

Equipment List

Pyrolysis Plant

100 - 700

Please destroy any previous issues

Rev	Description	Date	Made	Checked	Approved
A	Intermediate issue - for info only	1-Jul-22	RMK		
B	Intermediate issue - for info only	26-Aug-22	RMK		
C	Intermediate issue - for info only	05-Sep-22	RMK		
D	Intermediate issue - for info only	13-Sep-22	HA		
E	Intermediate issue - for info only	20-Sep-22	HA		
F	Issue for Estimate	30-Sep-22	HA		
1	Final Issue	21-Oct-22	HA		
2	Issue for Basic Engineering	04-Nov-22	HA	RMK	
3	Update for permit application	13-Sep-23	SS		

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Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units	Description	Part of Package (Package Tag / No)	Additional Details
A-310	Hydrocarbon Storage 1 Agitator	F	OUTSIDE	New		1	Installed in V-310		Top entry, gas seal plan 72
A-311	Hydrocarbon Storage 2 Agitator	F	OUTSIDE	New		1	Installed in V-311		Top entry, gas seal plan 72
A-312	Hydrocarbon Storage 3 Agitator	F	OUTSIDE	New		1	Installed in V-312		Top entry, gas seal plan 72
A-313	Hydrocarbon Storage 4 Agitator	F	OUTSIDE	New		1	Installed in V-313		Top entry, gas seal plan 72
Notes:									
							AGITATORS		
							Document Number:A9GM-255-LST-001-0001		

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Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Part of Package (Package Tag / No)	Additional Details
B-201	Air FD Fan	F	OUTSIDE	New		1	PK-201	
B-401A/B	Pyrolysis Pressure Control Fan	1	OUTSIDE	New		1		VFD
B-402A/B	Fuel Gas Fan	1	OUTSIDE	New		1		VFD
B-501	Combustor Air Fan	F	OUTSIDE	New		1	PK-602	
B-601	ID Fan	F	OUTSIDE	New		1	PK-602	
C-711A	Air Compressor	F	OUTSIDE	New		1	PK-711	
C-711B	Air Compressor	F	OUTSIDE	New		1	PK-711	
C-101	Compressor FH package	1	INSIDE	New		1	PK-101	VSD
Notes:								
Compressors								
Document Number:A9GM-255-LST-001-0001								

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Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Part of Package (Package Tag / No)	Additional Details
BE-101	Bucket Elevator Feeder	F	INSIDE	New		1	PK-101	
CV-101	Conveyor	2	INSIDE	New		1	PK-101	
CV-102	Weigh Scale Conveyer 1	2	INSIDE	New		1	PK-101	
CV-103	Reverse Conveyer	2	INSIDE	New		1	PK-101	
CV-104	Ferrous Collecting Conveyer	2	INSIDE	New		1	PK-101	
CV-105	Conveyor	2	INSIDE	New		1	PK-101	
CV-106	Conveyor	F	INSIDE	New		1	PK-101	
CV-107	Conveyor (Reverse)	F	INSIDE	New		1	PK-101	
CV-108	Weigh Conveyor	F	INSIDE	New		1	PK-101	
SC-201	Feedstock Screw TCU	2	OUTSIDE	New		1	PK-201	Equipment handled by Itero
SC-202	Char Cooling Screw TCU	2	OUTSIDE	New		1	PK-201	Equipment handled by Itero
SC-203	Char Cooling Screw TCU	3	OUTSIDE	New		1	PK-201	Equipment handled by Itero
SC-204	Char Cooling Screw TCU	3	OUTSIDE	New		1	PK-201	Equipment handled by Itero
Notes:								
Conveyors								
Document Number:A9GM-255-LST-001-0001								

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Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Description	Equipment Included in Package Unit	Additional Details
PK-101	Feedstock Handling Package	F	INSIDE	New		1	Feedstock Handling Package to process the Plastic Waste feedstock (unbaling, sorting and shredding) to be suitable to send it as feed into the Pyrolysis Reactor.	- Bale Breaker (SR-101) - Weigh Scale Conveyor (CV-101) - Overbelt Magnetic Separator (MS-101) - Ferrous Collecting Conveyor (CV-102) - Optical Sorter (Negative) (SO-101) - Negative Pick Collecting Conveyor (CV-103) - Feedstock Pick Collecting Conveyor (CV-104) - Shredder (SR-102) - Shredder Discharge Weigh Conveyor (CV-105) - Bucket Elevator Feeder (BE-101) or Inclined Conveyor - Feedstock Silo Unit including screw conveyor (BN-101)	Package handled by Itero
PK-201	Pyrolysis Reactor Package	F	OUTSIDE	New		1	Pyrolysis Reactor Package	- Dosing screw SC-(201) - Primary Hopper (BN-201) - Primary Hopper (BN-202) - Secondary Hopper BN-203 - Pyrolysis Reactor (R-201) - Burners (H-201) - Air FD Fan (B-201) - Cooling Screw TCU (SC-201) - Char Cooling Screw (SC-202) - Discharge Screw (SC-203)	Package handled by Itero
PK-301	Liquid Hydrocarbon Recovery Package	F	OUTSIDE	New		1	Liquid Hydrocarbon Recovery Package		Package handled by Itero
PK-401	Scrubber Package	F	OUTSIDE	New		1	Scrubber Package to remove contaminants such as HCL, NH3, H2S and HCN from the Product Gas.	- Acid Product Gas Scrubber (T-401) - Water Softening Package (PK-402) - Caustic Product Gas Scrubber (T-402) - Dehumidifier (DR-401) - H2SO4 Dosing Pump (P-401/B) - NaOH Dosing Pump (P-402/B) - Acid Scrubber Pump (P-403A/B) - Caustic Scrubber Pump (P-404A/B)	Hold for vendor selection en final scope in vendor package.
X-402	Flare Package	F	OUTSIDE	New		1			
PK-602	Exhaust Gast Treatment Package	F	OUTSIDE	New		1			
PK-701	Nitrogen Generation	F	OUTSIDE	New		1	Nitrogen Generation Unit		
PK-711	Air Compressor Package	F	OUTSIDE	New		1	Compressed Air (Plant + Instrument Air) Unit	Holding temp. 5°C	
PK-781	Refrigeration Package	F	OUTSIDE	New		1	Refrigeration Package	1. 30wt% aqueous mixture has been considered as chilled water composition. 2. PK-781 shall allow for adjustment in chilled water requirement by variable speed drive of chilled water supply pump. 3. Expansion vessel, V-781 shall be considered as a part of Refrigeration package PK-781. 4. All instrumentation, safety equipment required for V-781 shall be provided by Refrigeration Package PK-781 vendor. 4. Pressure drop of 1 bar has been considered for PK-781.	
X-731	LNG-Facility	3	OUTSIDE	New		1	LNG storage & supply facility		
Notes:								Unit: 100 - 700	Package Units
								Project: Pyrolysis Plant	
							3	Location: BCC, Geleen, NL	
							Rev	Job No. A9GM 13-Sept-23 Date WBS: 0	Document Number:A9GM-255-LST-001-0001

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Pyrolysis Plant

Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Pump type (API type or Centr-hor / Centr-Vert)	Additional Details
P-301A/B	Hydrocarbon Pump System 1	F	OUTSIDE	New		2	Centrifugal Pump	
P-302A/B	Hydrocarbon Pump System 2	F	OUTSIDE	New		2	Centrifugal Pump	
P-303A/B	Hydrocarbon Pump System 3	F	OUTSIDE	New		2	Centrifugal Pump	
P-304A/B	Hydrocarbon Pump System 4	1	OUTSIDE	New		2	Positive displacement	
P-305A/B	Hydrocarbon Pump System 5	F	OUTSIDE	New		2	Positive displacement	
P-306A/B	Hydrocarbon Pump System 6	F	OUTSIDE	New		2	Positive displacement	
P-310A/B	Hydrocarbon 1 Loading Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-311A/B	Hydrocarbon 2 Loading Pump	1	OUTSIDE	New		2	Centrifugal Pump	
P-312A/B	Hydrocarbon 3 Loading Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-313A/B	Hydrocarbon 4 Loading Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-314	Effluent Pump	1	OUTSIDE	New		1	Positive displacement	
P-316	Online Oil CIP Pump	2	OUTSIDE	New		1	Positive displacement	
P-317	CIP Return Pump	F	OUTSIDE	New		1	Positive displacement	
P-401A/B	H2SO4 Dosing Pump	F	OUTSIDE	New		2	Positive displacement	
P-402A/B	NaOH Dosing Pump	F	OUTSIDE	New		2	Positive displacement	
P-403A/B	Acid Scrubber Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-404A/B	Caustic Scrubber Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-405	Flare Knockout Drum Pump	F	OUTSIDE	New		1	Positive displacement	Pump is operated intermittent
P-407	Gas Buffer Drain Pump	F	OUTSIDE	New		1	Positive displacement	Pump is operated intermittent
P-601	Urea Pump	F	OUTSIDE	New		1	Positive displacement	
P-741A/B	Raw Water Pumps	1	OUTSIDE	New		2	Centrifugal Pump	
P-751A/B	Cooling Water Pump	F	OUTSIDE	New		2	Centrifugal Pump	
P-761A/B	Hot Water Pump	2	OUTSIDE	New		2	Centrifugal Pump	
P-781A/B	Chilled Water Pump	1	OUTSIDE	New		2	Centrifugal Pump	
P-766A/B	Tempered Water Pump	2	OUTSIDE	New		2	Centrifugal Pump	
P-771A/B	Hot Oil Pump	1	OUTSIDE	New		2	Centrifugal Pump	
P-791	Diesel Pump	F	OUTSIDE	New		1	Centrifugal Pump	
P-796	CIP Solution Pump	F	OUTSIDE	New		1	Centrifugal Pump	
P-723	OWS Waste Water Pump	1	OUTSIDE	New		1	Centrifugal Pump	

Notes:

Pumps

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Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Orientation	Part of Package (Package Tag / No)	Additional Details (PWHT, Cladding, boot, internals, etc. Column internals: type, material, number of trays or packing height, other. Catalyst type, volume)
BN-201	Primary Hopper	F	OUTSIDE	New		1		PK-201	Equipment handled by Itero
BN-202	Primary Hopper	F	OUTSIDE	New		1		PK-201	Equipment handled by Itero
BN-203	Secondary hopper	3	OUTSIDE	New		1			
BN-101	Feedstock Silo Unit	F	INSIDE	New		1		PK-101	Equipment handled by Itero
R-201	Pyrolysis Reactor (TCU)	F	OUTSIDE	New		1		PK-201	Equipment handled by Itero
T-401	Acid Product Gas Scrubber	F	OUTSIDE	New		1		PK-401	
T-402	Caustic Product Gas Scrubber	F	OUTSIDE	New		1		PK-401	
V-101	Ferrous Residue Bunker	F	INSIDE	New		1		PK-101	
V-102	Residue Bunker	F	INSIDE	New		1		PK-101	
V-103	Feedstock Bunker	F	INSIDE	New		1		PK-101	
V-104	Feedstock Bunker	F	INSIDE	New		1		PK-101	
V-201	Char Container	F	OUTSIDE	New		1		PK-201	
V-301	Condenser 1 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-302	Condenser 2 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-303	Condenser 3 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-304	Condenser 4 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-305	Condenser 5 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-306	Condenser 6 Collection Container	F	OUTSIDE	New		1	Horizontal		
V-310	Hydrocarbon Storage 1 Vessel	F	OUTSIDE	New		1	Vertical		The nett working volume (HLL-LLL) of this vessel is 30 m3
V-311	Hydrocarbon Storage 2 Vessel	F	OUTSIDE	New		1	Vertical		The nett working volume (HLL-LLL) of this vessel is 30 m3
V-312	Hydrocarbon Storage 3 Vessel	F	OUTSIDE	New		1	Vertical		The nett working volume (HLL-LLL) of this vessel is 30 m3
V-313	Hydrocarbon Storage 4 Vessel	F	OUTSIDE	New		1	Vertical		The nett working volume (HLL-LLL) of this vessel is 30 m3
V-316	Online CIP Oil storage vessel	2	OUTSIDE	New		1	Vertical		
V-401	H2SO4 Vessel	F	OUTSIDE	New		1	Vertical		IBC by H2SO4 supplier; Revised bruto volume is 15 m3
V-402	NaOH Vessel	F	OUTSIDE	New		1	Vertical		IBC by NaOH supplier; Revised bruto volume is 15 m3
V-403	Product Gas Vessel	F	OUTSIDE	New		1	Vertical		
V-404	Knockout Drum	F	OUTSIDE	New		1	Horizontal	X-402	
V-601	Urea Tank	F	OUTSIDE	New		1	Horizontal		The net working volume (HLL-LLL) of this vessel is 8 m3
V-701	Nitrogen Buffer	F	OUTSIDE	New		1	Vertical		
V-711A	Pressurised Air Vessel	F	OUTSIDE	New		1	Horizontal	PK-711	
V-711B	Pressurised Air Vessel	F	OUTSIDE	New		1	Horizontal	PK-711	
V-741	Raw Water Tank	F	OUTSIDE	New		1	Vertical		
V-751	Cooling Water Expansion Vessel	F	OUTSIDE	New		1	Vertical		
V-761	Hot Water Expansion Vessel	2	OUTSIDE	New		1	Vertical		
V-766	Tempered Water Expansion Vessel	2	OUTSIDE	New		1	Vertical		
V-771	Hot Oil Expansion Vessel	2	OUTSIDE	New		1	Horizontal		
V-781	Chilled Water Expansion Vessel	F	OUTSIDE	New		1	Vertical		
V-791	Diesel Tank	F	OUTSIDE	New		1	Vertical		
V-792	Emergency Diesel Day Tank	2	OUTSIDE	New		1		X-791	Part of X-791 EDG
V-796	CIP Solution Storage Tank	F	OUTSIDE	New		1	Vertical		
V-406	Flare Seal Drum	2	OUTSIDE	New		1	Vertical	X-402	
V-721	Oily Water Sewer Drain Drum	2	OUTSIDE	New		1	Horizontal		
X-731	LNG-buffertank	3	OUTSIDE	New		1	Vertical		
Notes:									
Vessel, Drum, Column, Reactor									
Document Number:A9GM-255-LST-001-0001									

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Pyrolysis Plant

Item Number	Service	Rev	WBS	Wtype (New, Revamp, Dem)	TAR scope (Yes/No)	Number of Units (-)	Part of Package (Package Tag / No)	Additional Details
H-201	Burners	F	OUTSIDE	New		1	PK-201	
H-501	Combustor	F	OUTSIDE	New		1	PK-602	
<u>Notes:</u>								
Fired Heaters, Furnace								
Document Number:A9GM-255-LST-001-0001								