

## Technical description of the proposed solution

The prospective vendors shall submit the following form in Table 1 for each category of RSW systems along with supporting documents as evidence of meeting the requirements proposed.

Table 1. Description of proposed RSW systems (55kw Genset)

No.	Description	Minimum Specifications	Proposed Specifications
<b>A.</b>	<b>DIESEL GENERATORS</b>		
1	Brand	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins
2	Capacity (KW)	55 KW, 70 KW, 80 KW, 125 KW	55 Kw
3	Power type	Prime	Prime
4	Voltage (V)	380/220 Volt	380 Volts
5	Number of Phases	3 Phase	3 Phase
6	Number of Wires	4 Wire	4 Wire
7	Frequency (Hz)	50 Hz	50 Hz
8	Power Factor (%)	0.8	0.8
9	Minimum Over-all Efficiency (%) for Generator	90	-
10	Overload Capacity (%)	10	10% for 1 hour
11	Dimensions of genset	-	
	- Length: (mm)	-	1900 mm
	- Width: (mm)	-	895 mm
	- Height: (mm)	-	1300 mm
	- Weight: (kg)	-	1100 kg
<b>B.</b>	<b>ENGINE</b>		
1	Brand / Model	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins / 6BT5.9-GM83
2	Country of Origin	-	China
3	Number of Cycles	4 Cycles	4 Cycles
4	Type of Governor	-	Electric Governor
5	Frequency Regulation (%)	± .25	-
6	Speed (rpm)	1500 rpm	1500 rpm
7	Cooling System	Water Cooling by seawater	Water cooling by sea water
8	Fuel Consumption (ltr/hour)	-	210 ±5% g/Kwh
9	Aspiration	Turbocharged	Turbocharged
10	Construction	-	Open type
11	Diesel Oil	-	

12	Standard Equipment	Turbocharger, Engine-mounted Water	
		Pump, Heat Exchanger, Expansion Tank,	included
		Lubricating Oil Cooler and Filter,	-
		Fuel Oil Filter, Cutouts (High and Low Water	Water fuel & water oil separator
		and Oil Pressure, Over speed)	optional
		Dry-type exhaust manifold, Engine gauges	
		(lube oil temp., water temp, lube oil pressure),	
		Electric starter, NiCad Batteries, Battery	
		Charger, Stainless steel flexible exhaust pipe	
		connector, silencer, Coupling,	Silencer optional
		Tachometer, running time meter, steel base	
		frame, Lifting brackets, Spring type vibration	
Isolators.			
<b>C.</b>	<b>ALTERNATOR</b>		
1	Brand	Stamford, Leroy Sommer, AVK	Stamford UCM274C
2	Country of Origin	-	
3	Cap. kVA Nett. Output	-	55 Kw
4	Insulation Class	Class F and H	Class H
5	Excitation	-	
6	Speed (rpm)	1500 rpm	1500 rpm
7	Power Factor	80%	0.8 (lag)
8	Voltage Regulation (%)	± 0,5 (Steady State); ± 1,0 (from NL to FL)	
9	Protection	-	
10	Characteristics	Brushless, Revolving field type, Self-exciting, Self-regulating.	Brushless self-exciting.
<b>D.</b>	<b>ENGINE GENERATOR CONTROL</b>		
1	Indicating Lights	Over crank lockout, Low oil pressure pre-alarm and shutdown, Overspeed shutdown, High water temp, pre-alarm and shutdown	Battery volt monitoring, protection & testing, overspeed alarm & shutdown, low oil pressure low warning & shutdown, high coolant temp warning & shutdown, low fuel level alarm & shutdown, battery voltage low alarm, fuel leak alarm & start failure alarm.
2	Engine control selector switch	Remote/Off/Run	
3	Muffler Pipe Insulation	-	
	- Brand	-	
	- Type	-	
	- Density	-	
	- Thickness	-	
<b>E.</b>	<b>VIBRATION ISOLATOR</b>		
1	Mounting	-	

Table 2. Description of proposed RSW systems (70kw Genset)

No.	Description	Minimum Specifications	Proposed Specifications
<b>A.</b>	<b>DIESEL GENERATORS</b>		
1	Brand	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins
2	Capacity (KW)	55 KW, 70 KW, 80 KW, 125 KW	70 Kw
3	Power type	Prime	Prime
4	Voltage (V)	380/220 Volt	380 Volts
5	Number of Phases	3 Phase	3 Phase
6	Number of Wires	4 Wire	4 Wire
7	Frequency (Hz)	50 Hz	50 Hz
8	Power Factor (%)	0.8	0.8
9	Minimum Over-all Efficiency (%) for Generator	90	-
10	Overload Capacity (%)	10	10% for 1 hour
11	Dimensions of genset	-	
	- Length: (mm)	-	1920 mm
	- Width: (mm)	-	895 mm
	- Height: (mm)	-	1300 mm
	- Weight: (kg)	-	1250 kg
<b>B.</b>	<b>ENGINE</b>		
1	Brand / Model	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins / 6BT5.9-GM83
2	Country of Origin	-	China
3	Number of Cycles	4 Cycles	4 Cycles
4	Type of Governor	-	Electric Governor
5	Frequency Regulation (%)	± .25	-
6	Speed (rpm)	1500 rpm	1500 rpm
7	Cooling System	Water Cooling by seawater	Water cooling by sea water
8	Fuel Consumption (ltr/hour)	-	210 ±5% g/Kwh
9	Aspiration	Turbocharged	Turbocharged
10	Construction	-	Open type
11	Diesel Oil	-	

12	Standard Equipment	Turbocharger, Engine-mounted Water			
		Pump, Heat Exchanger, Expansion Tank,	included		
		Lubricating Oil Cooler and Filter,	-		
		Fuel Oil Filter, Cutouts (High and Low Water and Oil Pressure, Over speed)	Water fuel & water oil separator optional		
		Dry-type exhaust manifold, Engine gauges (lube oil temp., water temp, lube oil pressure),			
		Electric starter, NiCad Batteries, Battery			
		Charger, Stainless steel flexible exhaust pipe connector, silencer, Coupling,	Silencer optional		
		Tachometer, running time meter, steel base			
		frame, Lifting brackets, Spring type vibration			
		Isolators.			
		<b>C.</b>	<b>ALTERNATOR</b>		
		1	Brand	Stamford, Leroy Sommer, AVK	Stamford UCM274D
2	Country of Origin	-			
3	Cap. kVA Nett. Output	-	70 Kw		
4	Insulation Class	Class F and H	Class H		
5	Excitation	-			
6	Speed (rpm)	1500 rpm	1500 rpm		
7	Power Factor	80%	0.8 (lag)		
8	Voltage Regulation (%)	± 0,5 (Steady State); ± 1,0 (from NL to FL)			
9	Protection	-			
10	Characteristics	Brushless, Revolving field type, Self-exciting, Self-regulating.	Brushless self-exciting.		
<b>D.</b>	<b>ENGINE GENERATOR CONTROL</b>				
1	Indicating Lights	Over crank lockout, Low oil pressure pre-alarm and shutdown, Overspeed shutdown, High water temp, pre-alarm and shutdown	Battery volt monitoring, protection & testing, overspeed alarm & shutdown, low oil pressure low warning & shut down, high coolant temp warning & shutdown, low fuel level alarm & shut down, battery voltage low alarm, fuel leak alarm & start failure alarm.		
2	Engine control selector switch	Remote/Off/Run			
3	Muffler Pipe Insulation	-			
	- Brand	-			
	- Type	-			
	- Density	-			
	- Thickness	-			
<b>E.</b>	<b>VIBRATION ISOLATOR</b>				
1	Mounting	-			

Table 3. Description of proposed RSW systems (80kw Genset)

No.	Description	Minimum Specifications	Proposed Specifications
<b>A.</b>	<b>DIESEL GENERATORS</b>		
1	Brand	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins
2	Capacity (KW)	55 KW, 70 KW, 80 KW, 125 KW	80 Kw
3	Power type	Prime	Prime
4	Voltage (V)	380/220 Volt	380 Volts
5	Number of Phases	3 Phase	3 Phase
6	Number of Wires	4 Wire	4 Wire
7	Frequency (Hz)	50 Hz	50 Hz
8	Power Factor (%)	0.8	0.8
9	Minimum Over-all Efficiency (%) for Generator	90	-
10	Overload Capacity (%)	10	10% for 1 hour
11	Dimensions of genset	-	
	- Length: (mm)	-	2110 mm
	- Width: (mm)	-	860 mm
	- Height: (mm)	-	1360 mm
	- Weight: (kg)	-	1650 kg
<b>B.</b>	<b>ENGINE</b>		
1	Brand / Model	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins / 6BTA5.9-GM100
2	Country of Origin	-	China
3	Number of Cycles	4 Cycles	4 Cycles
4	Type of Governor	-	Electric Governor
5	Frequency Regulation (%)	± .25	-
6	Speed (rpm)	1500 rpm	1500 rpm
7	Cooling System	Water Cooling by seawater	Water cooling by sea water
8	Fuel Consumption (ltr/hour)	-	216 ±5% g/Kwh
9	Aspiration	Turbocharged	Turbocharged
10	Construction	-	Open type
11	Diesel Oil	-	

12	Standard Equipment	Turbocharger, Engine-mounted Water	
		Pump, Heat Exchanger, Expansion Tank,	included
		Lubricating Oil Cooler and Filter,	-
		Fuel Oil Filter, Cutouts (High and Low Water and Oil Pressure, Over speed)	Water fuel & water oil separator optional
		Dry-type exhaust manifold, Engine gauges	
		(lube oil temp., water temp, lube oil pressure),	
		Electric starter, NiCad Batteries, Battery	
		Charger, Stainless steel flexible exhaust pipe	
		connector, silencer, Coupling,	Silencer optional
		Tachometer, running time meter, steel base	
		frame, Lifting brackets, Spring type vibration	
		Isolators.	
		<b>C.</b>	<b>ALTERNATOR</b>
1	Brand	Stamford, Leroy Sommer, AVK	Stamford UCM274E
2	Country of Origin	-	
3	Cap. kVA Nett. Output	-	80 Kw
4	Insulation Class	Class F and H	Class H
5	Excitation	-	
6	Speed (rpm)	1500 rpm	1500 rpm
7	Power Factor	80%	0.8 (lag)
8	Voltage Regulation (%)	± 0,5 (Steady State); ± 1,0 (from NL to FL)	
9	Protection	-	
10	Characteristics	Brushless, Revolving field type, Self-exciting, Self-regulating.	Brushless self-exciting.
<b>D.</b>	<b>ENGINE GENERATOR CONTROL</b>		
1	Indicating Lights	Over crank lockout, Low oil pressure pre-alarm and shutdown, Overspeed shutdown, High water temp, pre-alarm and shutdown	Battery volt monitoring, protection & testing, overspeed alarm & shutdown, low oil pressure low warning & shutdown, high coolant temp warning & shutdown, low fuel level alarm & shutdown, battery voltage low alarm, fuel leak alarm & start failure alarm.
2	Engine control selector switch	Remote/Off/Run	
3	Muffler Pipe Insulation	-	
	- Brand	-	
	- Type	-	
	- Density	-	
	- Thickness	-	
<b>E.</b>	<b>VIBRATION ISOLATOR</b>		
1	Mounting	-	

Table 4. Description of proposed RSW systems (120kw Genset)

No.	Description	Minimum Specifications	Proposed Specifications
<b>A.</b>	<b>DIESEL GENERATORS</b>		
1	Brand	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins
2	Capacity (KW)	55 KW, 70 KW, 80 KW, 125 KW	120 Kw
3	Power type	Prime	Prime
4	Voltage (V)	380/220 Volt	380 Volts
5	Number of Phases	3 Phase	3 Phase
6	Number of Wires	4 Wire	4 Wire
7	Frequency (Hz)	50 Hz	50 Hz
8	Power Factor (%)	0.8	0.8
9	Minimum Over-all Efficiency (%) for Generator	90	-
10	Overload Capacity (%)	10	10% for 1 hour
11	Dimensions of genset	-	
	- Length: (mm)	-	2110 mm
	- Width: (mm)	-	860 mm
	- Height: (mm)	-	1360 mm
	- Weight: (kg)	-	1700 kg
<b>B.</b>	<b>ENGINE</b>		
1	Brand / Model	Mitsubishi, Cummins, Deutz, Perkins, Yamma	Cummins / 6CTA8.3-GM155
2	Country of Origin	-	China
3	Number of Cycles	4 Cycles	4 Cycles
4	Type of Governor	-	Electric Governor
5	Frequency Regulation (%)	± .25	-
6	Speed (rpm)	1500 rpm	1500 rpm
7	Cooling System	Water Cooling by seawater	Water cooling by sea water
8	Fuel Consumption (ltr/hour)	-	205 ±5% g/Kwh
9	Aspiration	Turbocharged	Turbocharged
10	Construction	-	Open type
11	Diesel Oil	-	

12	Standard Equipment	Turbocharger, Engine-mounted Water	
		Pump, Heat Exchanger, Expansion Tank,	included
		Lubricating Oil Cooler and Filter,	-
		Fuel Oil Filter, Cutouts (High and Low Water	Water fuel & water oil separator optional
		and Oil Pressure, Over speed)	
		Dry-type exhaust manifold, Engine gauges	
		(lube oil temp., water temp, lube oil pressure),	
		Electric starter, NiCad Batteries, Battery	
		Charger, Stainless steel flexible exhaust pipe	
		connector, silencer, Coupling,	Silencer optional
		Tachometer, running time meter, steel base	
		frame, Lifting brackets, Spring type vibration	
Isolators.			
<b>C.</b>	<b>ALTERNATOR</b>		
1	Brand	Stamford, Leroy Sommer, AVK	Stamford UCM274F
2	Country of Origin	-	
3	Cap. kVA Nett. Output	-	120 Kw
4	Insulation Class	Class F and H	Class H
5	Excitation	-	
6	Speed (rpm)	1500 rpm	1500 rpm
7	Power Factor	80%	0.8 (lag)
8	Voltage Regulation (%)	± 0,5 (Steady State); ± 1,0 (from NL to FL)	
9	Protection	-	
10	Characteristics	Brushless, Revolving field type, Self-exciting, Self-regulating.	Brushless self-exciting.
<b>D.</b>	<b>ENGINE GENERATOR CONTROL</b>		
1	Indicating Lights	Over crank lockout, Low oil pressure pre-alarm and shutdown, Overspeed shutdown, High water temp, pre-alarm and shutdown	Battery volt monitoring, protection & testing, overspeed alarm & shutdown, low oil pressure low warning & shut down, high coolant temp warning & shutdown, low fuel level alarm & shut down, battery voltage low alarm, fuel leak alarm & start failure alarm.
2	Engine control selector switch	Remote/Off/Run	
3	Muffler Pipe Insulation	-	
	- Brand	-	
	- Type	-	
	- Density	-	
	- Thickness	-	
<b>E.</b>	<b>VIBRATION ISOLATOR</b>		
1	Mounting	-	