco, Furphy, Interfab, Feldmeir, Biomashin, Metalocaima
	KEG filling plant	M+F, Gruber	
	Laboratory equipment	Thiemt, VLB Berlin, Wagner und Munz	
	Spent grains handling (wet and dry)	Ponndorf, Vetter	KPS
	Centrifuge	Flottweg	Alfa Laval, GEA Westfalia
	Decanter	Flottweg	SPX
	DA Plant	Centec	Alfa Laval, APV, Corosys, Pentair, GEA
	Boiler house	Dankl, WSP (Africa)	Bosch, BBS, Danstoker, Cleaver Brooks, Panini, Standard, (Schnelldampf-erzeuger Juno, Certuss)
	Refrigeration plant	Pakt, Hansa, IAT	Patcol, Axima, York, Mycom, Hörmann, Güntner, WSP
	Compressed air supply	Atlas Copco	Renner, Ingersoll Rand, Boge, Kaeser, Compair, AF, Becker (spent grains blower)
	Water treatment plant	Krones	Chriwa, Berkefeld, Euwa, Waterleau
	Waste water treatment	Envirochemie, Cuss, GWE (Global Water Engineering), Waterleau	
	Trafos	Schneider Electric, ABB, Siemens, WSP, SGB	
	Middle and low voltage supply	Stoll	Schneider Electric, ABB, Siemens
	Emergency power supply	ABZ, Cummins, SAB Hamburg, Frerk, Atlas Copco	Kinolt, CAT
	CO2 plant	Haffmans-Union, EMEB	WSP, Buse, Hypro, ASCO