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001	1	PAAD3	62616	CENTRAL	COOLING	WATER SYST	ΓEM									0
002	4		04045	CENTRAL	COOLING	WATER SYST	ГЕМ		SPECIFI	CATION						0
002	1	PTAAU	81045				DE	SIGN GL	JIDANCE	VALUES						0
003	1	DTAA00	01217	CENTRAL	COOLING	WATER SYST	IEM		PR	OPOSAL						
004	1	107.429	9.532	CONCEPT	GUIDANC	E										
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_		CCW: Cylinder Cooling CS: Crank Shaft Cap. : Capacity HT: High Temperature	Water	WIN GL Winterthur Gas & Diese	CENTRAL SPECIFICATION	cooling water	R SYSTEM	
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SEQ NO	QTY	Item ID		Item Name				Dimension	Standard-ID	Basic Material		V	Net Veight
015	1	107.41	3.097.500	EXPANSION	TANK							().001
016	1	107.24	5.419.500	EXPANSION	TANK							().001
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Design guidance values for the system layout

All values in Table 1 below are based on an R1 rated engine. Based on the project-specific GTD data, layout optimisations are possible.

Table 1: Pipe and tank sizes *1)

В

C

Ε

F

Number of cylinders		5	6	7	8			
Pressure drop across the engine	(bo	1r)		1.	.3	1		
Cooling water expansion tank (HT)	Cap.	(m³)	Dependi min. 10°	ng on a % of H	ncillary T cooling	plants g water		
Cooling water expansion tank (LT)	Cap.	(m³)	Dependi min. 10°	ng on c % of L1	incillary F cooling	plants g water		
PROPOSAL for pipe dimensioning								
	А	DN	Yard determination					
	В	DN	suitable for main engine					
	C	DN	and ancillary plants					
Neminal pipe diameter	D	DN	150	150	150	200		
l nominat pipe diamerer.	E	DN	100	125	125	125		
	G	DN	125	125	125	150		
	Н	DN	50	50	50	50		
	J	DN	50	50	50	50		

Table 2: LT and HT water volumes on the engine side

Cylinder	HT circuit CCW Volume (l)	LT circuit SAC CW Volume (l)
5	600 l	475 l a)
6	700 l	475 l a) / 1100 l b)
7	825 l	475 l a) / 1200 l b)
8	950 l	500 l a) / 1300 l b)

a) Values for executions with 1 SAC. b) Values for executions with 2 SAC.

Remarks:

*1) All dimensions refer to the piping and tanks as shown in the SYSTEM PROPOSAL.

*2) Guidance regarding the pipe size selection, in relation to the project-specific flow rates in GTD, is given by the drawing FLUID VELOCITIES AND FLOW RATES, as included in the MIDS "DG9730" Various Installation Items".

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A 8) OUTLET - Scavenge air cooler cooling water (LT w - CW volume flow: according to GTD specification adjusted by an orifice in the outlet pipe on s	vater) n, shipside	2	INLET - Cylinder cod - CCW supply pres - CCW volume flow - CCW treatment:	oling water (HT wa ssure: 2.0 - 4.0 ba v: according to GTE freshwater must b	ter) r D specification be treated according	to WinGD specificat	ion
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			3	OUTLET – Cylinder o – CW temperature: Controller set-p Steady state co Transient conditi	cooling water (HT v : oint: 90 °C ondition: 90 ± 2 °(ion: 90 ± 4 °C	water) C		
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_		CCW: Cylinder Cooling CS: Crank Shaft Cap. : Capacity HT: High Temperature	Water	WIN GL Winterthur Gas & Diese	CENTRAL SPECIFICATION	cooling water	R SYSTEM	
F		LT: Low Temperature SAC: Scavenge Air Coo	oler	separate BOM availo Scale -	Dimension NX Units [MM] [kg]	Basic Material	SPECIF Net Weight	FICATION 0.000
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002	1	PTAA0	81050	CENTRAL	COOLING	WATER SYS	TEM										0.001
002	1		01015	CENTRAL	COOLING	WATER SYS	de Tem	SIGN GL	JIDANCE \	VALUES							
003		DIAAU	01215						PRC	POSAL						-	
004	1	107.429	9.532			-											
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	SPECIFICATION which must be	met at	the eng	ine interf	ace conne	ections		
	8 OUTLET - Scavenge air cooler cooling water (LT wa	ter)	(1) INLET -	- Cylinder cooling w	ater (HT water)			
_	- CW volume flow: according to GTD specification, a orifice in the outlet pipe on shipside	adjusted by an	- CCW - CCW - CCW - CCW - CCW - CCW	supply pressure: 2. volume flow: accord treatment: freshwa static pressure: a sted by buffer unit	0 - 4.0 bar ding to GTD specifi ter must be treat buffer unit must l pressure setting	ication ed according to WinGE be installed. The stati	l specification c pressure must be	-
3			- Pre-h befor	neating: the engine re the engine start	must be warmed-u	up with heated HT wa	er to min. 60 °C	
			OUTLET	- Cylinder cooling	water (HT water)			
_			Contr Stear Trans	roller set-point: 90 dy state condition: sient condition: 90	°C 90 ± 2 °C ± 4 °C			
٥			7 INLET -	- Scavenge air coole	er cooling water (L	T water)		
			- CW t Contr	remperature: roller set-point: 10	- 36 °C	ation		
D			- CW v - CW t - The o becau galvo - CW s an e - The o the o	reatment: freshwat cooling water must use the nitrites of anised pipes and cr static pressure: the xpansion tank expansion tank mus "Installation Drawing	ing to GTD specific er must be treate be supplied by pip the cooling water eate sludge static pressure m st be installed at g') in relation to t	anion ed according to WinGD bes which are not inte treatment attack zin nust be adjusted by t a height of min. 12 m the CS centerline	specification rnally galvanised : lining of he installation of (''Hmin_LT'' in	
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		CCW: Cylinder Co CS: Crank Shaft Cap. : Capacity HT: High Temper	poling Water t rature	WIN GI Winterthur Gas & Dies	CENTRAL SPECIFICATION	COOLING WATER	SYSTEM	
=		LI: Low lempero SAC: Scavenge /	ature Air Cooler	separate BOM avail Scale	able Dimension	Basic Material	SPECIFI Net Weight	CATION 0.001
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16	1	107.245	5.419.500	EXPANSION	TANK							0.00
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Design guidance values for the system layout

All values in Table 1 below are based on an R1 rated engine. Based on the project-specific GTD data, layout optimisations are possible.

Table 1: Pipe and tank sizes +1)

В

C

Π

F

F

Number of cylinders			5	6	7	8
Buffer unit for HT circuit	Cap.	(m³)	0.8	0.8	0.8	0.8
Cylinder cooling water feed tank only min.	Cap.	(m³)	1.5	1.5	1.5	1.5
CCW feed and drain tank (combined) min.	Cap.	(m³)	4	4	4	4
Cooling water expansion tank (LT)	Cap.	(m³)	Depend min. 10°	ing on a % of L1	ancillary F cooling	plant g wate

PROPOSAL for pipe dimensioning +2)

	A	DN	Yard d	tion						
	В	DN	suitable	suitable for main engine						
	C	DN	and ancillary plants							
	D	DN	150	150	150	200				
Nominal pipe diameter	E	DN	100	125	125	125				
	G	DN	125	125	125	150				
	Н	DN	80	80	80	80				
	I	DN	32	32	32	32				
	J	DN	50	50	50	50				

Remarks:

*1) All dimensions refer to the piping and tanks as shown in the SYSTEM PROPOSAL.

*2) Guidance regarding the pipe size selection, in relation to the project-specific flow rates in GTD, is given by the drawing FLUID VELOCITIES AND FLOW RATES, as included in the MIDS "DG9730 Various Installation Items".

Table 2: LT and HT water volumes on the engine side

Cylinder	HT circuit CCW Volume (l)	LT circuit SAC CW Volume (l)						
5	600 l	475 l a)						
6	700 l	475 l a) / 1100 l b)						
7	825 l	475 l a) / 1200 l b)						
8	950 l	500 l а) / 1300 l b)						

a) Values for executions with 1 SAC. b) Values for executions with 2 SAC.

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der *16)	
HT water)	
r (HT water)	
C) cooling water (LT water) *7)	
SAC) cooling water (LT water) *7)	

Pos.	SYSTEM COMPONENTS *1)								
001	Low sea chest								
002	High sea chest								
003	Seawater strainer								
004	Air vent (air vent pipe or equal venting system acc. to the shipyard's design)								
005	Seawater circulating pump								
006	Central cooler (LT cooling water)								
007	Automatic temperature control valve for LT circuit *13)								
008	LT water temperature sensor *13)								
009	Cooling water pump for LT circuit								
010	Lubricating oil cooler								
011	Automatic temperature control valve for HT circuit *14)								
012	HT water temperature sensor *14)								
013	Cylinder cooling water pump for HT circuit	в							
014	Pre-heating circulating pump (optional), cap. 10% from cylinder cooling pump *8)								
015	Pre-heater for main engine (HT circuit)								
016	Solenoid valve (air inlet to be interlocked with min. water level)								
017	Control air valve with air release function *15)								
018	(to be adjusted to ensure CW pressure at ME inlet 4 - 5 bar(g)) Throttling disc *5)								
019	Freshwater generator								
020	Buffer unit for HT circuit (detail drawing linked in the partlist (BOM))								
021	LT water expansion tank (detail drawing linked in the partitist (BOM)) *18)								
022	Filling pipe / inlet chemical treatment								
023	Cylinder cooling water feed and drain tank (or feed tank only)								
024	Cylinder cooler								
025	Supply pump, automatic level control (0.5 m3/h at 4 bar)								
026	Chemical water treatment refil unit *4)								
027	Transition piece (adapter) *9)	-							
028	MDO/MGO cooler								
- Air - Air	ures: vent and drain pipes are not shown on the drawing. They must be installed where required. vent and drain pipes must be fully functional at all inclination angles of the ship at which the								
enç	jine must be operational.								
*2) R	efer to the "Pipe Connection Plan" for the execution and location of the engine pipe								
*3) T	onnection. o be delivered by the engine manufacturer, i.e. already equipped on the engine side.								
*4) T A	o be installed for cooling water after-treatment during regular engine operation. ppropriate dimensions are provided in view "A". Other designs are possible.								
*5) W	/hen using a valve, lock the disc in proper position to avoid mishandling.								
*7) T	my when pos. 014 is installed. he inlet and outlet pipes to SAC must be designed to allow the engine thermal expansion								
*8) F	be fitted with expansion pieces. or guidance only, the final layout according to the engine pre-heating requirements. estalled as required (check the "Dine Connection Plan")								
*10)	Optional filling line to enable fast system refilling (e.g. after a complete system drainage)								
*13)	by means of the pre-heating pumps. A constant temperature at the engine inlet must be maintained. Temperature set-point can	E							
	be selected between 10 °C - 36 °C. WinGD recommends a set-point of 25 °C. A lower temperature of LT water assists the main engine to reach lower BSFC. If the ancillary plants require a temperature lower or higher than the LT water set-point, a separate water supply system with a different temperature set-point must be installed (please refer to the system proposal in the MIM).								
*14)	(4) A constant temperature at the engine outlet must be maintained. Required controller set-point for the main engine operation is 90 °C.								
*15)	If the selected control air valve does not have the integrated air release functionality, a separate air release valve can be installed as an alternative on the top of the buffer unit.								
*16)	Only to be used for manual venting of isolated cylinders after maintenance. To be kept closed during engine operation.								
*17)	Optional, only to be installed if needed for hydraulic balancing. If nas driven auviliaries are connected to the LT circuit, the LT expansion tank must be								
	gas-tight and must be vented to a safe area outside the engine room.								

 Seawater pipes		Drain/overflow pipes
 LT freshwater pipes		Air vent pipes
 HT freshwater pipes		Control/feed back
 Balance pipes	\equiv	Pipes on engine
 Subsidiary pipes	0	Pipe connections

				_							
				CE			OLING WATER SYST	EM			
				HT_static press.: buffer-unit, air separator: on-engin							
				hen D	Size A0						
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												Po	s. Description	\bigcirc					
												00)1 Drain						
A	007~			1.1.1.1. I.					0.0.0			00)2 Balance pipe fr	rom LT circ	uit				
			æ		_0	03			- 800	,,	,	00)3 Overflow/air ve	ent					
									-			00)4 Low level alar	m					
	Δ		U		£				*			00)5 Thermometer						
									-			00)6 Level indicator	*1)					
В	Sev	ice level			Ship's move 22°30' (roll	ment ing)				 *		00)7 Inspection cove	er *2)					В
												00)8 Filling pipe∕in	let chemic	al treatmen	t *2)			
					0	06													
	×												Remarks:						
_	prox.				0	04				b		*1)	Level indicator ca	n be omitte	ed if an al	ernative is	fitted.		
		ow level			-							*2)	Other designs like	e hinged co	vers, etc.	are also po	ssible		
	0X.)				-0	05						-	For required tank	capacity o	and pipe di	ameters ref	er to drawi	ng	
-	(appr					.00							'Central cooling	water syst	em'				
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D								4	T,	+ 	`		Table 1: Tank dim	ensions I					D
										Å			LT tank capacity	W	Х	Υ	Z		
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													0.5	800	800	330	640		
F													0.75	800	1200	500	960		F
													1.0	800	1600	670	1280		
_	٨								X 1:5				1.25	1000	1250	530	1000		
									$(\bigcirc$				1,5	1000	1500	630	1200		
F													1.75	1000	1750	730	1400		F
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			/\ W									_	Produ W-2	ct 2S	EXPA	NSION TANK		er prawn da	ential
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Tank Proposal





F													
Capacity	Α	В	С	D	E	F	G	Н	I	К	L	М	Ν
8001	Ø900	1430	1205	222	250	455	520	600	250	250	800	65	390
12001	ø1100	1520	1255	262	300	470	520	650	280	290	800	65	390



- 01 Compressed air supply from control air valve, DN15 with blank flange
- 02 Pressure indicator, DN25 with blank flange
- 03 Safety and relief valve adjustment 5,5 bar DN32 with blank flange
- 04 Level alarm high, with blank flange
- 05 Level alarm low, with blank flange
- 06 Compensation, DN80 with blank flange
- 07 Drain, DN32 with blank flange
- 08 Feed, DN32 with blank flange
- 09 Flanges for level indicator
- ©11 Valve for level indicator, self-closing type
 - 12 Level indicator

SURFACE PROTECTION SEE GROU TOLERANCING PRINCIPLE ISOBO

- 13 Level switch high, with blank flange **
- 14 Level switch low, with blank flange **

Drawn for 12001 capacity





Working pressure : 5 bar

* Wall thickness and test pressure : according to relevant classification society/rules Service temperature : max. 95°C

** Tank volume between LSH and LSL shall be no less than 150 litres. (F)



MIDS_COOLING-WATER-SYSTEM (DG9721)

WinGD-X62-S2.0

TRACK CHANGES

DATE	SUBJECT	DESCRIPTION
2021-03-01	DRAWING SET	First web upload
2024-02-20	PAAD362616A PAAD362619A	New revision
2024-05-14	PTAA081050- PAAD362616-A PAAD362619-A PAAD362620-B PAAD362621-B PTAA081045-	New revision

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