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INTEGRATION PROJECTS

Referencias de Naval

CUSTOMER Cliente	SHIPOWNER Cliente final	PROJECT Proyecto	COUNTRY Pais	YEAR ORDER Año pedido
Astilleros M. CIES	Ministerio de Agricultura, Pesca y Alimentación	Electrical Diesel Propulsion for Oceanographic Vessel with Dynamic Position System Class DP1	Spain	2000
Astilleros IZAR SESTAO	Jan De Nul	Dredger Engineering Coordination for 2x Suction Dredger 16.500m3	Belgium	2001
Astilleros IZAR SESTAO	F. TAPIAS / KNUTSEN OAS	Engineering Coordination for 2x LNG Tanker	Spain / Norway	2001
Astilleros IZAR FERROL / INGELECTRIC	Astilleros IZAR FERROL / INGELECTRIC	Research Project on Azimuthal POD Electrical Propulsion Sytems	Spain	2001
Astilleros IZAR SESTAO	Jan De Nul	Main and Dredging Electrical Equipment for 2x Hopper Suction Dredger 11.300 m3 with Dynamic Position System Class DP1	Belgium	2002
Astilleros IZAR GIJON	Jan De Nul	Main Electrical Equipment and Electrical Diesel Propulsion for 2x Trailing Hopper Suction Dredger 4.400 m3 with Dynamic Position System Class DP1	Belgium	2002
Astilleros ZAMAKONA	ESVAGT	Electrical Diesel Propulsion for 4x Stand-By & Rescue Vessel with Dynamic Position System Class DP1	Denmark	2003
Astilleros M. CIES	Ministerio de Agricultura, Pesca y Alimentación	Electrical Diesel Propulsion for Oceanographic Vessel with Dynamic Position System Class DP1 and ICES209	Spain	2005

CUSTOMER Cliente	SHIPOWNER Cliente final	PROJECT Proyecto	COUNTRY Pais	YEAR ORDER Año pedido
Astilleros IZAR SESTAO	KNUTSEN OAS	Engineering Coordination for LNG Tanker	Spain	2005
Astilleros BALENCIAGA	ADAMS OFFSHORE	Main Electrical Plant and Electrical Diesel Propulsion for Multipurpose and Dive Support Vessel with Dynamic Position System Class DP2	Kingdom Of Bahrain	2006
Astilleros LA NAVAL de Sestao	Jan De Nul	Main Electrical Plant for 2x Trailing Suction Hopper Dredger 46.000 m3 with Dynamic Position System Class DP2	Belgium	2006
Astilleros JULIANA Gijon	RIEBER SHIPPING	Main Electrical Plant and Erection Complete Electrical Instalation for 2x Multi-Streamer Seismic Vessel with Dynamic Position System Class DP2	Norway	2007
Astilleros LA NAVAL de Sestao	Jan De Nul	Automation for 2x Trailing Suction Hopper Dredger 46.000 m3 with Dynamic Position System Class DP2	Belgium	2007
Astilleros LA NAVAL de Sestao	Jan De Nul	Main Electrical Plant and Electrical Diesel Propulsion for a Fall Pipe Vessel with Dynamic Position System Class DP2	Belgium	2007
Astilleros de HUELVA	TS MARINE LTD	Main Electrical Plant and Electrical Diesel Propulsion for 2x Multipurpose Subsea Operation ROV & Support Vessel with Dynamic Position System Class DP3	Scotland	2007

CUSTOMER Cliente	SHIPOWNER Cliente final	PROJECT Proyecto	COUNTRY Pais	YEAR ORDER Año pedido
Tianjin Xinhe Shipbuilding (China)	Dredging and Maritime Management	Main and Dredging Electrical Equipment for Split Hopper Dredger 3.700 m3 with Dynamic Position System Class DP1	Luxembourg	2007
Astilleros M. CIES	Instituto Español de Oceanografía (IEO)	Electrical Diesel Propulsion for 2x Oceanographic Vessel with Dynamic Position System Class DP1 and ICES209	Spain	2008
Astilleros LA NAVAL de Sestao	Jan De Nul	Automation for Fall Pipe Vessel with Dynamic Position System Class DP2	Belgium	2008
Astilleros LA NAVAL de Sestao	Jan De Nul	Main Electrical Plant, Dredging Equipment and Auxiliary Propulsion Thruster for Trailing Suction Hopper Dredger 30.500 m3 CHARLES DARWIN	Belgium	2009
STX (KOREA)	Jan De Nul	Main Electrical Plant & Main Pump Drives for 2x Trailing Suction Hopper Dredger 7.500 m3 with Dynamic Position System Class DP1	Belgium	2009
STX (KOREA)	Jan De Nul	Main Electrical Plant and Electrical Diesel Propulsion for Stone Side Dumping Vessel with Dynamic Position System Class DP2	Belgium	2002
STX (KOREA)	Jan De Nul	Automation for Stone Side Dumping Vessel with Dynamic Position System Class DP2	Belgium	2009
Estaleiro Rio Maguari	Vale	Main Electrical Plant and Electrical Diesel Propulsion for 2x River Pusher Vessel	Brazil	2009
Uljanik Shipyard	Jan De Nul	Main Electrical Plant & Main Pump Drives for 2x Hopper Suction Dredger 14.000 m3 with Dynamic Position System Class DP2	Belgium	2011

CUSTOMER Cliente	SHIPOWNER Cliente final	PROJECT Proyecto	COUNTRY Pais	YEAR ORDER Año pedido
Astilleros LA NAVAL de Sestao	Jan De Nul	Fall Pipe Vesel and mining control System	Belgium	2011
Astilleros LA NAVAL de Sestao	Jan De Nul	Main Electrical Plant and Electrical Diesel Propulsion for a Fall Pipe Vessel with Dinamic Position System Class DP2 Automation for Fall Pipe Vessel with Dynamic Position System Class DP2	Belgium	2011
Keppel Singmarine Brasil	Keppel Singmarine Brasil	Main Electrical Plant and Electrical Diesel Propulsion for a Fall Pipe Vessel with Dinamic Position System Class DP2 Automation for Fall Pipe Vessel with Dynamic Position System Class DP2	Belgium	2011
Keppel Singmarine Brasil	Keppel Singmarine Brasil	Main Electrical Plant and Electrical Diesel Propulsion for a Fall Pipe Vessel 4500 with Dinamic Position System Class DP2 Automation for Platform Support Vessel 4500 with Dynamic Position System Class DP2	Belgium	2012
Astilleros ARMON, S.A.	INAPESCA	Electrical equipment for V-087 vessel propulsion	Spain	2012

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FREQUENCY CONVERTERS REFERENCES

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FINAL CUSTOMER / SHIPOWNER	COUNTRY	DESCRIPTION	VESSEL NAME	TOTAL QTY	RATING (KW)	TYPE	RECTIFIER TYPE	INPUT VOLTAGE	DELIVERY YEAR
Spanish Ministry of the Environment and Rural and Marine Affairs	Spain	Electrical Propulsion for Oceanographic Vessel	Vizconde de Eza	2	900	LV400	AFE	690	2000
Jan de Nul	Belgium	11300 m^3 Hopper Dredger Vessel for Dredge Pump/Discharging Pump and Jet Pump	Francis Beaufort	2	7500	MV100	2x12p DFE	2x2x1850	2002
			Filippo Bruneleschi	2					
Jan de Nul	Belgium	4400 m^3 Hopper Dredger Vessels drives: Dredge Pump/Main Propulsion/ Jet Pump/ Bow thruster	Taccola	2	3000	LV400	12p DFE	2x750	2003
				4	2150	LV400	12p DFE	2x750	
			Filippo Di Giorgio	2	1200	LV400	12p DFE	2x750	
				2	550	LV400	6p DFE	690	
Svagt	Denmark	Electrical Propulsion for Rescue Standby Vessel	Svagt Corona	4	715	LV400	12p DFE	2x750	2004
			Svagt Capella	2	300	LV200	6p DFE	400	
Spanish Ministry of the Environment and Rural and Marine Affairs	Spain	Electrical Propulsion for Oceanographic Vessel	Miguel Oliver	2	1000	DC200	AFE	400	2006
Consolidated Projects Ltd.	China	Electrical Propulsion for Towing Vessel	Jascon 20 Jascon 21	4	400	LV200	6p DFE	400	2006
Consolidated Projects Ltd.	China	Electrical Propulsion for Hotel Construction Barge	Jascon 28 Jascon 30	2	1000	LV400	AFE	440	2006
Oceanografía Mexico	Mexico	Electrical Propulsion for Multipurpose Diving / Support Vessel	Don Amado	4	1500	LV400	AFE	480	2006
			Amado Daniel	6	900	LV400	AFE	480	
Consolidated Projects Ltd.	China	Electrical Propulsion for Hotel Construction Barge	Jascon 31	1	1000	LV400	AFE	440	2007
US Navy	USA	Electrical Propulsion for Suction dredger	Essayons	1	750	LV400	AFE	600	2007
Jan de Nul	Belgium	7500 m^3 Hopper Suction Dredgers	Al Idrisi	2	4000	LV400	12p DFE	2x750	2007
				2	1500	LV400	12p DFE	2x750	
			Vitus Bering	2	750	LV400	6p DFE	690	
Oceanografía Mexico	Mexico	Electrical Propulsion for Offshore Support Vessel	Caballo Criollo	2	900	LV400	AFE	480	2007
				2	350	LV200	12p DFE	2x520	

FINAL CUSTOMER / SHIPOWNER	COUNTRY	DESCRIPTION	VESSEL NAME	TOTAL QTY	RATING (KW)	TYPE	RECTIFIER TYPE	INPUT VOLTAGE	DELIVERY YEAR
Harrah´s Casino Entertainment Inc.	USA	Electrical Propulsion for Casino Boat		3	850	LV400	AFE	480	2007
Sanco Shipping	Norway	Compressor drives for Seismic Vessel	Sanco Star Sanco Spirit	4	1200	LV400	12p DFE	2x750	2007 2008
SMIT Amandla Marine	South Africa	Electrical Propulsion for Fuel Bunker Barge Vessel	Smit Lipuma	2 1	500 420	LV200 LV200	AFE AFE	400 400	2007
Oceanografía Mexico	Mexico	Electrical Propulsion for Offshore Support Vessel	Caballo Lusitano	2 2	900 350	LV400 LV200	AFE 12p DFE	480 2x520	2008
Adams	Bahrein	Electrical Propulsion for Multipurpose Diving / Support Vessel	Adams Challenge	2 1 2	3000 1400 1400	LV400 LV400 LV400	AFE AFE AFE	690 690 690	2008 2007 2007
Jan de Nul	Belgium	Electrical Propulsion for Side Stone Dumping Vessel	Willem de Vlamingh	2 2	2500 2000	LV400 LV400	12p DFE 12p DFE	2x750 2x750	2007
		Electrical Propulsion for Platform Supply Vessel	C485 C486	4 2 4	3200 1400 1400	LV400 LV400 LV400	AFE AFE AFE	690 690 690	2008
Jan de Nul	Belgium	46000 m^3 Hopper Dredger Vessel	Cristobal Colón	2 2 2	8500 2250	MV500 MV100	12p DFE 12p DFE	2x1800 2x1850	2008
Jan de Nul	Belgium	Split Hopper Dredger Vessel	De Laperouse	1 1 1 1	3300 1200 1200	LV400 LV400 LV400	AFE (Double Fed) AFE AFE	690 690 690	2008
US Navy	USA	Electrical Thruster propulson for Missile Range Instrumentation Ship T-AGM	Howard L Lorenzen	1	2300	LV400	AFE	690	2008
Jan de Nul	Belgium	Electrical Porpulsion for Fall Pipe and Mining Vessel	Simon Stevin	4 4	4500 2200	MV100 MV100	12p DFE 12p DFE	2x1850 2x1850	2008

FINAL CUSTOMER / SHIPOWNER	COUNTRY	DESCRIPTION	VESSEL NAME	TOTAL QTY	RATING (KW)	TYPE	RECTIFIER TYPE	INPUT VOLTAGE	DELIVERY YEAR
Noordhoek Offshore bv	The Netherlands	Electrical Propulsion for Multipurpose Diving / support Vessel	Noordhoek Constructor	2	1500	LV400	AFE	480	2008
				1	900	LV400	AFE	480	
				1	710	LV400	AFE	480	
Jan de Nul	Belgium	46000 m^3 Hopper Dredger Vessel	Leiv Eiriksson	2	8500	MV500	12p DFE	2x1800	2009
				2					
				2	2250	MV100	12p DFE	2x1850	
Vestland Offshore	Norway	Compressor drives for Seismic Vessel	Ocean Europe	2	1200	LV400	12p DFE	2x725	2009
Oceanografía Mexico	Mexico	Electrical Propulsion for Offshore Support Vessel	Caballo As de Oros						2009
			Caballo Siete Leguas	12	900	LV400	AFE	480	2009
			Don Alfonso						2011
			Caballo Galiceno						2011
			Caballo Xanthus	12	400	LV200	12p DFE	2x520	2011
			Caballo Genitor						2011
Oceanografía Mexico	Mexico	Electrical Propulsion for Multipurpose Diving / support Vessel	Nordhoek Pathfinder	2	450	LV200	AFE	480	2009
				2	900	LV400	AFE	480	2010
Oceanografía Mexico	Mexico	Electrical Propulsion for Multipurpose Diving / support Vessel	Don Daniel	2	1500	LV400	AFE	480	2010
				3	900	LV400	AFE	480	2010
Jan de Nul	Belgium	Electrical propulsion for Dredging Split Barges Vessels	Arent	4	750	LV400	AFE	400	2010
			Leeuw					400	2010
			Marques de Prie					400	2011
			Tiger					400	2011
Ezion Maritime	Singapore	Electrical Propulsion for 13000 dwt Deck Cargo Vessel	Teras Navigator	2	2800	LV400	AFE	690	2010
				2	1400	LV400	AFE	690	
Stemat bv	Netherlands	Electrical Propulsion for DP2 special service workboat	Stemat Spirit	1	900	LV400	AFE	380	2009
Jan de Nul	Belgium	30500 m3 Hopper Suction Dredger	Charles Darwin	2	8500	MV500	12p DFE	2x1800	2010
				1	900	LV400	12p DFE	2x725	
Vale	Brazil	Electrical Propulsion for river Tug Vessel	C436	6	1650	LV400	AFE	690	2010
			C437						

FINAL CUSTOMER / SHIPOWNER	COUNTRY	DESCRIPTION	VESSEL NAME	TOTAL QTY	RATING (KW)	TYPE	RECTIFIER TYPE	INPUT VOLTAGE	DELIVERY YEAR
Dragages et Ports	France	Dredgeing and propulsion Converters for 1500m3 Sand Dredgers	293	2	Multidrive	LV400	AFE	690	2012
Dragages et Ports	France	Dredgeing and propulsion Converters for 2600m3 Sand Dredgers	294	1	Multidrive	LV400	AFE	690	2012
		Electrical Propulsion for Offshore Support Vessel	YN450 YN451	4 4	900 400	LV400 LV200	AFE 12p DFE	480 2x520	2012
Keppel Singmarine Brasil	Brazil	Electrical Propulsion for 4500 DWT-PSV Vessel	H-1002	2	2800	LV400	AFE	2x1850	2012
Gilfmark Offshore	USA	Electrical Propulsion for PSVs	B850/1 B853/1 B850/1	2 2 2	2200	LV400	AFE	690V	2012
		Electrical Propulsion for Osa Goliath Offshore Construction Vessel	504	3	4300	LV400	AFE	690V	2012
		Electrical Propulsion for 100m 4L Lift Boat	JHI-J006	3 3	1100 800	LV400	AFE	690V	2012
Blue Ship Invest		Electrical Propulsion for PX121 Platform Supply Vessel	Hull 296 Hull 297 Hull 298 Hull 299	8 4 4	2700 1100 1100	LV400	12p DFE	2x732	2013 2012 2013 2013
INAPESCA	Mexico	Electrical Propulsion for Research Vessel in AC fulfiling ICES-209	V087	2	1100	LV400	AFE	690V	2013
	Singapore	Electrical Bow Thruster Propulsion for PSV	GS12139 GS12140	4	560	LV400	AFE	415	2013
BRITOIL	UK	Electrical Propulsion for PX121 Platform Supply Vessel	H200434 H200435	4 2	2200 1100	LV400	12p DFE	2x732	2013 2013
FJELLSTRAND	Norway	Offshore Service Vessel SX163	NB1697	1 2 2	1100 1500 2000	LV400	12p DFE	2x732	2013
	The Netherlands	Electrical Propulsion for Passanger Vessel	341	2 1	850 450	LV400 LV400	AFE AFE	400 400	2013

MOTORS & GENERATORS REFERENCES

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CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGETEAM POWER TECHNOLOGY-MARINE	SPAIN	M	1050	190	690	2	710	2013
STX OSV ELECTRO AS	NORWAY	M	2200	1200	690	1	500	2013
STX OSV ELECTRO AS	NORWAY	M	2200	1200	690	1	500	2013
STX OSV ELECTRO AS	NORWAY	M	1200	1200	660	2	450	2013
TECHSOL MARINE Inc.	VIETNAM	M	2800	1200	690	1	500	2013
TECHSOL MARINE Inc.	VIETNAM	M	2800	1200	690	1	500	2012
STX OSV ELECTRO, A.S.	SINGAPORE	M	2000	1200	660	12	500	2013
STX OSV ELECTRO, A.S.	SINGAPORE	M	1600	1800	690	6	450	2013
ULSTEIN POWER & CONTROL	NORWAY	M	2200	1200	660	2	500	2012
ULSTEIN POWER & CONTROL	NORWAY	M	2200	1200	660	2	500	2013
ULSTEIN POWER & CONTROL	NORWAY	M	2200	1200	660	2	500	2012
COMBINATIE CROON BAKKER	HOLLAND	M	2500	0-660	660	3	630	2012
COMBINATIE CROON BAKKER	HOLLAND	M	1500	800	660	2	500	2012
COMBINATIE CROON BAKKER	HOLLAND	M	2400	900	660	1	630	2012
BAKKER SLIEDRECHT Electro Industrie B.V.	CROATIA	M	1500	1200	660	1	450	2012
C.M.R. (Far East) Pte. Ltd.	SINGAPORE	M	600	1200	690	2	400	2013
C.M.R. (Far East) Pte. Ltd.	SINGAPORE	M	600	1200	690	1	400	2013
C.M.R. (Far East) Pte. Ltd.	SINGAPORE	M	1000	1200	690	3	400	2013
STX Osv	SINGAPORE	M	1600	1200	660	2	450	2012
INGETEAM POWER TECHNOLOGY S.A.	BRASIL	M	2500	900	690	2	560	2012
ABB OY	ITALY	M	2800	300	6630	2	900	2012
COMBINATIE CROON BAKKER	HOLLAND	M	2200	800	600	2	630	2012
COMBINATIE CROON BAKKER	HOLLAND	M	2400	900	660	2	630	2012

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
COMBINATIE CROON BAKKER	HOLLAND	M	2950	600	660	1	630	2012
COMBINATIE CROON BAKKER	HOLLAND	M	2950	600	660	2	630	2012
INGETEAM MARINE	BELGIUM	G	5000	1500	690	1	710	2012
BAKKER	MALAYSIA	M	430	600	660	4	450	2012
BAKKER	MALAYSIA	M	1500	1200	660	2	450	2012
BAKKER	MALAYSIA	M	3000	1200	660	2	560	2012
BAKKER	MALAYSIA	G	9500	1200	6600	2	900	2012
STX OSV	ROMANIA	M	1900	1200	690	2	500	2012
STX OSV	ROMANIA	M	2200	900	660	2	500	2012
STX OSV	ROMANIA	M	2200	900	660	2	500	2012
STX OSV	ROMANIA	M	2200	900	660	2	500	2012
ABB OY	ITALY	M	0-2300	0-181	0-660	2	900	2012
BAKKER Sliedrecht	SPAIN	M	0-250	0-600	0-690	1	400	2012
L-3 MARINE SYSTEMS	SINGAPORE	M	2600	155	690	2	1000	2012
L-3 MARINE SYSTEMS	SINGAPORE	M	1200	900	690	1	450	2012
JAN DE NUL	SINGAPORE	G	12500/8750	1200/840	6000/4200	2	900	2012
FINCANTIERI CANTIERI NAVALI	ITALY	M	1200	900	6.600	1	500	2012
BAKKER Sliedrecht	HOLAND	M	920	1000/1800	600	1	560	2012
INGETEAM MARINE	BRASIL	M	2500	900	690	2	560	2012
STX OSV	NORWAY	M	2200	1200	660	2	500	2012
STX OSV	NORWAY	M	2200	1200	660	2	500	2012
STX OSV	NORWAY	M	2200	1200	660	2	500	2012
STX OSV	NORWAY	M	1200	1800	660	1	400	2012
STX OSV	NORWAY	M	1200	1800	660	1	400	2012
STX OSV	NORWAY	M	1200	1800	660	1	400	2011

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
STX OSV	ROMANIA	M	2000	1200	660	2	500	2012
STX OSV	VIETNAM	M	2000	1200	660	2	500	2011
STX NORWAY ELECTRO	NORWAY	M	0-1600	0-1200	660	2	450	2011
BAKKER SLIEDRECHT	HOLLAND	M	0-3500	0-1000	0-3100	1	630	2011
INGETEAM MARINE	BELGIUM	G	5625	720	6600	5	900	2012
INGETEAM MARINE	SPAIN	M	0-2000	0-750	0-3300	2	560	2012
INGETEAM MARINE	SPAIN	M	0-3350	0-1000	0-3300	4	630	2012
INGETEAM MARINE	SPAIN	M	0-2000	0-750	0-3300	2	560	2012
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-750	660	1	450	2011
STX NORWAY ELECTRO	NORWAY	M	0-2200	0-1200	0-660	2	500	2011
BAKKER SLIEDRECHT	CHINA	M	0-4500	0-420	0-2900	1	800	2012
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-750	0-660	4	450	2012
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-1000	0-3100	2	630	2012
BAKKER SLIEDRECHT	HOLLAND	M	0-5000	0-1111	0-3100	1	710	2011
BAKKER SLIEDRECHT	HOLLAND	M	0-5000	0-1111	0-3100	2	710	2011
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-1000	0-3100	2	630	2011
INGETEAM MARINE	SOUTH KOREA	M	0-4000	0-1000	0-690	1	630	2011
INGETEAM MARINE	SOUTH KOREA	M	0-1500	0-900	0-690	1	500	2011
STX NORWAY ELECTRO	NORWAY	M	0-2000	0-1200	0-660	2	500	2011
STX NORWAY ELECTRO	INDIA	M	0-1600	0-1200	0-660	2	450	2012
STX NORWAY ELECTRO	INDIA	M	0-1600	0-1200	0-660	2	450	2012
STX NORWAY ELECTRO	INDIA	M	0-1600	0-1200	0-660	2	450	2012
STX NORWAY ELECTRO	INDIA	M	0-1600	0-1200	0-660	2	450	2012
BAKKER SLIEDRECHT	HOLLAND	M	1250	330	660	1	710	2011
BAKKER SLIEDRECHT	HOLLAND	M	0-1750/1750	0-1200	0-660	2	450	2011

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	HOLLAND	M	0-1750/1750	0-1200	0-660	2	450	2011
INGETEAM MARINE	CROATIA	M	0-8500	0-1000	2X3X3150	1	1000	2011
STX NORWAY ELECTRO	VIETNAM	M	0-2000	0-1200	0-660	2	500	2011
STX NORWAY ELECTRO	NORWAY	M	0-2000	0-1200	0-660	2	500	2011
STX NORWAY ELECTRO	VIETNAM	M	0-2000	0-1200	0-660	2	500	2011
ULJANIK BRODOGRADILISTE D.D.	CROATIA	G	8750	1200	6600	2	900	2012
STX NORWAY ELECTRO	NORWAY	M	0-2200	0-1200	0-660	2	500	2011
INGETEAM MARINE	CROATIA	M	0-8500	0-1000	2 x3 x3150	1	1000	2011
ULJANIK BRODOGRADILISTE D.D.	CROATIA	G	8750	1200	6600	2	900	2011
ULJANIK BRODOGRADILISTE D.D.	CROATIA	M	0-8500	0-1000	2 x3 x3150	1	1000	2012
BAKKER SLIEDRECHT	EMIRATOS ARABES	G	800	1000	380	1	450	2011
BAKKER SLIEDRECHT	BELGIUM	M	0-520	0-350	0-660	2	500	2011
STX NORWAY ELECTRO	NORWAY	M	0-1600	0-1000	0-660	3	500	2011
STX NORWAY ELECTRO	NORWAY	M	0-550	0-1108	0-660	2	400	2011
STX NORWAY ELECTRO	NORWAY	M	0-550	0-1108	0-660	2	400	2011
STX NORWAY ELECTRO	NORWAY	M	0-1600	0-1000	0-660	3	500	2011
STX NORWAY ELECTRO	ROUMANIA	M	0-2500	0-1200	0-660	2	500	2010
STX NORWAY ELECTRO	ROUMANIA	M	0-2500	0-1200	0-660	2	500	2011
BAKKER SLIEDRECHT	HOLLAND	M	0-340	0-1000	0-660	1	400	2010
INGETEAM MARINE	KOREA	G	4815	750	690	2	900	2010
INGETEAM MARINE	KOREA	G	4815	750	690	2	900	2010

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGETEAM MARINE	SOUTH KOREA	M	0-750-750	0-1000/1050	0-660/660	1	450	2010
INGETEAM MARINE	SOUTH KOREA	M	0-750-750	0-1000/1050	0-660/660	1	450	2010
ULSTEIN POWER & CONTROL A.S.	NORWAY	M	0-450	0-1200	0-690	2	400	2010
ULSTEIN POWER & CONTROL A.S.	NORWAY	M	0-1550	0-1200	0-690	2	450	2010
ULSTEIN POWER & CONTROL A.S.	NORWAY	M	0-450	0-1200	0-690	2	400	2010
ULSTEIN POWER & CONTROL A.S.	NORWAY	M	0-1550	0-1200	0-690	2	450	2010
INGETEAM MARINE	BELGIUM	M	0-7500	0-1000	3300	1	900	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-410	0-1500	0-500	1	355	2010
INGETEAM MARINE	BRASIL	M	0-1600	0-1600	0-690	3	450	2010
INGETEAM MARINE	BRASIL	M	0-1600	0-1600	0-690	3	450	2010
INGETEAM MARINE	SPAIN	M	0-2150	0-600	0-3300	1	560	2010
CMR	CHINA	M	0-1120	0-1200	0-690	2	450	2010
CMR	CHINA	M	0-2500	0-1600	0-690	2	500	2010
GARCIA COSTAS	SPAIN	M	720	1500	400	1	400	2010
STX EUROPE	NORWAY	M	0-550	0-1108	0-660	2	400	2010
STX EUROPE	NORWAY	M	0-1600	0-1000	0-660	3	500	2010
STX EUROPE	NORWAY	M	0-550	0-1108	0-660	2	400	2010
STX EUROPE	NORWAY	M	0-1600	0-1000	0-660	3	500	2010
STX EUROPE	NORWAY	M	0-550	0-1108	0-660	2	400	2010
STX EUROPE	NORWAY	M	0-1600	0-1000	0-660	3	500	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-1250	0-900	0-690	2	450	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-1000	0-1800	0-690	2	400	2010
BAKKER SLIEDRECHT	BELGIUM	G	2500	720	3300	1	710	2010

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGETEAM MARINE	SPAIN	M	0-525	0-1800	0-690	1	400	2009
INGETEAM MARINE	BELGIUM	G	13500	1200	6600	2	900	2009
INGETEAM MARINE	SPAIN	M	1350	900	6600	3	500	2009
INGETEAM MARINE	SPAIN	M	0-7500	0-1000	0-3100	2	900	2010
INGETEAM MARINE	SPAIN	M	1600	900	6600	2	500	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-1000	0-3100	2	630	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-1000	0-3100	2	630	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-750	0-660	4	450	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-5000	0-1111	0-3100	3	710	2010
BAKKER SLIEDRECHT	SPAIN	M	0-3400/3400	0-280/320	0-3100/3100	2	800	2009
BAKKER SLIEDRECHT	SPAIN	M	0-3400/3400	0-280/320	0-3100/3100	1	800	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-2500	0-660	0-660	3	630	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-2400	0-900	0-660	1	630	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-800	0-660	2	500	2009
ABB OY	ITALY	M	0-2300	0-181	0-660	2	900	2009
ABB OY	ITALY	M	0-2300	0-181	0-660	2	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-2000	0-450	0-3300	1	800	2010
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1800	0-660	2	450	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-410/410	0-1500/2000	0-660/660	1	355	2009
BAKKER SLIEDRECHT	HOLLAND	M	250-1250/1250	200-1000/1200	0-660/660	2	450	2009
BAKKER SLIEDRECHT	HOLLAND	M	1500-7500/7500	200-1000/1300	0-3100/3100	1	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-700	0-1000	0-660	2	400	2009

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	HOLLAND	M	0-410/410	0-1500/2000	0-660/660	1	355	2009
BAKKER SLIEDRECHT	HOLLAND	M	250-1250/1250	200-1000/1200	0-660/660	2	450	2009
BAKKER SLIEDRECHT	HOLLAND	M	1500-7500/7500	200-1000/1300	0-3100/3100	1	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-700	0-1000	0-660	2	400	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-410	0-1500/2000	0-660/660	1	355	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-410	0-1500/2000	0-660/660	1	355	2009
BAKKER SLIEDRECHT	CROATIA	G	7778	1200	6600	3	900	2009
BAKKER SLIEDRECHT	CROATIA	M	0-5000/5000	0-1000/1200	0-3100/3100	3	710	2009
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2009
BAKKER SLIEDRECHT	CROATIA	M	0-3500	0-1000	0-3100	2	630	2009
INGETEAM MARINE	BELGIUM	G	5625	720	6600	5	900	2008
INGETEAM MARINE	SPAIN	M	0-3350/3350	0-1000/1200	0-3300/3300	4	630	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-6000/6000	0-250/300	0-3100/3100	1	900	2009
BAKKER SLIEDRECHT	BELGIUM	M	1250	0-300	0-660	1	800	2009
BAKKER SLIEDRECHT	BELGIUM	M	1250	0-300	0-660	1	800	2009
INGETEAM MARINE	SPAIN	M	2000	0-750	0-3300	2	560	2008
INGETEAM MARINE	SPAIN	M	0-2150	0-900	0-3300	2	560	2008
INGETEAM MARINE	SPAIN	M	0-8000/8000	0-1000/1200	0-3300/3300	2	900	2008
INGETEAM MARINE	SPAIN	M	2150	900	6600	3	560	2008
INGETEAM MARINE	SPAIN	M	0-900	0-230	0-750	2	800	2009
INGETEAM MARINE	BELGIUM	G	18500	900	6600	2	1320	2009
INGETEAM MARINE	SPAIN	M	0-900	0-230	0-750	2	800	2009

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	HOLLAND	M	2500	333	2000	1	900	2009
INGETEAM MARINE	SPAIN	M	0-3000/3000	0-1000/1200	0-690/690	1	560	2008
GOIMENDI,S.A.	HOLLAND	M	860	1800	6600	4	400	2008
GOIMENDI,S.A.	HOLLAND	M	420	1800	6600	2	400	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2009
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2009
BAKKER SLIEDRECHT	CROATIA	M	0-5000/5000	0-1000/1200	0-3100/3100	3	710	2009
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2009
BAKKER SLIEDRECHT	CROATIA	G	7778	1200	6600	3	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-2950	0-660	0-660	1	630	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-2400	0-900	0-660	1	630	2008
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2008
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1000	0-660	2	500	2009
BAKKER SLIEDRECHT	HOLLAND	G	4000	600	690	2	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1000	0-660	1	500	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-340	0-1000	0-660	4	400	2009
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-1300	0-1200	0-690	2	450	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-3000	0/1200	0-690	2	560	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-1200	0/1200	0-690	1	450	2008

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2008
BAKKER SLIEDRECHT	CROATIA	M	0-5000/5000	0-1000/1200	0-3100/3100	3	710	2008
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2008
BAKKER SLIEDRECHT	CROATIA	G	7778	1200	6600	3	900	2008
BAKKER SLIEDRECHT	BELGIUM	M	0-5000/5000	0-1000/1200	0-3100/3100	1	710	2008
BAKKER SLIEDRECHT	CROATIA	G	7778	1200	6600	1	900	2008
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2008
BAKKER SLIEDRECHT	CROATIA	G	7778	1200	6600	3	900	2008
BAKKER SLIEDRECHT	CROATIA	M	0-3500/3500	0-1000/1200	0-3100/3100	2	630	2008
BAKKER SLIEDRECHT	CROATIA	M	0-5000/5000	0-1000/1200	0-3100/3100	3	710	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-3500	0-500	0-660	2	950	2009
BAKKER SLIEDRECHT	HOLLAND	G	5400	750	6600	6	900	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-1150	0-1000	0-660	2	450	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-5500	0-500	0-3100	2	1120	2009
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	G	5000	1500	690	2	710	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	2150	0-1000	0-690	2	500	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-1500	0-1000	0-690	2	500	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-6000/6000	0-258/310	0-3100/3100	1	900	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2009
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2009

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	HOLLAND	M	0-1200	0-1000	0-660	2	560	2009
GOIMENDI,S.A.	HOLLAND	M	860	1800	6600	4	400	2008
GOIMENDI,S.A.	HOLLAND	M	420	1800	6600	2	400	2008
BAKKER SLIEDRECHT	BELGIUM	M	0-6500/6500	0-253/325	0-3100/3100	2	900	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-8000	0-1000	0-3300	2	900	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-2150	0-900	0-3300	2	560	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	18500	900	6600	2	1320	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	2150	900	6600	1	560	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	2150	900	6600	2	560	2008
BAKKER SLIEDRECHT	HOLLAND	M	0-750	0-1500	0-660	1	450	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-4000	0-1000	0-690	1	630	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-4000	0-1000	0-690	1	630	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-4000	0-1000	0-690	1	630	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-1500	0-900	0-690	1	500	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-1500	0-900	0-690	1	500	2007

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-1500	0-900	0-690	1	500	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-750	0-1000	0-690	1	450	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	G	4650	750	690	2	900	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	M	0-750	0-1000	0-690	1	450	2008
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	KOREA	G	4650	750	690	2	900	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2950	0-660	0-660	3	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2400	0-900	0-660	2	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2200	0-800	0-660	1	630	2007
BAKKER SLIEDRECHT	CHINA	M	0-1640	0-1600	0-660	1	500	2007
BAKKER SLIEDRECHT	CHINA	M	0-1640	0-1600	0-660	1	500	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-900	0-660	2	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-3000	0-900	0-660	4	630	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	ESPAÑA	G	3119	900	690	4	710	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	ESPAÑA	M	0-990/990	0-1200/1320	0-690/690	2	450	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	ESPAÑA	M	0-2450/2450	0/900/990	0-690/690	2	560	2007
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	ESPAÑA	M	0-1000	0-1000	0-690	1	400	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1200	0-660	1	450	2007

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
JUAN AZCUE,S.A.	SPAIN	M	650	2900	660	2	355	2007
BAKKER SLIEDRECHT	BELGIUM	M	0-6500/6500	0-253/325	0-3100/3100	2	900	2007
BAKKER SLIEDRECHT	HOLLAND	G	800	1000	500	1	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	800	1000	500	1	630	2007
ECHEBASTAR FLEET, S.L.U	SPAIN	G	1000	1500	380	1	450	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1800	0-660	2	450	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-650	0-1800	0-660	2	400	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-650	0-1800	0-660	2	400	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1800	0-660	2	450	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1500	0-1200	0-660	2	450	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1700	0-900	0-660	1	500	2007
BAKKER SLIEDRECHT	HOLLAND	G	1800	750	400	2	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-850	0-1000	0-660	1	450	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-350	0-750	0-660	2	400	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-1650	0-840	0-660	2	560	2007
BAKKER SLIEDRECHT	HOLLAND	G	3500	750	690	2	710	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-350	0-750	0-660	2	355	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2200	0-800	0-660	1	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2400	0-900	0-660	2	630	2007
BAKKER SLIEDRECHT	HOLLAND	M	0-2950	0-660	0-660	3	630	2007
ASTILLEROS DE MURUETA,S.A.	SPAIN	G	1250	1000	380	2	500	2006
ASTILLEROS DE MURUETA,S.A.	SPAIN	G	1250	1500	380	1	500	2006
ASTILLEROS DE MURUETA,S.A.	SPAIN	G	1250	1500	380	1	500	2006
ASTILLEROS DE MURUETA,S.A.	SPAIN	G	1500	1500	380	1	500	2006

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
GARCIA COSTAS,JOSE	SPAIN	M	500	1500	400	3	355	2007
BAKKER SLIEDRECHT	HOLLAND	M	880/880	300/580	400/400	1	500	2006
BAKKER SLIEDRECHT	HOLLAND	G	1800	1300	600	1	500	2006
BAKKER SLIEDRECHT	HOLLAND	M	1333/1333	867/1200	600/600	1	560	2006
GARCIA COSTAS,JOSE	SPAIN	G	380	1500	500	1	355	2006
BAKKER SLIEDRECHT	CHINA	M	550	1500	400	1	400	2005
BAKKER SLIEDRECHT	CHINA	M	550	1500	400	1	400	2006
JOSE GARCIA COSTAS, S.L.U.	SPAIN	M	316	1800	440	1	355	2005
BAKKER SLIEDRECHT	BELGIUM	M	880	1800	480	1	400	2005
BAKKER SLIEDRECHT	BELGIUM	M	450	1800	450	1	355	2005
BAKKER SLIEDRECHT	BELGIUM	M	450	1800	450	1	355	2005
BAKKER SLIEDRECHT	HOLLAND	M	0-2200	0-800	0-600	1	630	2006
BAKKER SLIEDRECHT	HOLLAND	M	0-2400	0-900	0-660	2	630	2006
BAKKER SLIEDRECHT	HOLLAND	M	0-2950	0-660	0-660	3	630	2006
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0/1000	0/178	0/725	2	800	2005
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	G	1050	1500	690	4	450	2005
GARCIA COSTAS	SPAIN	M	450	1500	400	2	355	2005
BAKKER SLIEDRECHT	CHINA	M	0-1750	0-1066	0-690	1	500	2005
BAKKER SLIEDRECHT	BELGIUM	M	0-250	0-1000	0-660	3	355	2006
MARPRO TRAWLING	SOUTH AFRICA	M	331	900	410	1	355	2006
BAKKER SLIEDRECHT	BELGIUM	M	1250	280	3x660	1	800	2006
PESQUERIA VASCO MONTAÑANESA, S.A.	SPAIN	G	850	1500	380	1	400	2005

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
GARCIA COSTAS	SPAIN	G	135	1500	220	1	355	2005
BAKKER SLIEDRECHT	BELGIUM	M	0-250	0-1000	0-660	4	355	2005
BAKKER SLIEDRECHT	BELGIUM	M	750	1500	400	1	400	2005
BAKKER SLIEDRECHT	BELGIUM	M	1250	296	616	1	800	2005
BAKKER SLIEDRECHT	HOLLAND	M	700	1500	415	1	400	2005
GARCIA COSTAS	SPAIN	M	441	1500	400	1	355	2005
GARCIA COSTAS	SPAIN	M	331	1500	400	2	355	2005
GARCIA COSTAS	SPAIN	G	500	1500	380	2	355	2004
GARCIA COSTAS	SPAIN	G	1200	1500	400	2	450	2005
GARCIA COSTAS	SPAIN	G	1500	1500	400	1	500	2005
GARCIA COSTAS	SPAIN	G	1200	1500	400	2	450	2005
ASTILLEROS DE MURUETA	SPAIN	G	1500	1500	380	1	500	2005
ASTILLEROS DE MURUETA	SPAIN	G	595	1500	380	2	400	2005
ASTILLEROS DE MURUETA	SPAIN	G	1100	1500	380	2	500	2005
ASTILLEROS DE MURUETA	SPAIN	G	1350	1000	380	2	560	2005
BAKKER SLIEDRECHT	HOLLAND	M	0-551/551	0-1060/1700	0-680/680	1	400	2005
ATUNSA	SPAIN	G	956	1500	380	1	500	2005
GARCIA COSTAS	SPAIN	M	441	1500	400	1	355	2005
GARCIA COSTAS	SPAIN	M	515	1500	400	2	355	2005
BAKKER SLIEDRECHT	BELGIUM	M	1250	280	3x660	1	800	2005
BAKKER SLIEDRECHT	BELGIUM	M	1250	280	3x660	1	800	2005
BAKKER SLIEDRECHT	HOLLAND	M	400	1470	3x415	1	355	2004
BAKKER SLIEDRECHT	HOLLAND	M	400	1470	3x415	1	355	2004
GARCIA COSTAS	SPAIN	M	316	1800	440	1	355	2004

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	CHINA	M	0-750	0-1500	0-660	1	450	2004
GARCIA COSTAS	SPAIN	G	475	1500	380	1	355	2004
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2004
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2004
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2004
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	400	1	400	2005
GARCIA COSTAS	SPAIN	G	450	1500	400	2	355	2004
GARCIA COSTAS	SPAIN	G	450	1500	400	2	355	2004
GARCIA COSTAS	SPAIN	M	295	1500	380	1	355	2004
PESQUERIA VASCO- MONTAÑANESA	SPAIN	G	850	1500	380	1	400	2004
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-715	0-1200	0-690	1	400	2004
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-715	0-1200	0-690	1	400	2004
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-1000	0-660	2	450	2004
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-1000	0-660	2	450	2004
GARCIA COSTAS	SPAIN	M	367	1500	380	1	355	2003
BAKKER SLIEDRECHT	CHINA	M	1444	400	3x690	1	630	2004
GARCIA COSTAS	SPAIN	G	515	1500	380	1	355	2004
GARCIA COSTAS	SPAIN	G	255	1500	400	1	355	2004
BAKKER SLIEDRECHT	HOLLAND	M	0-1650	0-900	0-660	4	500	2004
GARCIA COSTAS	SPAIN	G	1000	1500	380	1	450	2003
GARCIA COSTAS	SPAIN	G	1000	1500	380	1	450	2003
GARCIA COSTAS	SPAIN	G	468	1500	500	2	355	2003

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
GARCIA COSTAS	SPAIN	M	440	900	500	1	355	2003
GARCIA COSTAS	SPAIN	M	800	1500	400	1	355	2003
GARCIA COSTAS	SPAIN	G	1150	1000	400	1	500	2003
GARCIA COSTAS	SPAIN	G	1150	1000	400	3	500	2003
GARCIA COSTAS	SPAIN	G	1500	1000	400	1	500	2003
GARCIA COSTAS	SPAIN	M	368	1500	400	3	355	2004
BAKKER SLIEDRECHT	HOLLAND	M	650	1500	380	1	400	2003
BAKKER SLIEDRECHT	HOLLAND	M	650	1500	380	1	400	2003
GARCIA COSTAS	SPAIN	G	415	1500	380	1	355	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0-2150/2150		0-690/690	1	500	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0-3000/3000	0/1000/1200	0-690/690	1	560	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	3375	1000	690	1	630	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	6750	1200	6600	1	710	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1200	1500	380	2	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1200	1500	380	1	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1500	1500	380	1	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1200	1500	380	1	500	2003
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-1000	0-660	4	450	2004
BAKKER SLIEDRECHT	HOLLAND	M	0-800	0-1000	0-660	5	450	2004
S.C.A.M./ COBRECAF CMB	FRANCE	G	500	1500	380	1	355	2003
GARCIA COSTAS	SPAIN	G	1000	1500	380	2	450	2003

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
GARCIA COSTAS	SPAIN	G	405	1500	400	1	355	2003
BAKKER SLIEDRECHT	BELGIUM	M	1700	394	3052	1	800	2003
GARCIA COSTAS	SPAIN	G	370	1500	500	1	355	2003
GARCIA COSTAS	SPAIN	G	370	1500	500	1	355	2003
GARCIA COSTAS	SPAIN	G	630	1500	400	1	400	2003
GARCIA COSTAS	SPAIN	G	450	1500	400	1	400	2003
GARCIA COSTAS	SPAIN	M	330	1000	500	1	355	2003
GARCIA COSTAS	SPAIN	G	450	1500	400	1	400	2003
GARCIA COSTAS	SPAIN	G	630	1500	400	1	400	2003
GARCIA COSTAS	SPAIN	G	370	1500	500	1	355	2003
GARCIA COSTAS	SPAIN	G	370	1500	500	1	355	2003
GARCIA COSTAS	SPAIN	M	330	1000	500	1	355	2003
GARCIA COSTAS	SPAIN	G	400	1500	400	2	355	2003
GARCIA COSTAS	SPAIN	G	1000	1500	400	2	450	2003
GARCIA COSTAS	SPAIN	M	588	1500	400	1	355	2003
GARCIA COSTAS	SPAIN	G	1500	1000	400	1	560	2003
GARCIA COSTAS	SPAIN	G	1150	1000	400	1	500	2003
GARCIA COSTAS	SPAIN	G	1150	1000	400	3	500	2003
GARCIA COSTAS	SPAIN	M	588	1500	400	1	355	2003
BAKKER SLIEDRECHT	HOLLAND	M	750	1200	3x440	1	400	2003
M.S.P.	GERMANY	G	510	750	380	1	450	2003
BAKKER SLIEDRECHT	BELGIUM	M	450	1775	3x450	1	355	2003
GARCIA COSTAS	SPAIN	M	515	1500	400	3	355	2003

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1250	1000	380	1	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1250	1500	380	1	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1250	1500	380	1	500	2003
ASTILLEROS DE MURUETA, S.A.	SPAIN	G	1250	1000	380	2	500	2003
GARCIA COSTAS	SPAIN	M	588	1500	400	1	355	2003
PESQUERAS ECHEBASTAR, S.A.	SPAIN	G	1300	1500	380	2	450	2002
BAKKER SLIEDRECHT	BELGIUM	M	1100	750	440	2	450	2003
BAKKER SLIEDRECHT	INDIA	M	1075		750	1	630	2003
GOIMENDI,S.A.	SPAIN	M	600	1800	6600	2	400	2003
BAKKER SLIEDRECHT	BELGIUM	M	0-3400	0-280	0-3100	1	800	2003
BAKKER SLIEDRECHT	HOLLAND	M	1320	352,8	690	2	500	2003
BAKKER SLIEDRECHT	HOLLAND	M	1320	352,8	690	2	500	2003
BAKKER SLIEDRECHT	HOLLAND	M	400	1770	3x440	1	355	2002
BAKKER SLIEDRECHT	HOLLAND	M	575	1000	3x660	2	450	2002
BAKKER SLIEDRECHT	HOLLAND	M	575	1800	3x660	1	400	2002
BAKKER SLIEDRECHT	HOLLAND	M	575	1000	3x660	2	450	2003
BAKKER SLIEDRECHT	HOLLAND	M	575	1800	3x660	1	400	2003
BAKKER SLIEDRECHT	HOLLAND	M	1000	1200	3x660	1	500	2002
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-2150	100/1100	0-690	2	500	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-1200	0-1000	0-690	1	450	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	3375	1000	690	2	630	2003

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	G	625	1500	690	1	400	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-3000	100/1200	0-690	1	560	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	550	1500/0/1500	690	1	400	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-2150	100/1100	0-690	2	500	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	3375	1000	690	2	630	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	G	625	1500	690	1	400	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	550	1500/0/1500	690	1	400	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-3000	0-1200	0-690	1	560	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	SPAIN	M	0-1200	0-1000	0-690	1	450	2003
GARCIA COSTAS	SPAIN	M	440	900	500	2	355	2002
GARCIA COSTAS	SPAIN	G	220	1500	380	1	355	2002
GARCIA COSTAS	SPAIN	G	1000	1500	380	1	450	2002
GARCIA COSTAS	SPAIN	G	1000	1500	380	1	450	2002
GOIMENDI,S.A.	SPAIN	M	600	1800	6600	2	400	2002
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0-7500/7500	0-1000/1200	0-3300/3300	1	900	2003

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	6750	1200	6600	2	710	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0-3400/3400	0-280/320	0-3300/3300	1	800	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-3400/3400	0-280/320	0-3300/3300	1	800	2003
BAKKER SLIEDRECHT	HOLLAND	M	630/630	800/1200	660/660	1	400	2002
BAKKER SLIEDRECHT	HOLLAND	M	550	1500	660	1	400	2002
GARCIA COSTAS	SPAIN	M	490	1500	400	2	355	2001
GARCIA COSTAS	SPAIN	M	330	1500	400	2	355	2002
BAKKER SLIEDRECHT	SCOTLAND	M	800	1000	690	2	400	2002
BAKKER SLIEDRECHT	ENGLAND	M	1100	296	3x660	1	800	2002
BAKKER SLIEDRECHT	HOLLAND	M	500	1470	400	2	355	2002
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0-3400/3400	0-280/320	0-3300/3300	1	800	2002
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	M	0/7500/7500	0/1000/1200	0-3300/3300	1	900	2003
INGELECTRIC INGENIERIA DE SISTEMAS S.A.	BELGIUM	G	6750	1200	6600	2	710	2003
GARCIA COSTAS	SPAIN	G	550	1000	380	1	400	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-3800	0-1000	0-3100	2	630	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-3800	0-1000	0-3100	2	630	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-6000	0-1000	0-3100	2	710	2002
BAKKER SLIEDRECHT	BELGIUM	G	2250	1800	440	1	560	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-575	0-750	0-440	2	400	2002

CUSTOMER CLIENTE	COUNTRY País	MOTOR Generator	POWER Potencia	SPEED (rpm) Velocidad	VOLTAGE Tensión (V)	QUANTITY Cantidad	SIZE Tamaño	DELIVERY Entrega
BAKKER SLIEDRECHT	BELGIUM	M	0-900	0-1200	0-690	2	400	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-3800	0-1000	0-3100	1	630	2002
BAKKER SLIEDRECHT	BELGIUM	G	10200	1200	6600	3	900	2002
BAKKER SLIEDRECHT	BELGIUM	M	400	1800	6600	3	355	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-575	0-750	0-440	2	400	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-575	0-750	0-440	1	400	2002
BAKKER SLIEDRECHT	BELGIUM	M	0-575	0-750	0-440	1	400	2002
GARCIA COSTAS	SPAIN	M	368	1500	380	1	355	2002
BAKKER SLIEDRECHT	HOLLAND	M	0-6500	0-253	0-3100	1	900	2003
BAKKER SLIEDRECHT	HOLLAND	M	0-6500	0-253	0-3100	1	900	2003

Ingeteam

CASE STUDIES - PROJECTS

Referencias de Naval

MEGA HOPPER SUCTION DREDGER

“CRISTOBAL COLON” AND “LEIV EIRIKSSON”

WITH A HOPPER CAPACITY OF 46.000 M³

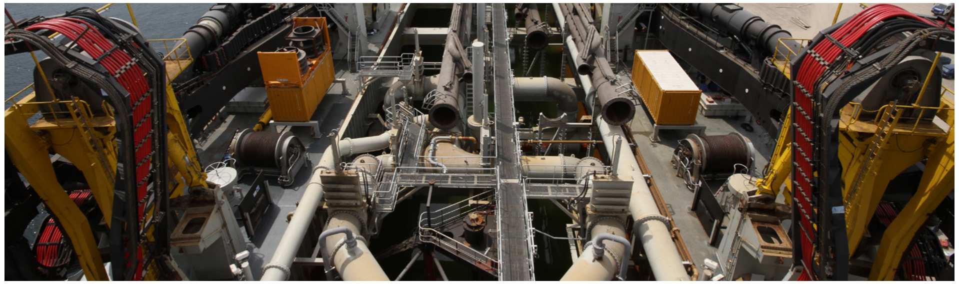
- Owned by Jan De Nul Group, Belgium
- Built by La Naval - Spain
- Certificate of Bureau Veritas for the Class DYNAPOS AM/AT
- Ingeteam delivery to each vessel:

    Electric Power Plant

    Power Management System

    Integrated Automation System

Main Characteristics of the Vessel



Cristobal Colón

- 46.000m^3 tralling suction hopper dredger
- Deadweight 78.000 tan
- Length averall 223.000 m
- Breadth 41.0 m
- Daught loaded 15.15m
- Maximum dredging depth 155.0 m
- Suction pipe diameter 2 x 1.300 mm
- Pump power (tralling) 2 X 6.500 KW
- Pump power (discharging) 16.000 KW
- Propulsion power 2 x 19.200 KW
- Total installed diesel power 41.500 KW
- Speed 18.0 kn
- Accommodation 46 persons

Ingeteam Scope of Supply

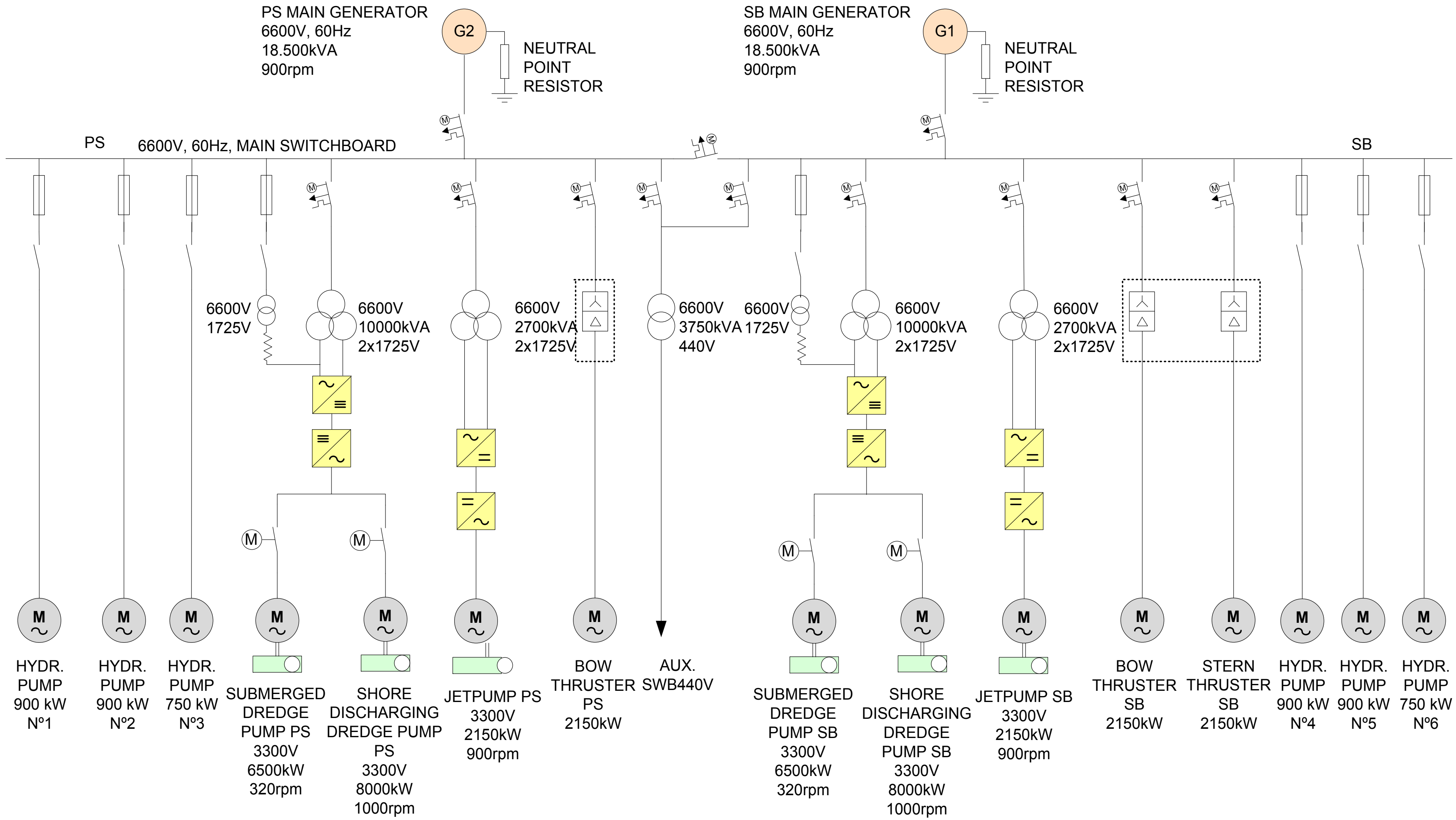
For Integrated Monitoring & Control System

- PLC´s Network
- Human Machine Interface (HMI)
- Control Desks
- Instrumentation
- Navigation Systems
- Engineering and Workshop Testing

For Main Electrical Plant

- 2x 18.500 kVA Main Generators
- 6´6 kV Main Switchboard
- 1x 3.750 kVA Distribution Transformer
- 2x 10.000 kVA Dredge and Shore discharging pump Transformer
- 2x MEDCON AC (8.000 kW) Frequency Converters for Pumps
- 2x Asynchronous Motors INDAR (8.000 kW) for Pumps
- 2x 2.700 kVA Jet pump Transformer
- 2x MOTOCON AC MP-MT (2.150 kW) Frequency Converters for Jet Pumps
- 2x Asynchronous Motors INDAR (2.150 kW) for Jet Pumps

Ingeteam



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3	27/11/06	AZ	JRM	Project.	AZ
Ind.	Date	Project.	Approv.	Approv.	AZ

T.S.H.D. 46,000 m^3

ASTILLERO SESTAO-JAN DE NUL

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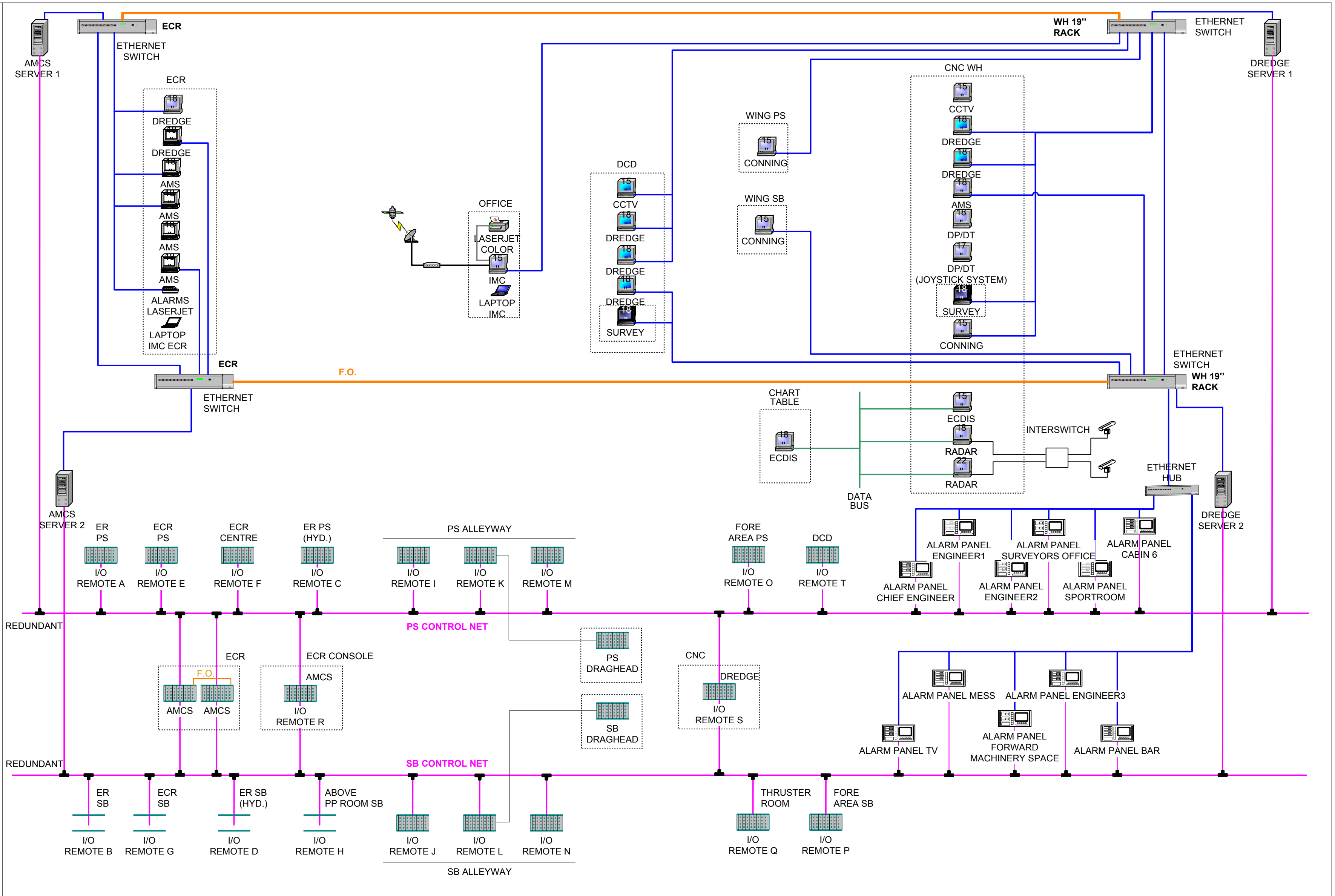
POWER DISTRIBUTION DIAGRAM

Page: 1

AN0164-A Rev.4



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5	20/03/2007	SC	SC	Project.	JIC
Ind.	Date	Project.	Approv.	Approv.	MAM

46.000M³ HOPPER SUCTION DREDGER
JAN DE NUL

Ingeteam

INTEGRATED MONITORING AND CONTROL SYSTEM.
CONTROL LAYOUT

Page: 1 / 1

AN-0164/B rev. 5

SPLIT HOPPER DREDGER

“HPR-8032 ” “DE LAPÉROUSE”

WITH A HOPPER CAPACITY OF 3.700 M³

- Owned by Jan De Nul Group, Belgium
- Built by Tianjin Xinhe Shipbuilding (Peoples Republic of China)
- Certificate of Bureau Veritas
- Ingeteam delivery:
  - Electric Power Plant
  - Transformers
  - Frequency converters
  - Motors for dredge and jet pumps
  - Calculations
  - Engineering
  - Documentation
  - Commissioning
  - Sea trials

Main Characteristics of the Vessel

De Lapérouse

Jan De Nul signed the contrat for the construction of one new split hopper dredger. The design of the dredger is based on the design of the 3.700 m³ splitbarges; the vessel is provided with a suction pipe with submerged dredge pump. This dredger is equipped with a self-emptying installation with 3.000 kW shore discharging dredge pump.

- Hopper capacity 3.700 m³
- Deadweight 5440 ton
- Length o.a 99.5 m
- Breadth 19.4 m
- Draught loaded 5.85 m
- Maximum dedging depth 32.0 m
- Suction pipe diameter 900 mm
- Pump power (trailing) 1250 KW
- Pump power (discharging) 3000 KW
- Propulsion power 2 x 1850 KW
- Total installed diesel power 6360 KW
- Speed 12.2 kn
- Accommodation 16 persons
- Built in 2010

Ingeteam Scope of Supply

For Shore Discharging Dredge and UWP Pumps

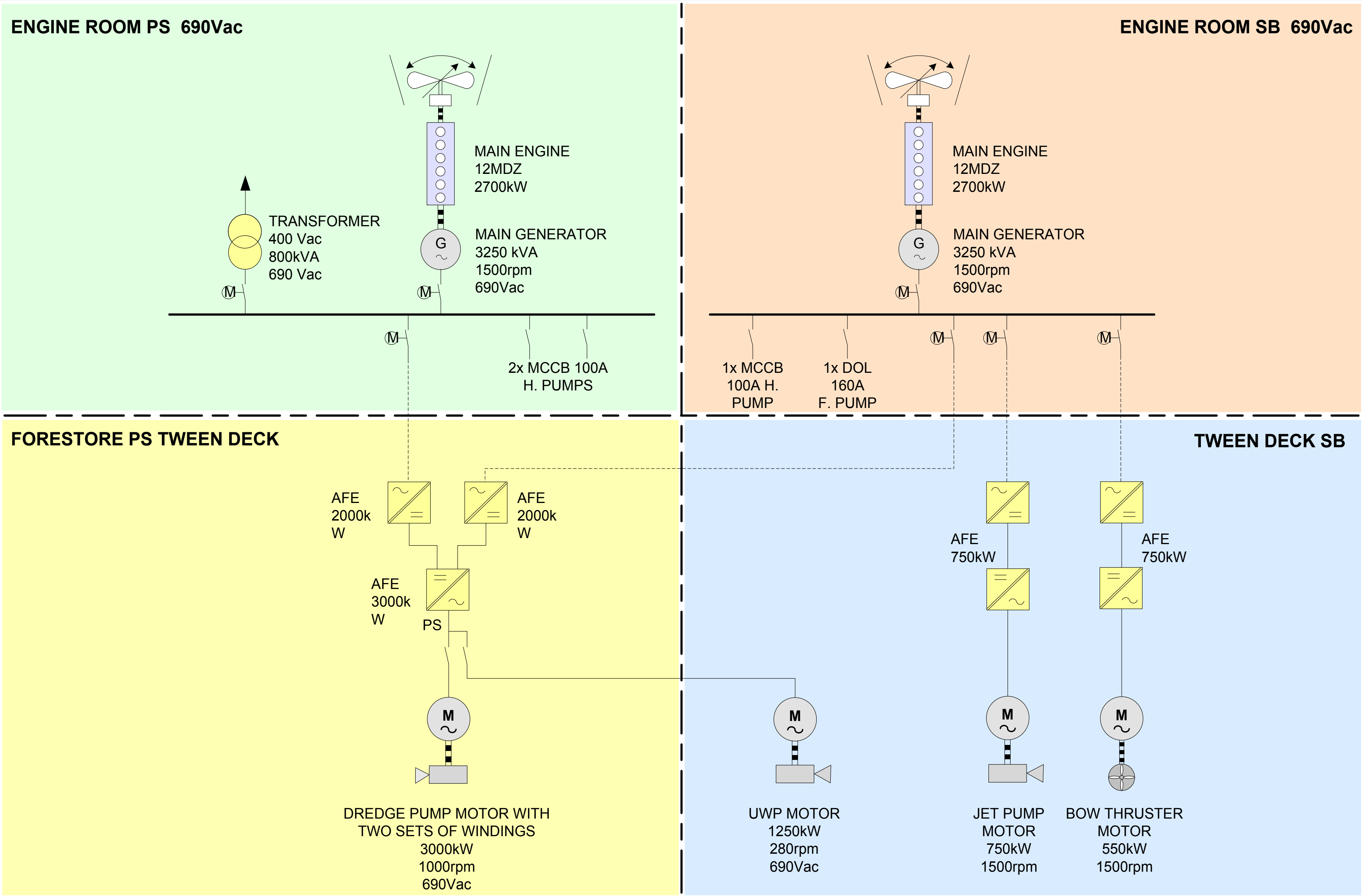
- 1x MOTOCON AC MP-BT (3.000 kW) Frequency Converters for Shore Discharging Dredge Pump
- 2x AFE RECTIFIERS of 2.000 kW
- 1x Asynchronous Motor INDAR (3.000 kW / 1.200 rpm) for Shore Discharging Dredge Pump

For Jet Pump and Bow Thruster

- 2x MOTOCON AC MP-BT (750 kW) Frequency Converters for Jet Pump and Bow Thruster
- 1x Asynchronous Motor INDAR (750 kW / 1.500 rpm) for Jet Pump
- 1x Asynchronous Motor INDAR (550 kW / 1.500 rpm) for Bow Thruster

For Main Electrical Plant

- 2x 3.250 kVA Main Generators
- 0,690 kV Main Switchboard Engine Room PS MSB (draw out type)
- 0,690 kV Main Switchboard Engine Room SB MSB (draw out type)
- Calculations, Engineering and Documentation
- Commissioning
- Sea Trials



				Date	19/09/07	HRP8032: SPLIT HOPPER DREDGER 3700m³	Ingeteam	ELECTRICAL SINGLE LINE DIAGRAM	Page: 2
				C A E	AU				
2	20/11/07	AZ	SC	Project.	AZ	JAN DE NUL		(OPTION 4)	OAN-07-0013A Rev.3
Ind.	Date	Project.	Approv.	Approv.	SC				

MEDIUM SIZE HOPPER SUCTION DREDGER

“JDN-8023”

WITH A HOPPER CAPACITY OF 7.500 M³

- Owned by Jan De Nul Group, Belgium
- Built by Heun Woo Steel Co.Ltd. (Busan – South Korea)
- Certificate of Bureau Veritas for the Class DYNAPOS AM/AT
- Ingeteam delivery to each vessel:

  Electric Power Plant

  Power Management System

  Transformers, frequency converters and motors for dredge and jet pumps.

Main Characteristics of the Vessel

JDN - 8023

Jan De Nul signed the contrat for the construction of two new medium sized hopper suction dredgers. The two hoppers will be built by Heun Woo Steel Co. Ltd. in Busan, South Korea. The first vessel will be delivered in August of 2008, the second in November of 2008. These hopper suction dreggers will have a hopper capacity of 7,500 m³ and a very reduced draught to work in shallower waters.

- Hopper capacity 7,500 m³
- Deadweight 11,800 ton
- Length overall 104.3 m
- Breadth 23.0 m
- Draught loaded 8.15 m
- Maximum dedging depth 46.4 m
- Suction pipe diameter 1,000 mm
- Pump power (trailing) 2,000 KW
- Pump power (discharging) 4,000 KW
- Propulsion power 2 x 4,000 KW
- Total installed diesel power 8,975 KW
- Speed 14.0 kn
- Accommodation 21 persons
- Built in 2008

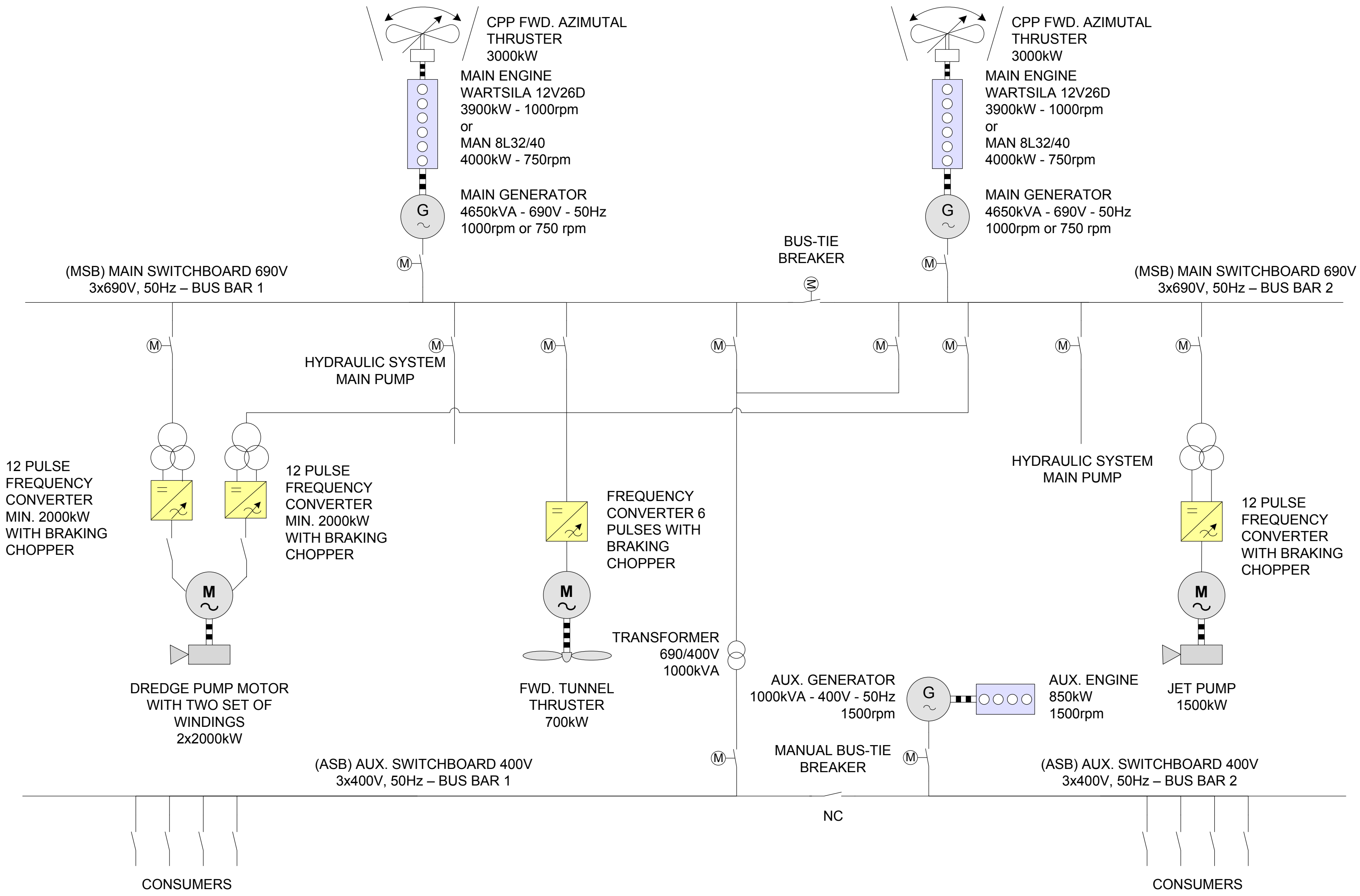
Ingeteam Scope of Supply

For Dredge and Jet Pumps

- 2x 2.450 kVA Dredge pump Transformer
- 2x MOTOCON AC MP-BT (2.200 kW) Frequency Converters for Dredge Pump
- 1x Asynchronous Motor INDAR (4.000 kW) for Dredge Pump
- 1x 1.825 kVA Jet pump Transformer
- 1x MOTOCON AC MP-BT (1.500 kW) Frequency Converters for Jet Pump
- 1x Asynchronous Motor INDAR (1.500 kW) for Jet Pump

For Main Electrical Plant

- 2x 4.650 kVA Main Generators
- 1x 1.000 kVA Auxiliary Generator
- 0,690 kV Main Switchboard
- 0.440 / 0.230 kV Auxiliary and Emergency Switchboard
- 1x1.000 kVA Distribution Transformer
- 1x MOTOCON AC MP-BT (750 kW) Frequency Converters for Tunnel Thrusters
- 1x Asynchronous Motors INDAR (750 kW) for Tunnel Thrusters
- Calculations, Engineering and Documentation
- Commissioning
- Sea Trials



				Date	11/04/06	$7500m^3$ TRAILER SUCTION HOPPER DREDGER	Ingeteam	ELECTRICAL SINGLE LINE DIAGRAM	Page: 2
				C A E	AU				
				Project.	AZ			OPTION 2, 12 PULSE	AN0174 Rev.0
Ind.	Date	Project.	Approv.	Approv.	JRM	JAN DE NUL			

DIVING SUPPORT VESSEL

M/V ADAMS CHALLENGE

- Owned by ADAMS Offshore Ltd
- Built by Astilleros Balenciaga, S.A. - Spain
- Certificate of American Bureau of Shipping for the Class:

  ABS +A1, CIRCLE E, +AMS, +DPS2
- Ingeteam delivery to each vessel:

  Electric Power Plant

  Power Management System

  Engineering, Commissioning and Sea Trials

Main Characteristics of the Vessel

M/V Adams Challenge

The vessel is a dynamically positioned diesel electric powered, multi role offshore support vessel with rapid and efficient handling characteristics, capable of supporting a wide range of offshore activities, including diving support, ROV support, survey support, cable lay and offshore construction and maintenance.

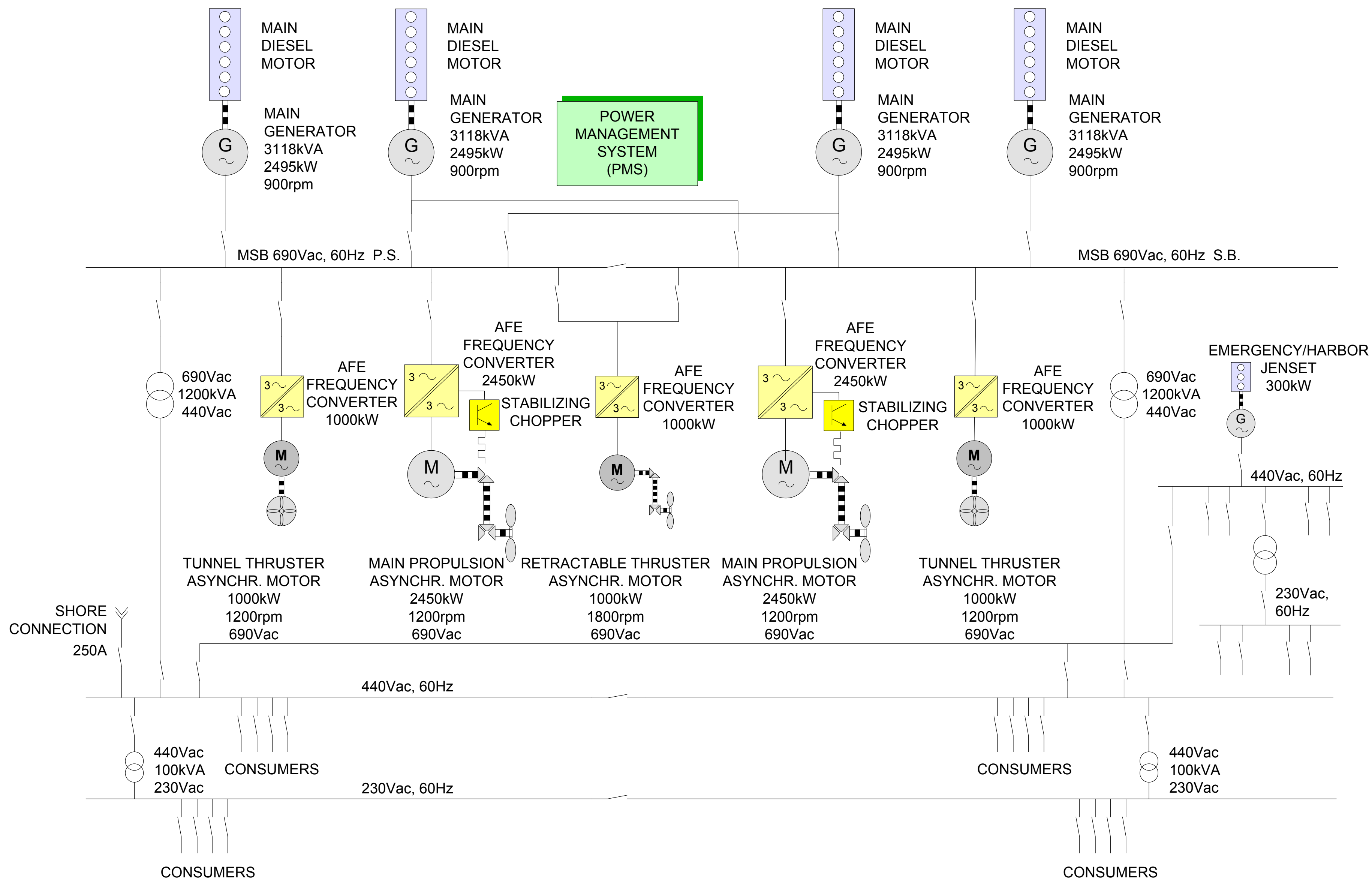
The vessel is equipped with a dual redundant dynamic positioning system configured to and suitable for the support activities, is designed for a speed of 15 knots in a fully loaded condition under trials conditions with the electric motors operating at 100% power.

Propulsion is provided by twin azimuth propeller units aft, each driven by an electric motor (2.450 kW). Transverse thrust is provided by then twin azimuth units aft and by three transverse thrusters forward, one of which is a retractable azimuth unit (three electrical motors 1.000 kW each motor).

Ingeteam Scope of Supply

For Main Electrical Plant

- 4x 3.118 kVA Main Generators
- 0,690 kV Main Switchboard
- 0,440 kV Main Switchboard
- 0,230 kV Main Switchboard
- 0,440 kV and 0,230 kV Emergency Switchboard
- 2x 1.200 kVA 690/440 Vac Distribution Transformer
- 2x INGEDRIVE LV (2.450 kW) AFE Frequency Converters for Main Propulsion
- 2x Asynchronous Motors INDAR (2.450 Kw 0-1.200 rpm) for Main Propulsion
- 3x INGEDRIVE LV (1.000 kW) AFE Frequency Converters for Tunnel Thrusters
- 3x Asynchronous Motors INDAR (1.000 kW 0-1.200 rpm) for Tunnel Thrusters
- Power Management System
- Engineering and documentation
- Commissioning and Sea Trials



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Ind.	Date	Project.	Approv.	Approv.	JRM

MULTIPURPOSE DIVE SUPPORT VESSEL

ADAMS OFFSHORE, S.A.

Ingeteam

MAIN ELECTRICAL DIAGRAM

Page: 1

OAN-06-0009A Rev.3

OCEAN AND FISHERIES RESEARCH VESSEL

“MIGUEL OLIVER”

FOR THE SPANISH FISHING DIRECTORATE

- Owned by Spanish Ministry of Agriculture, Fishing and Food
- Built by Astilleros M. Cies (Vigo) - Spain
- Certificate of Bureau Veritas for the Class:

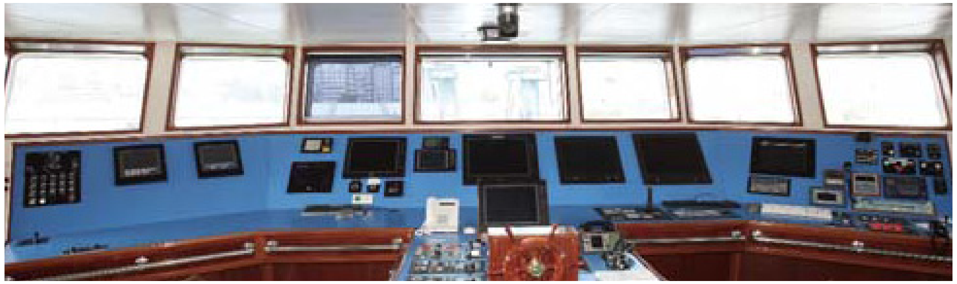
  I+HULL+MACH SPECIAL SERVICEFISHING INVESTIGATION UNRES-TICTED NAVEGATION ICE CLASS B – ICES 209
- Ingeteam delivery to vessel:

  Electric Power Plant

  Power Management System

  Engineering, Commissioning and Sea Trials

Main Characteristics of the Vessel



Miguel Oliver

The Miguel Oliver is a ship designed and built to conduct oceanographic and fishing research at high seas, for which it has a long range, both in terms of distance and in time of stay at sea.

The vessel is equipped with the following special research equipment:

- Deck machinery for stern trawling and sample-taking at great depths.
- Facilities for sorting and storing the catch.
- Laboratories with the corresponding research and analysis instruments.
- High-precision dynamic positioning system.
- Advanced electronic equipment for fish finding and studying the marine environment.
- Diesel-electric propulsion system with four motor generating sets mounted on a double bedplate with resilient chocking to minimize noise and vibrations.

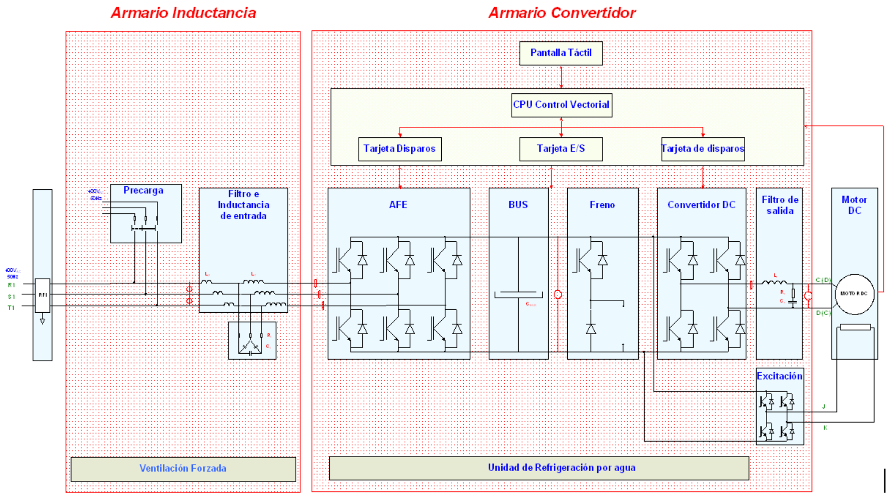
Electric propulsion offers a large range of advantages: Gain in efficiency in comparison with traditional diesel propulsion, at low speeds and when manoeuvring the efficiency is maintained at a high level. The electric propulsion system features a high level of reliability because each electric motor is supplied through its own converter. Electric propulsion offers operational manoeuvrability, simple arrangement and flexibility in maintenance and environmental friendliness.

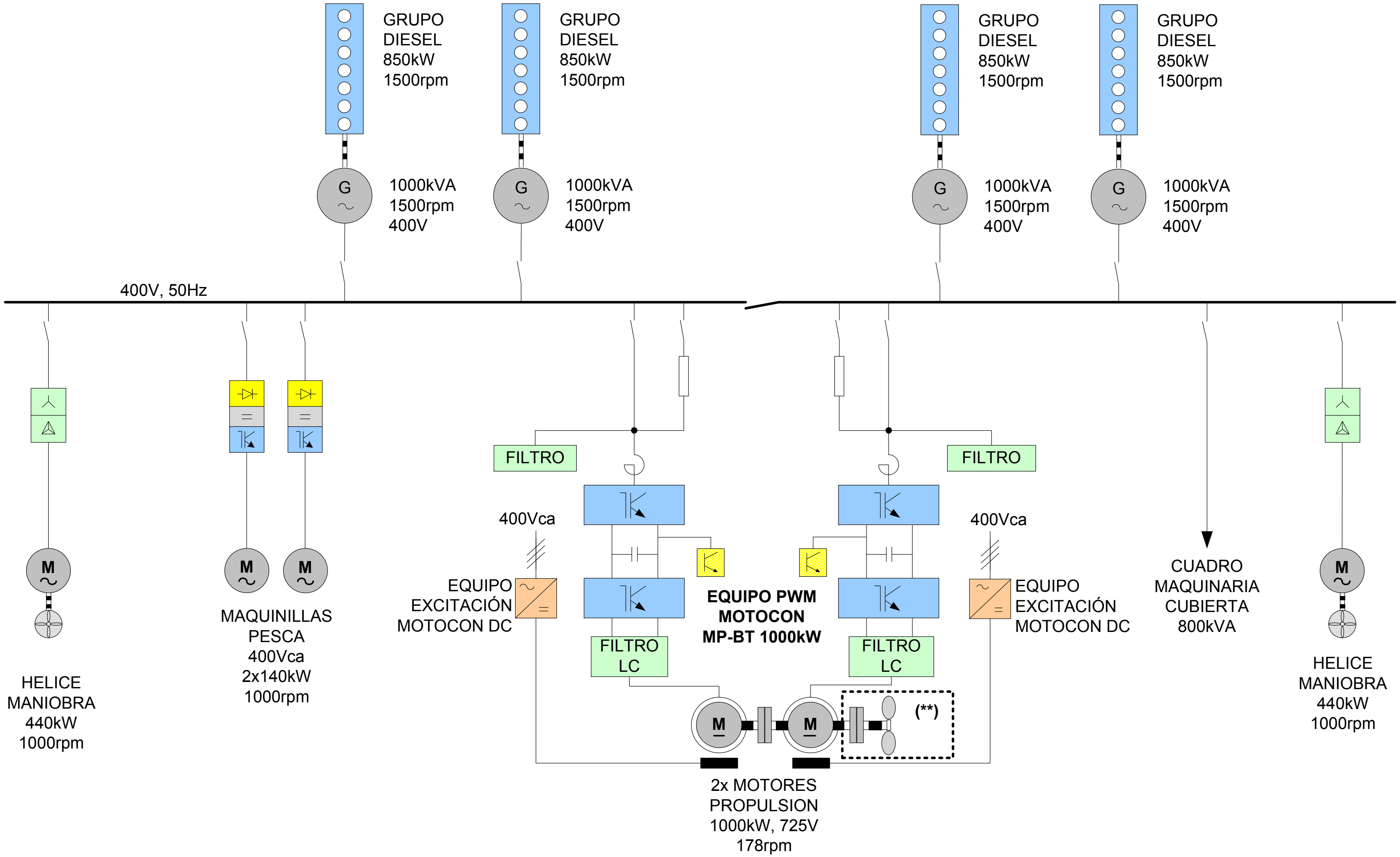
Ingeteam

Main Characteristics of the Vessel

Main particulars

- Length o.a 70,00 m
- Moulded breadth 14,40 m
- Propulsion power 2.000 KW
- Maximum speed 14 knots
- Gross tonnage 2.495 GT
- Crusing range 44 days
- Accommodation crew 22
- Accommodation research 23





				Date	04/03/05	BUQUE INVESTIGACIÓN PESQUERA	Ingeteam	DIAGRAMA DISTRIBUCIÓN POTENCIA PROPULSIÓN ELÉCTRICA	Page: 1
				C A E	AU				
8	20/05/05	MAM	MAM	Project.	AZ	MAPA-70m			AN0102 Rev.8
Ind.	Date	Project.	Approv.	Approv.	AR				

STANDBY AND RESCUE VESSEL FOR ESVAGT

"CORONA & CAPELLA"

- Owned by ESVAGT (Denmark)
- Built by Astilleros Zamakona, S.A. - Spain
- Ingeteam delivery to each vessel:
    - Electric Power Plant
    - IngeRAS™ System
    - Engineering, Commissioning and Sea Trials

Main Characteristics of the Vessel

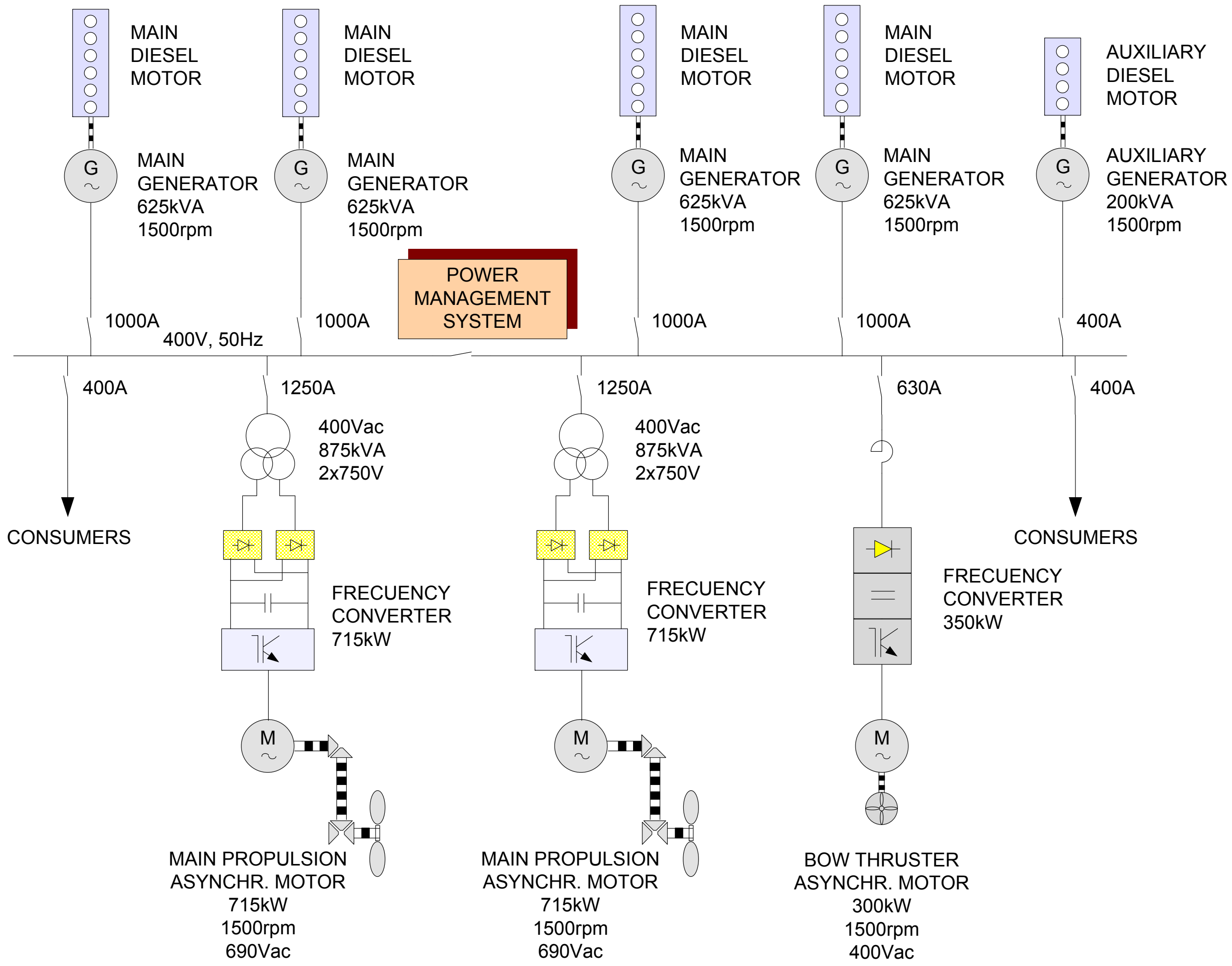
Corona & Capella

- Length Overall 44,03 m.
- Propulsion Power 2 x 715 Kw
- Breadth 11,5 m.
- Alternators 4 x 625 Kw
- Draught loaded 4,20 m.
- Classification Bureau Veritas
- Crew 12 men
- FI-FI Systems 2 x 75 m3
- Survivors 140 persons
- Tonnage 850 GT
- Speed 12 Knots
- Built In 2004

Ingeteam Scope of Supply

For Main Electrical Plant

- 4x 625 kVA Main Generators
- 0,440 kV Main Switchboard
- 2x 875 kVA Distribution Transformer
- 2x MOTOCON AC MP-MT (715 kW) Frequency Converters for Main Propulsion
- 2x Asynchronous Motors INDAR (715 kW 0-1.500rpm) for Main Propulsion
- 1x MOTOCON AC MP-MT (350 kW) Frequency Converters for Tunnel Thrusters
- 1x Asynchronous Motors INDAR (350 kW 0-1.500rpm) for Tunnel Thrusters
- Power Management System
- Engineering and documentation
- Commissioning and Sea Trials



				Date	10/12/02	STAND-BY VESSEL	Ingeteam	DIAGRAMA DE DISTRIBUCION	Page: 1
				C A E	AU				
2	07/07/03	AZ	AR	Project.	AZ	ASTILLEROS ZAMAKONA			AN0061 Rev.2
Ind.	Date	Project.	Approv.	Approv.	FA				

FALLPIPE ROCKDUMPING VESSEL

“SIMON STEVIN”

- Owned by Jan De Nul Group, Belgium
- Built by La Naval Sestao- Spain
- Certificate of Bureau Veritas for the Class DYNAPOS AM/AT R, Class 2

Ingeteam delivery:

Electric Power Plant

Power Management System

Integrated Alarm & Monitoring System

Navigation equipment

Main Characteristics of the Vessel

Simon Stevin

With a rock carrying capacity of 33.500 ton, the new Fall Pipe Rock Dumping Vessel “Simon Stevin” is one of the largest of its kind in the world and one of the few vessels equipped for water depths to 2.000 m. Besides the very large operational depth, a uniqie feature of the vessel’s fall pipe and feeding systems is the the capacity to deal with rock sizes of 400 mm, wich is more than any other fall pipe vessel. For pipeline and scour protection alongside offshore platforms where the stability of the rock is defined by seabed currents, this will allow reducing the rock volume and resulting costs. The vessel is equipped with 4 rudder propellers, 2 retractable azimuth thrusters and 2 bow thrusters. A DP2 class dynamic positioning system is provided. The vessel’s spread includes a 125 shaft horse power work class ROV.

Principal Particulars

- Deadweight 32.500 ton
- Propulsion Power 4 x 3.300 Kw
- Length Overall 191,5 m.
- Bowthuster Power 4 x 2.000 Kw
- Breadth 40,0 m.
- Total Installed Diesel Power 24.350 Kw
- Draught loaded 8,5 m.
- Speed 15,5 kn
- Mooring System 4 point anchoring
- Accommodation 70
- Dynamic Positioning DYNAPOS AM/AT R Class 2
- Built In Under construction in La Naval

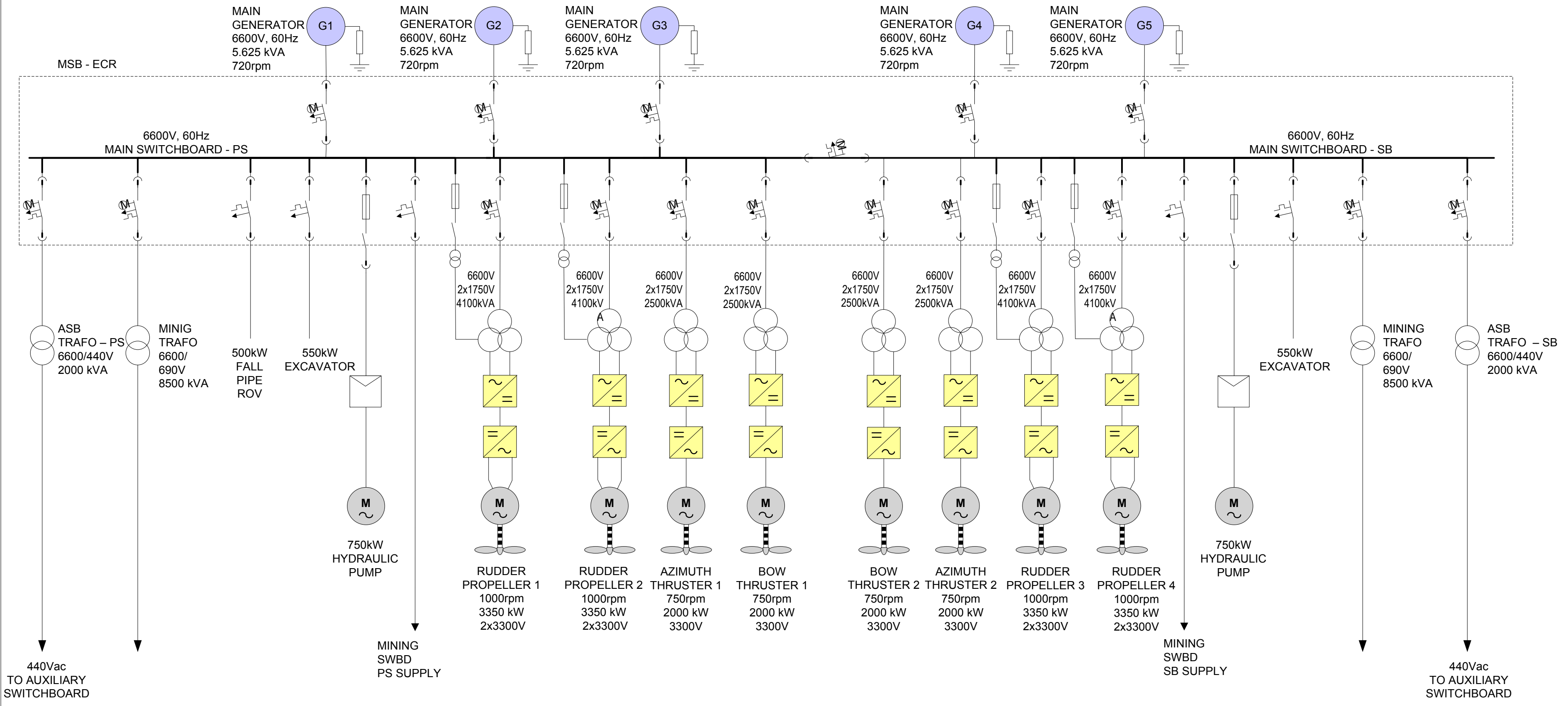
Ingeteam Scope of Supply

For Main Electrical Plant

- 5x 5.625 kVA Main Generators
- 6´6 kV Main Switchboard
- 2x2.000 kVA Distribution Transformer
- 4x 4.100 kVA transformers for Rudder propeller
- 4x 3.350 kW, INGEDRIVE MV Frequency Converters for Rudder propellers
- 4x 3.350 kW Indar Asynchronous Motors for Rudder propellers
- 3x 2.500 kVA transformers for thrusters
- 3x2.000 kW, INGEDRIVE MV Frequency Converters for thrusters
- 3x 2.000 kW Indar Asynchronous Motor for thrusters
- Engineering and Workshop Testing

For Integrated Alarm & Monitoring Control System

- PLC´s Network
- Human Machine Interface (HMI)
- Control Desks
- Instrumentation
- Navigation Systems
- Engineering and Workshop Testing



				Date	30/01/07
				C A E	AU
1	27/07/07	AZ	SC	Project.	SC
Ind.	Date	Project.	Approv.	Approv.	SC

FALL PIPE & MINING VESSEL

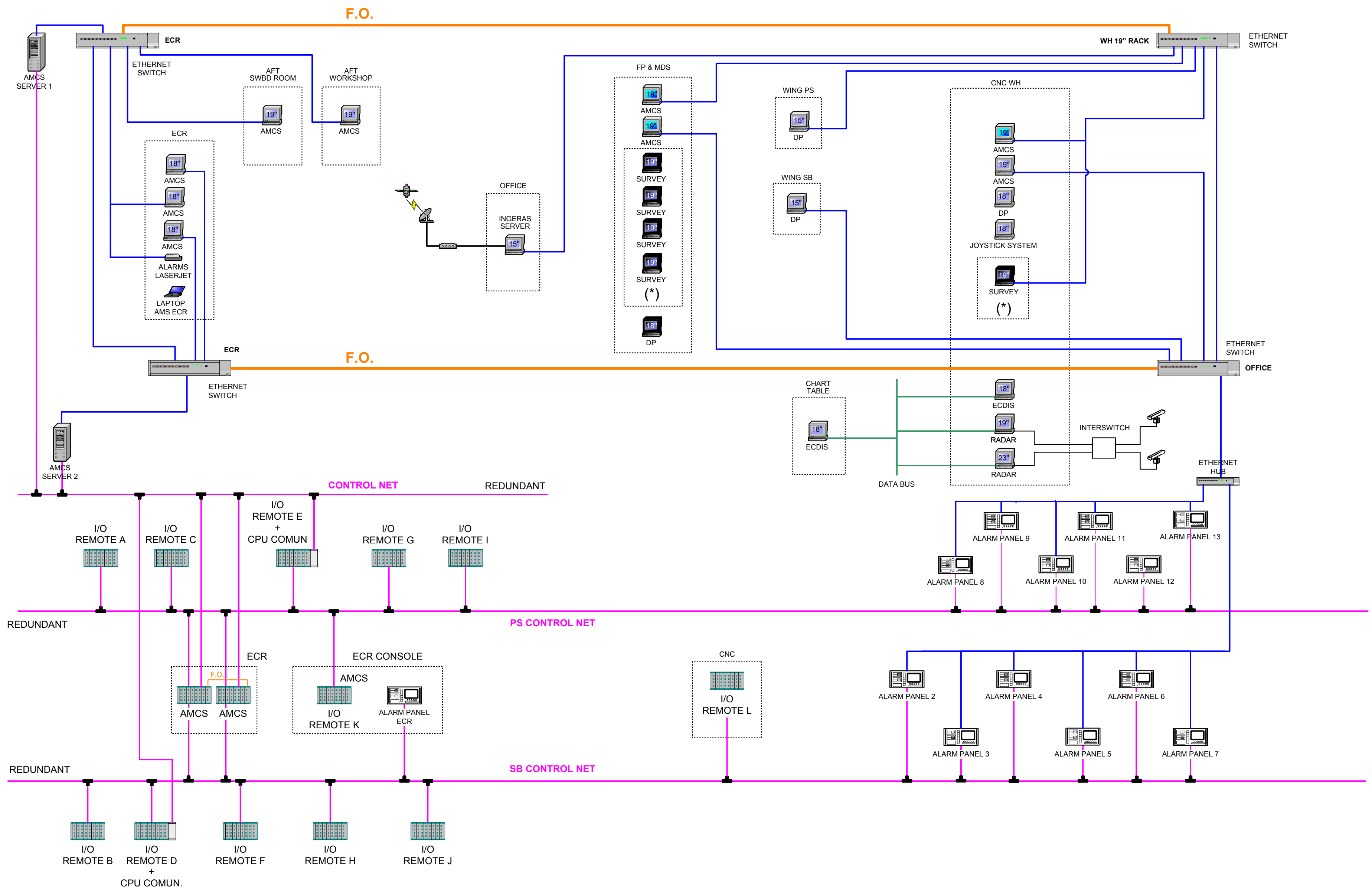
JAN DE NUL

Ingeteam

POWER DISTRIBUTION DIAGRAM
(OPTION 1 HV)

Page: 2

OAN-07-0004-A Rev.2



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				Date	04/01/08
				C A E	AU
				Project.	AZ
				Approv.	SC

FALL PIPE & MINING VESSEL

LA NAVAL (SESTAO)

Ingeteam

ALARM MONITORING AND CONTROL SYSTEM.
GENERAL LAYOUT

Page: 1

OAN-07-0004A Rev.0

HOPPER SUCTION DREDGER

“CHARLES DARWIN”, CRISTOBAL COLON’S AND LEIV EIRIKSSON’S LITTLE SISTER

WITH A HOPPER CAPACITY OF 30.500 M³

- Owned by Jan De Nul Group, Belgium
- Built by La Naval - Spain
- Certificate of Bureau Veritas for the Class DYNAPOS AM/AT

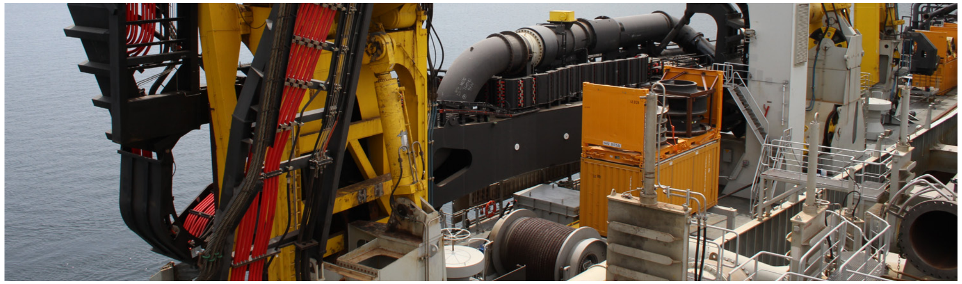
Ingeteam delivery to each vessel:

Electric Power Plant

Power Management System

Integrated Automation System

Main Characteristics of the Vessel



CHARLES DARWIN", CRISTOBAL COLON'S AND LEIV EIRIKSSON'S LITTLE SISTER

The vessel is specifically designed for operation in shallow or confined waters, having a design draught of only 11m and a length between perpendiculars of only 161,5 m. In the design much attention has been given to efficient use of the installed power, resulting in a low fuel consumption, and lowered emissions. Two suction pipes, diameter 1.200mm, equipped with submerged dredged pumps of each 3.400 kW are installed. Double walled, electrically driven shore discharging dredge pumps with a total power of 15.000 kW will enable discharging the load at a high rate, over long distance.

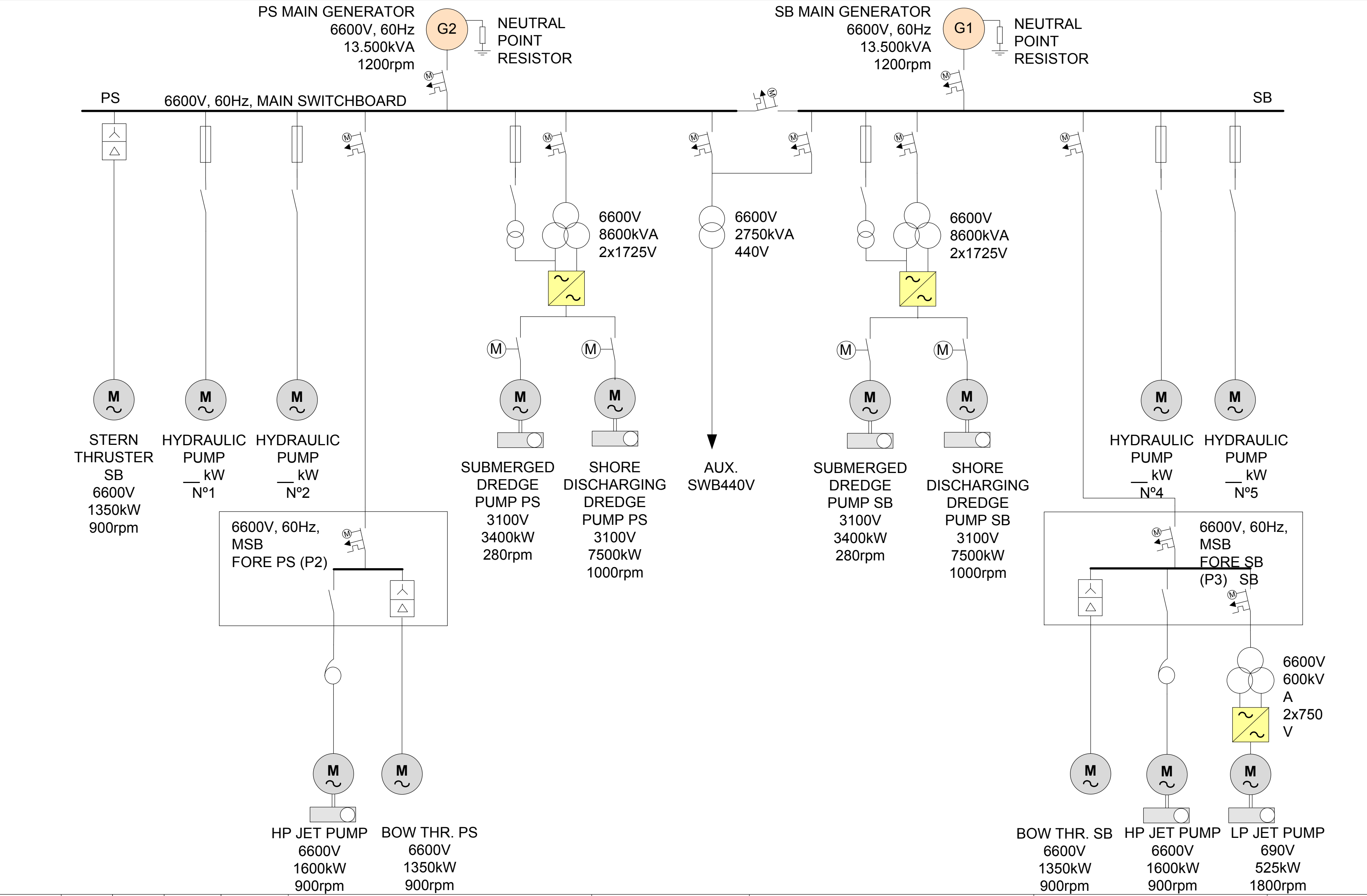
Ingeteam Scope of Supply

For Main Electrical Plant

- 2x 13.500 kVA Main Generators
- 6´6 kV Main Switchboard
- 1x 2.750 kVA 6.600/440 Vac Distribution Transformer
- 2x 8.000 kVA 6.600/2x1.790 Vac Dredge and Shore discharging pump Transformer
- 2x INGEDRIVE MV (7.500 kW) Frequency Converters for Pumps
- 2x Asynchronous Motors INDAR (7.500 kW 0-1.000/1.200 rpm) for Pumps
- 1x 600 kVA 6.600/2x750 Vac LP Jet Pump Transformer
- 1x INGEDRIVE LV (525 kW) Frequency Converters for LP Jet Pump
- 1x Asynchronous Motor INDAR (525 kW 0-1.800 rpm) for LP Jet Pump
- 2x Asynchronous Motors INDAR (1.600 kW 0-900 rpm) for HP Jet Pumps
- 3x Asynchronous Motors INDAR (1.350 kW 0-900 rpm) for Bow & Stern Thrusters

For Integrated Monitoring & Control System

- PLC´s Network
- Human Machine Interface (HMI)
- Control Desks
- Instrumentation
- Navigation Systems
- Engineering and Workshop Testing



				Date	04/06/08
				C A E	AU
1	22/10/08	AZ	SC	Project.	AZ
Ind.	Date	Project.	Approv.	Approv.	SC

HSD 30,500 m^3

LA NAVAL SESTAO

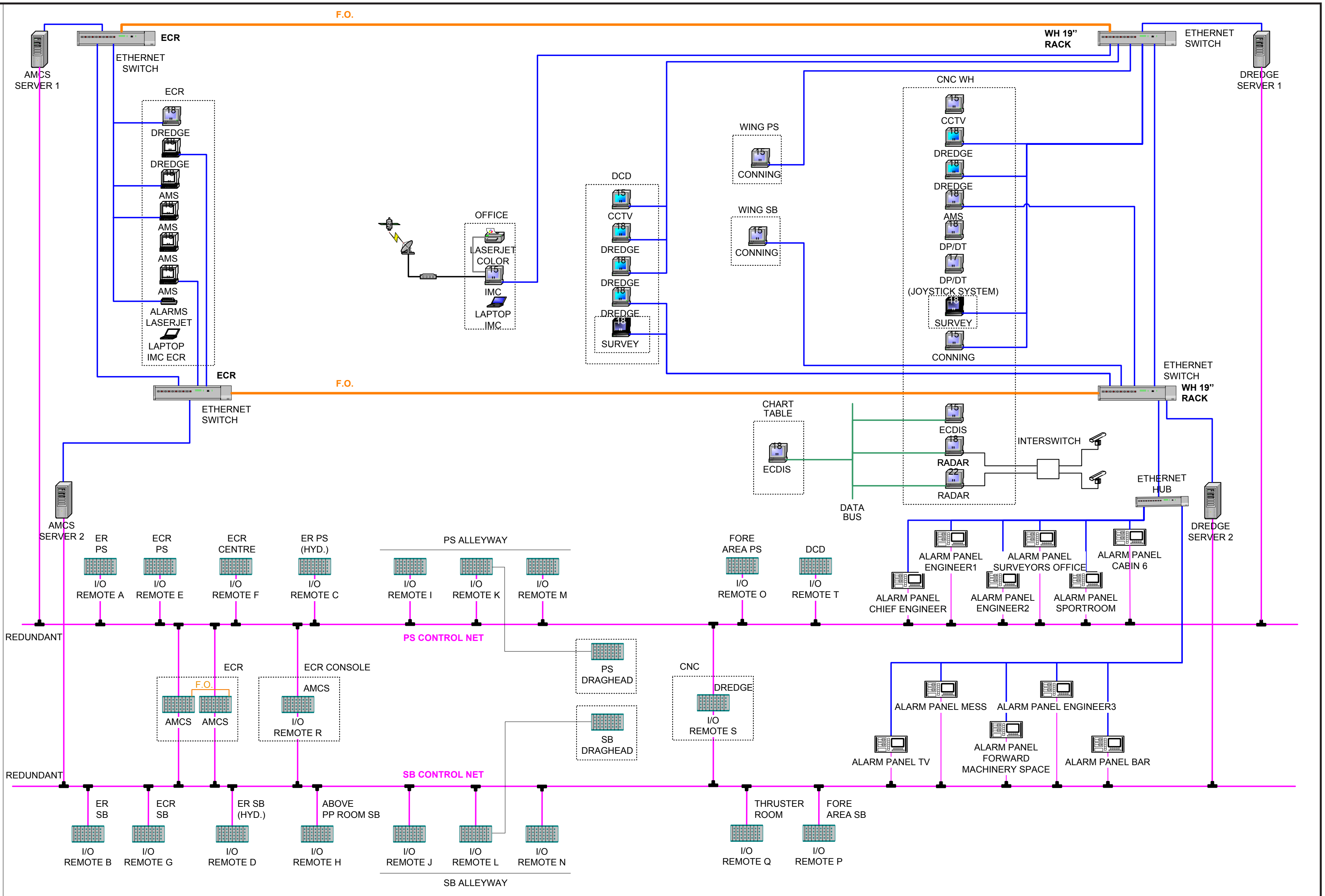
Ingeteam

POWER DISTRIBUTION DIAGRAM

Page: 1

OAN-08-0018A Rev.1

Ingeteam



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				C A E	JIC
1	27/03/09	AZ	JRM	Project.	JIC
Ind.	Date	Project.	Approv.	Approv.	MAM

30.500M³ HOPPER SUCTION DREDGER
JAN DE NUL

Ingeteam

INTEGRATED MONITORING AND CONTROL SYSTEM.
CONTROL LAYOUT

Page: 1 / 1

OAN-08-0018B Rev.1

STONE SIDE DUMPING VESSEL

"WILLEM DE VLAMINGH"

- Owned by Jan De Nul Group, Belgium
- Built by STX Shipyard Busan – Republic of Korea
- Certificate of Bureau Veritas for the DYNAPOS AM/AT R, Class
- Ingeteam delivery:

    Electric Power Plant

    Power Management System

    Integrated Alarm & Monitoring System

    for Main Functions of Stone Dumping

    Control Desk

Main Characteristics of the Vessel

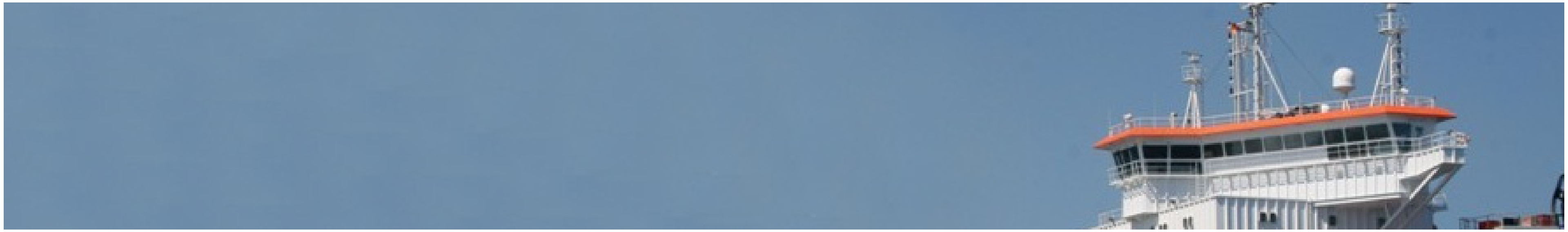
Willem de Vlamingh

The new Side Stone Dumping Vessel “Willem de Vlamingh” will have a capacity of nearly 3 times the largest existing side stone dumping vessel. This large capacity will allow installing rock for covering offshore oil and gas pipelines, scour protection around offshore platforms and construction of marine breakwaters at lowers cost. Its large sailing speed makes it possible to load directly at the quarry, as such eliminating the need for offshore transhipment, for supply barges. The vessel is dynamically positioned DP Class 2, enabling safe operation alongside offshore platforms and structures. Willem de Vlamingh can be equipped with an Flexible Fall Pipe with a ROV for controlling the position of the lower end of the fall pipe. In this way, the vessel cab be used for accurately placing stones on the sea bottom.

Principal Particulars

- Deadweight 8.500 ton
- Propulsion Power 2 x 2.150 Kw
- Length Overall 115,0 m.
- Bowthuster Power 2 x 1.250 Kw
- Breadth 23,0 m.
- Total Installed Diesel Power 8.975 Kw
- Draught loaded 5,35 m.
- Speed 13,0 kn
- Mooring System 4 point anchoring
- Accommodation 35
- Dynamic Positioning DYNAPOS AM/AT R Class
- Built In 2011

Ingeteam Scope of Supply



For Main Electrical Plant

- 2x 5.000 kVA Main Generators
- 690 Vac Main Switchboard
- 2x 2.650 kVA Transformers for Propulsion Thrusters
- 2x 2.150 kW, INGEDRIVE LV Frequency Converters for Propulsion Thrusters
- 2x 2.150 kW 0-1.000/1.100 rpm Indar Asynchronous Motors for Propulsion Thrusters
- 2x 1.900 kVA Transformers for Bow Thrusters
- 2x 1.900 kW, INGEDRIVE LV Frequency Converters for Bow Thrusters
- 2x 1.500 kW 0-1.000/1.000 rpm Indar Asynchronous Motor for Bow Thrusters
- 2x 250 kW, INGEDRIVE LV Frequency Converters for Ballast Pumps
- Engineering and Workshop Testing

For Integrated Alarm & Monitoring Control System

- PLC´s Network
- Human Machine Interface (HMI)
- Control Desks
- Engineering and Workshop Testing

MULTI-PURPOSE SUBSEA OPERATION

ROV & SUPPORT VESSEL - MT-6040

- Owned by TSMarine, Ltd
- Built by Astilleros de Huelva S.A. - Spain
- Certificate of Det Norske Veritas for the Class:

  +1A1-Well Intervention Unit 1 – SF – E0 – Dynpos AUTRO-DP3-DK(+) – HELDK-S – LFL – COMF-v(3) – Clean Class
- Ingeteam delivery to each vessel:

  Electric Power Plant

  Power Management System

  Engineering, Commissioning and Sea Trials

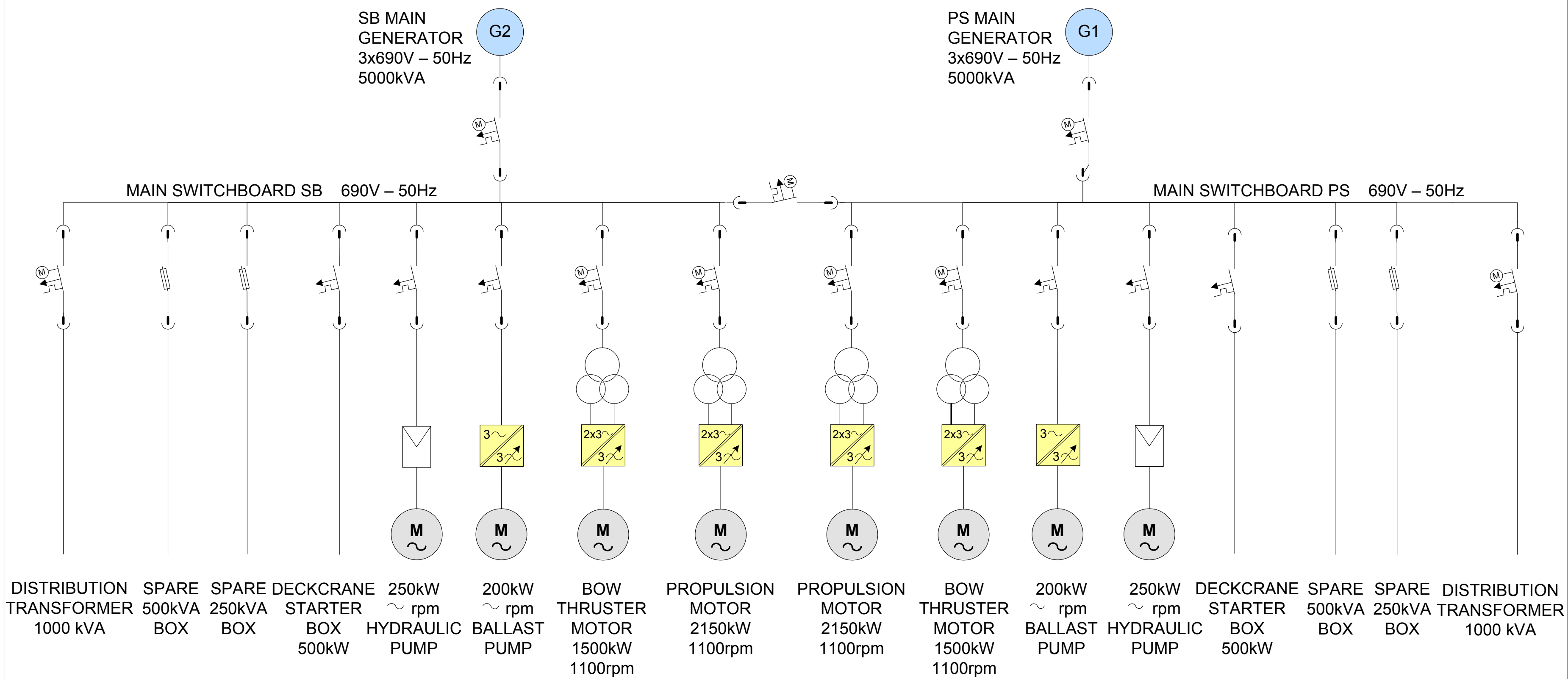
Main Characteristics of the Vessel

ROV & Support Vessel

The vessel is a dynamically positioned diesel electric powered, multi role offshore support vessel with rapid and efficient handling characteristics, capable of supporting a wide range of offshore activities, including subsea operation, ROV support, survey support and offshore construction and maintenance. The vessel is equipped with dynamic positioning system configured to and suitable for the support activities, is designed for a speed of 14,5 knots in a fully loaded condition under trials conditions with the electric motors operating at 100% power. Propulsion is provided by twin azimuth propeller units aft, each driven by an electric motor (3.000 kW). Transverse thrust is provided by then twin azimuth units aft and by three transverse thrusters (three electrical motors 1.300 kW each motor).

Electric propulsion offers a large range of advantages:

Gain in efficiency in comparison with traditional diesel propulsion, at low speeds and when manoeuvring the efficiency is maintained at a high level. The electric propulsion system features a high level of reliability because each electric motor is supplied through its own converter. Electric propulsion offers operational manoeuvrability, simple arrangement and flexibility in maintenance and environmental friendliness.

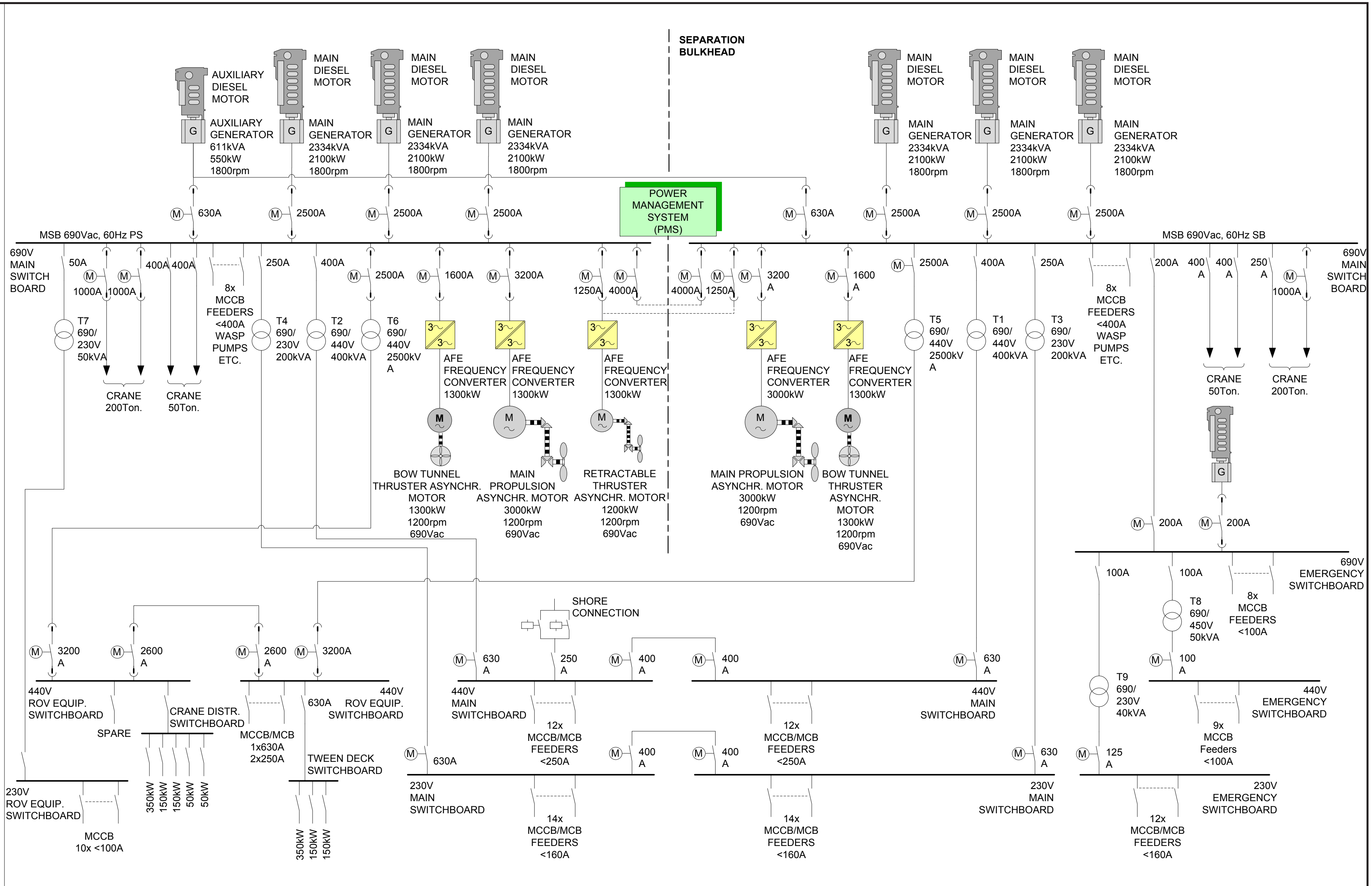


				Date	08/09/06	SSDV8623	Ingeteam	DISTRIBUTION DIAGRAM	Page: 1
				C A E	AU				
6	27/03/07	AZ	SC	Project.	AZ	JAN DE NUL			OAN-06-0026A Rev.6
Ind.	Date	Project.	Approv.	Approv.	JRM				

Ingeteam Scope of Supply

For Main Electrical Plant

- 6x 2.334 kVA Main Generators
- 2x 0,690 kV Main Switchboard (SB & PS)
- 2x 0,440 kV Distribution Switchboard (SB & PS)
- 2x 0,230 kV Distribution Switchboard (SB & PS)
- 2x 0,440 kV ROV Distribution Switchboard (SB & PS)
- 0,690 kV, 0,440 kV and 0,230 kV Emergency Switchboard
- 2x 400 kVA Distribution Transformer (0,690/0,440 kV)
- 2x 200 kVA Distribution Transformer (0,690/0,230 kV)
- 2x MOTOCON AC MP-MT (3.000 kW) AFE Frequency Converters for Main Propulsion
- 2x Asynchronous Motors INDAR (3.000 kW) for Main Propulsion
- 3x MOTOCON AC MP-MT (1.300 kW) AFE Frequency Converters for Tunnel Thrusters
- 3x Asynchronous Motors INDAR (1.300 kW) for Tunnel Thrusters
- Power Management System
- Engineering and documentation
- Commissioning and Sea Trials



				Date	27/02/06	BUQUES MULTIPROPOSITO (MT-6022)	Ingeteam	MAIN ELECTRICAL DIAGRAM	Page: 1
				C A E	AU				
5	05/06/07	AZ	SC	Project.	AZ	ASTILLEROS DE HUELVA, S.A.			OAN-06-0007A Rev.5
Ind.	Date	Project.	Approv.	Approv.	JRM				

CASE STUDIES - MOTORS & GENERATORS

Referencias de Naval

DOUBLE END FERRY

DOKTER WAGEMAKEER - HOLLAND

For the MV/DOKTER WAGEMAKEER, a double ended ferry for the owners TESO, which will be deployed on the route Den Helder – Texel in Holland and built at Damen Shipyards, redundant Diesel Electric propulsion and energy concept has been designed.

Main Characteristics of the Motor

The main system power the INDAR 2 x 2 Diesel Electric thrusters forward and aft motors of 1,650 kW each, which can be coupled and operate as one or be split into two independent half systems. An electric propulsion system that guarantees supply and power even under the most extreme circumstances to the thrusters.

Main motor characterirstics:

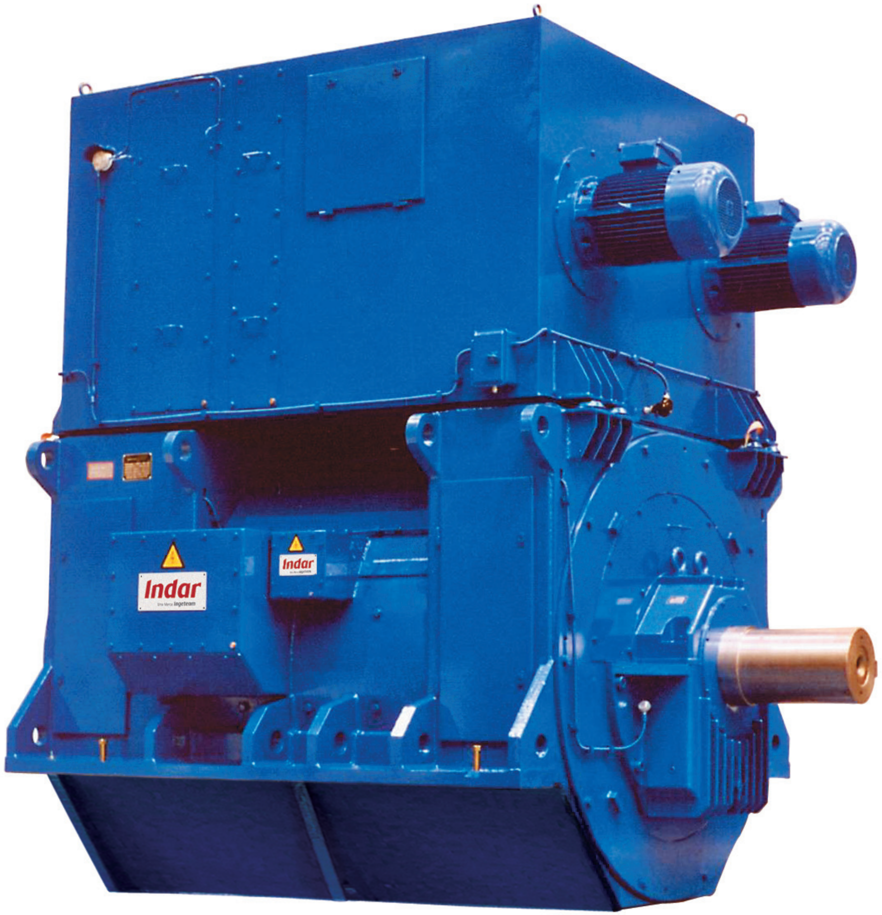
4 asynchronous motors fed by PWM drive of 1,650 kW, 900 rpm, 660 V

OCEANOGRAPHIC RESEARCH VESSEL

CELTIC EXPLORER - IRELAND

Oceanographic Research Vessel built for the Irish Marine Institute by Damen Shipyards in cooperation with Bakker Sliedrecht. INDAR R&D Dept. has specially designed “low noise and low vibration” generators and motors using the most advanced software to calculate all Mechanical Finite Elements variations.

Main Characteristics of the Motor



The supply comprised:

- 2 off Low Speed and Low Noise Diesel Electric DC propulsion motors in tandem execution. 1,500 kW, 180 rpm, 750 V
- AC Squirrel cage asynchronous Stern and Bow Thruster motors 500 kW, 1,000/1,500 rpm, 690 V
- 2 off Main generators 1,875 kVA, 1,000 rpm, 690 V
- Delivery 2,002

SELF PROPELLED CUTTER SUCTION DREDGER

JFJ DE NUL- JDN

INDAR Electric Machines has taken active part in the new build project of the world's largest self propulsion cutter suction dredger supplying the main driving and electric power generation systems as well as Diesel Electric propulsion motors.

The dredger has been built by the IHC Holland Yard for the Belgian Owner Jan de Nul. INDAR has been committed to supply the Dredge Booster pump motors, each with a capacity of 6,000 kW, a 3,800 kW submersible dredge pump e-motor as well as 2 x 3,800 kW Diesel Electric propulsion motors and a number of winch motors on board.

SELF PROPELLED CUTTER SUCTION DREDGER

JFJ DE NUL- JDN

In this project the INDAR scope of supply totals over 27,000 kW of installed electric power and all motors are fed by PWM frequency converters at 3,300 kW. The Shipboard electric power is derived from 3 off three-phase synchronous generators of 10,200 kVA each. Also INDAR supplied the smaller harbour generator, 2,250 kVA.

All motors and generators have been specifically designed to work under extreme sea conditions and comply with the European standard IEC and are certified by Bureau Veritas.

Main Characteristics of the Motor

Vessel main characteristics

- Length Overall 142 m.
- Total Dredger pump capacity 15,000 kW
- Max Suction Depth 35m
- Cutter Capacity 6,000 kW
- Total electric power installed 27,190 kW
- Delivered 2003

Machines technical characteristics

- 2 Ladder winch motors 900 kW, 1,200/1,600 rpm, 690 V
- 2 Cutter motors 3,800 kW, 1,000/1,200 rpm, 3,300 V
- 2 Spud winch motors 575 kW, 0/750 rpm, 440 V
- 1 Submerged Dredger pump 3800 kW, 1,000/1,200 rpm, 3,300 V
- 2 Side winch motors 575 kW, 0/750 rpm, 440 V
- 2 Inboard Dredger Pump motors 6,000 kW, 0/1,000/1,200 rpm, 3,300 V
- 2 Propulsion motors 3,800 kW, 1,000/1,200 rpm, 3,300 V
- 3 Hydraulic pump motors, 400 kW, 1,800 rpm, 6,600 V
- 3 Main generators, 10,200 kVA, 1,200 rpm, 6,600 V
- 1 Auxiliary generator, 2,250 kVA, 1,000 rpm, 440 V

REELED RIGID PIPE LYING INNOVATIVE OFFSHORE VESSELS

SEVEN OCEANS / SEVEN SEAS / SEVEN ATLANTIC

These innovative a reeled rigid pipe laying construction vessels, a flexlay pipe laying construction vessel and a diving support vessel for Subsea 7 is designed and built at IHC Merwede Shipyard. The vessels will be fully Dynamic Positioned (DP 2/3), suitable for world-wide operation of reeled rigid pipe laying and offshore construction work. They will have an electric propulsion system consisting of 3 x 2950 kW fixed pitch propellers in azimuthing nozzles aft. two 2400 kW retractable Azimuth thrusters will be fitted in the forward part of the vessel; one 2200 kW transverse thruster will be arranged in a tunnel forward.

A redundant diesel-electric propulsion and energy concept has been designed, divided over two separate enginerooms, two propulsion rooms and two switchboard rooms.

REELED RIGID PIPE LYING INNOVATIVE OFFSHORE VESSELS

SEVEN OCEANS / SEVEN SEAS / SEVEN ATLANTIC

The configuration of the electric power generation guarantees power supply to thrusters and pipe-lay / crane installation and other vital parts of the shipboard mains under the most extreme circumstances. The thrusters are controlled by direct water-cooled frequency converters. Together with the (Kongsberg) ship automation system for central monitoring and control of the vessel's main tasks and machinery the centralised bridge control desk and nautical equipment enable an optimisation of the availability. This flexible pipelay/offshore construction vessel, with a lifting capacity of 400t and a storage capacity for flexible pipes carried by two 1250t carrousels belowdecks and by a 3000t carrousel on deck, is able of accurately positioning and anchoring pipes up to depths of 3kms. Positioning of the vessel is fully automatic by means of a dynamic positioning system, linked to the satellite navigation system.

REELED RIGID PIPE LYING INNOVATIVE OFFSHORE VESSELS

SEVEN OCEANS / SEVEN SEAS / SEVEN ATLANTIC

The vessels measures a length of 151m, a beam of 28.4m accommodates a complement of 120 and is built in accordance to the Rules and Regulations of Lloyd's, class notation: Lloyd's Register of Shipping +100A1, Pipe Laying Ship, UD strength for load of 10 t/m2, Heli Landing Area, +LMC, UMS, DP(AA), CAC(3), EP, ICC and further in compliance with the requirements of "Isle of Man Authorities".

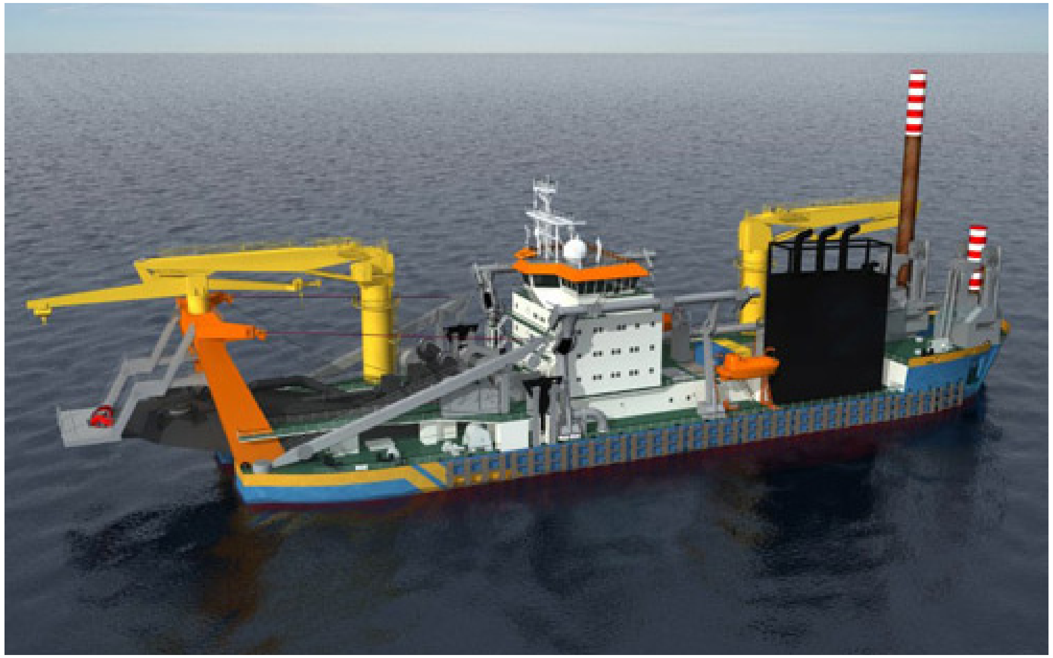
Main Characteristics of the Motor

The supply comprised:

- Azimuthing nozzles fitted afterwards 3 asynchronous motors of 2,950 kW
- Azimuth thruster fitted in the forward part 2 asynchronous motors of 2,400 kW
- Transverse thruster arranged in a tunnel forward 1 asynchronous motor of 2,200 kW

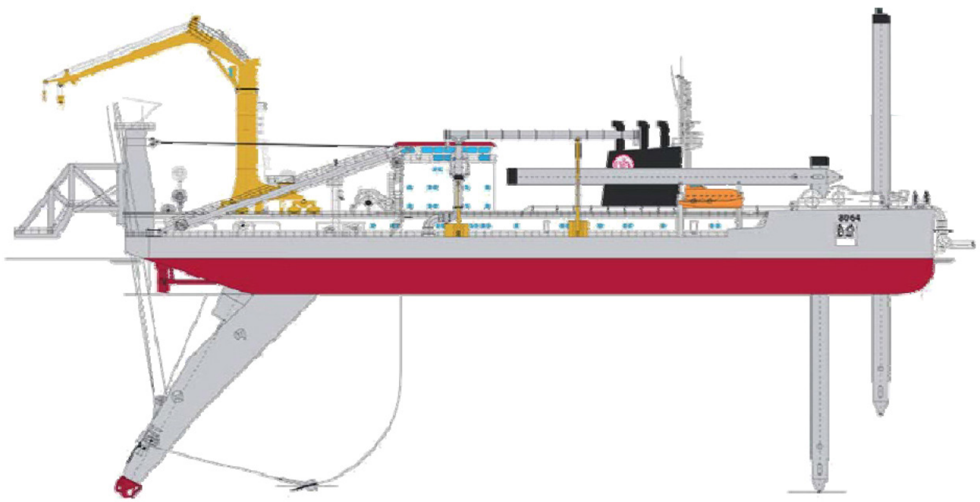
SELF PROPELLED - CUTTER SUCTION DREDGER

IBN BATTUTA, ZHENG HE, FERNAO DE MAGALHAES & JDN-8067 JDN



Dredging and Maritime Management S.A. is building in Uljanik Brodogradiliste d.d. in Pula, Croatia, three large self-propelled cutter suction dredgers. These vessels are further developments of the self-propelled cutter dredger Leonardo Da vinci, incorporating at the same time the experience and technical innovations of the J.F.J. De Nul, the largest and most powerful cutter dredger in the world. Two vessels will be delivered in 2009 and the third one on 2010.

Main Characteristics of the Motor



Cutter main characteristics

- Length o.a.: 138.5 m
- Total installed diesel engine power: 23,520 kW
- Breadth: 26.0 m
- Speed: 13kn
- Draught: 5.5m
- Dredging depth: 35.0 m

Electrical machines main characteristics per vessel

- Main generators 3 generators 7,778 kVA, 1,200 rpm
- Propulsion and cutters 4 motors 3,500 kW, 0-1,000 rpm
- Dredger pumps 3 motors 5,000 kW, 0-1,000 rpm

HLV 5000 – OLEG STRASHNOV

SEAWAY HEAVY LIFTING

Super Heavy Lifting Vessel: OLEG STRASHNOV For this innovative heavy lifting vessel for Seaway Heavy Lifting, built at IHC Merwede Krimpen Shipyard, we developed the electrical machines for diesel-electric propulsion concept, featuring a redundant energy generation and propulsion system. The thruster motors are fed and controlled by direct water-cooled frequency converters. Together with he vessels management (DP system (DP3 notation) this enables an optimisation of he availability. The vessel will enable her to have a transit speed of 14 knots, combined with exceptional working characteristics for a mono-hull design. Lift heights of 100 m for the 5,000 mt main hook and 132 m for the 800mt auxiliary hook enables the vessel to undertake an impressive range of projects from dual hook upending of large jackets to heavy deck installations.

Main Characteristics of the Motor

Indar deliveries

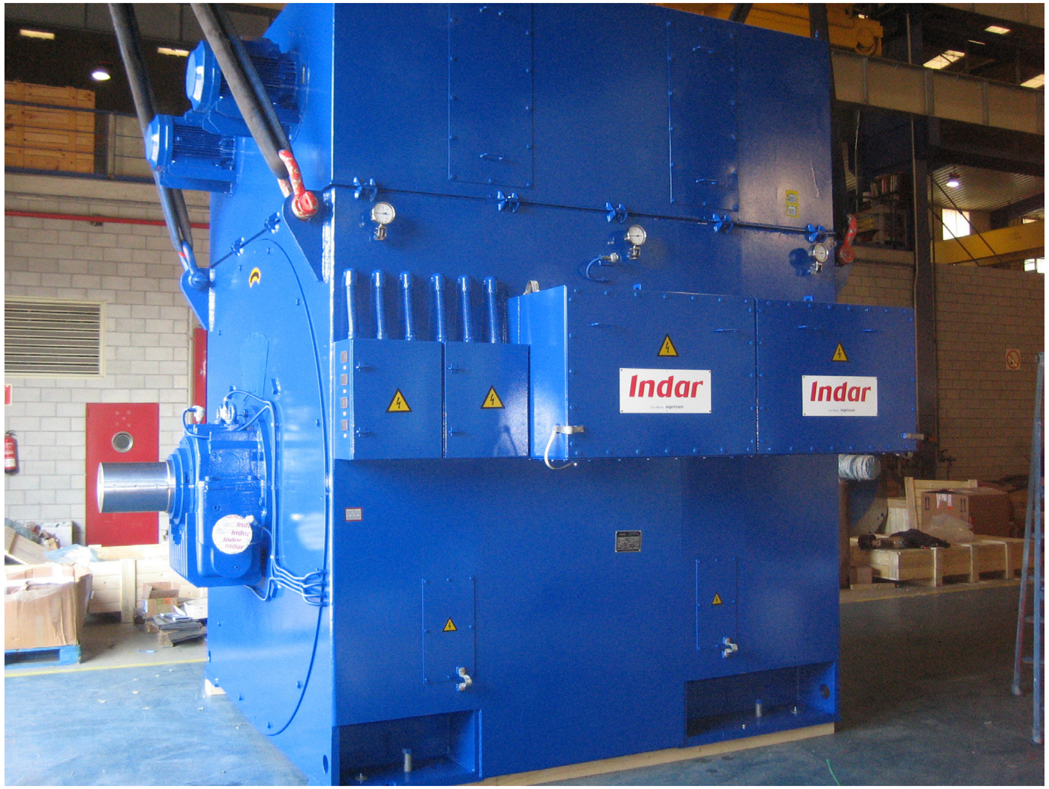
- Main generators: 6 generators 4,500 kW
- Propulsion thrusters: 2 motors 5,000 kW azimuthing underwater (dis)mountable aft
- DP thrusters: 2 motors 3,500 kW azimuthing retractable at midship
- Tunnel thrusters: 2 motors 1,012 kW(DP use) / 1,145 kW(auxiliary use) at bow

DIVING SUPPORT VESSEL

M/V ADAMS CHALLANGE

The vessel is a dynamically positioned diesel electric powered, multi role offshore support vessel with rapid and efficient handling characteristics, capable of supporting a wide range of offshore activities, including diving support, ROV support, survey support, cable lay and offshore construction and maintenance. The vessel is equipped with a dual redundant dynamic positioning system configured to and suitable for the support activities, is designed for a speed of 15 knots in a fully loaded condition under trials conditions with the electric motors operating at 100% power. Propulsion is provided by twin azimuth propeller units aft, each driven by an electric motor (2.200 kW). Transverse thrust is provided by then twin azimuth units aft and by three transverse thrusters forward, one of which is a retractable azimuth unit (three electrical motors 800 kW each motor).

Main Characteristics of the Motor



Indar deliveries

- Generation: 4 generators 2,312 kVA – 720 rpm
- Main propulsion: 2 motors 2,200 kW
- Tunnel thrusters: 3 motors 800 kW

MIGUEL OLIVER – RESEARCH VESSEL

LOW NOISE DIESEL ELECTRIC PROPULSION Ministerio de Agricultura y Pesca (España)

One of the world's most advances fisheries and oceanographic research ships rencently entered service with the Spanish Fishing Directorate. The propulsion have been designed and manufactured fulfilling the ICES 209 Standards as the noise transmission and water vibrations is concerned. Dc machines have long been the best solution for low noise operation. Indar motors were designed and built to meet the strictest ICES noise. Thanks to the AFE (Active Front End) technology implemented for this project, no perturbations are produced in the 400Vac, 50 Hz network. It this technology is specially suitable whenever there coexist under the same network, such as: navigation systems, oceanographic research, etc.

VESSEL MAIN CHARACTERISTICS & INDAR DELIVERIES

Main Characteristics of the Motor

Indar deliveries

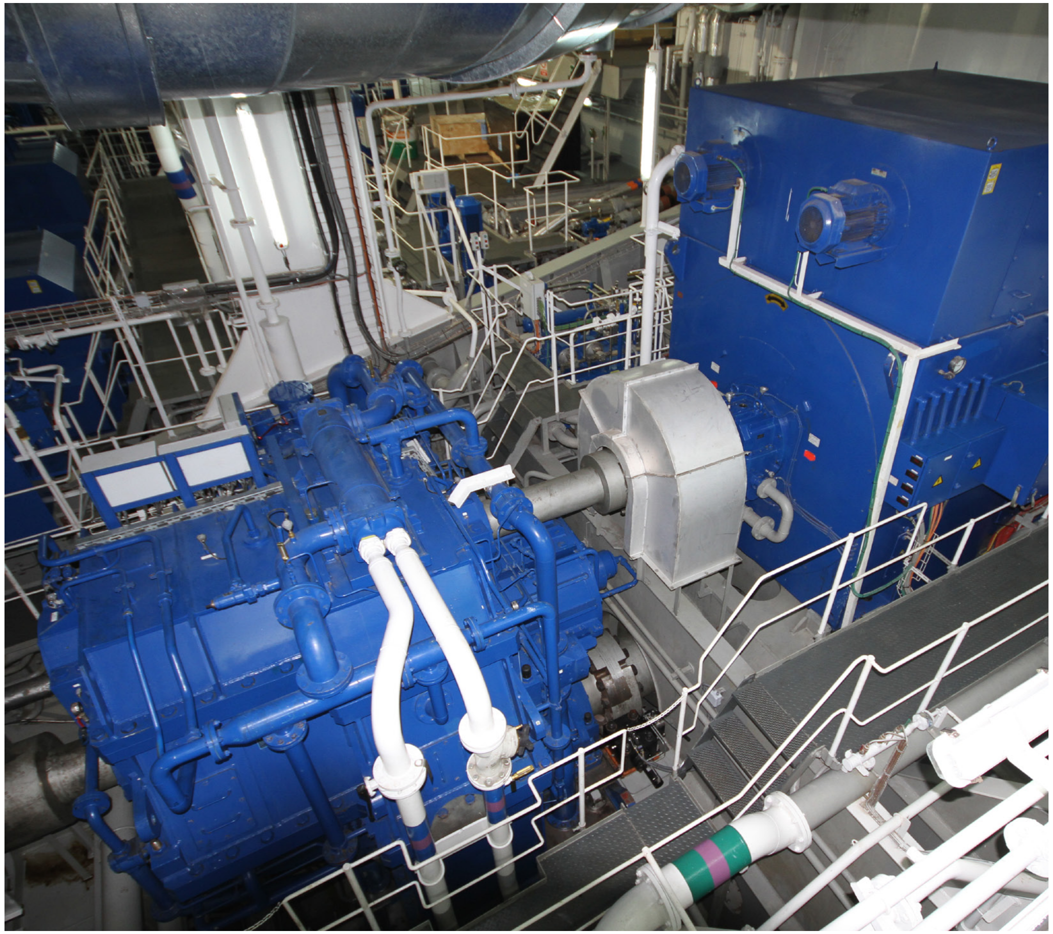
- Total length: 70 m Máx.
- speed: 14 nudos
- Bread: 14,40 m
- Electric comsumption: 3 MW
- Load draught: 4,50 4 AC
- Generators 1,430 kVA, 1,500 rpm.
- Propulsión power: 2,000 kW 2
- Super Quiet DC motors: 1,000 kW, 178 rpm, for main propulsion.
- Gross tonnage: 2,480 GT
- Delivered 2007

TRAILING SUCTION HOPPER DREDGER

46,000 m3, CRISTOBAL COLON / LEIV EIRIKSSON - JDN

These two ultra-large trailer hopper dredgers, which at capacity of 46,000 m³, will be the largest of their type in the world. The dredgers are building in La Naval (Spain) and they will be delivered in 2009.

Main Characteristics of the Motor



Vessel main characteristics

- Hopper Capacity 46,000 m³
- Pump power (Trailing) 2 x 6,500 kW
- Deadweight 78,000 ton
- Pump power (discharging) 16,000 kW
- Length overall 223.0 m
- Maximum dredging depth 155,0 m
- Breadth 41.0 m Built
- Under construction

Indar delivery

- 2 Main generators 18,5 MVA, 1,200 rpm
- 2 Jet pumps 2,150 kW, 0-1,000 rpm
- 2 Submersible motor 6,500 kW, 0-253 rpm
- 3 Tunnel thruster motor 2,150 kW, 1,200 rpm
- 2 Shore discharging pumps motors 8,150 kW, 0-1,000 rpm
- Delivery 2009

SUPER MEGA-YACHT

L´BOREAL / LÁUSTRAL – COMPAGNIE DU PONANT

A superb mega-yacht with 132 cabins, she is the fruit of the expertise of the Italian Fincantieri shipyard and French sophistication, as interpreted by designer Jean-Philippe Nuel. Le Boréal remains faithful to our philosophy - to create a unique atmosphere, a subtle blend of luxury, intimacy and well-being.

2 AC propulsion motors: 2,300 kW, 0/191 rpm, 660 V:
Low limits for structureborne noise (Fincantieri shipyard specifications)

Main Characteristics of the Motor

Indar deliveries

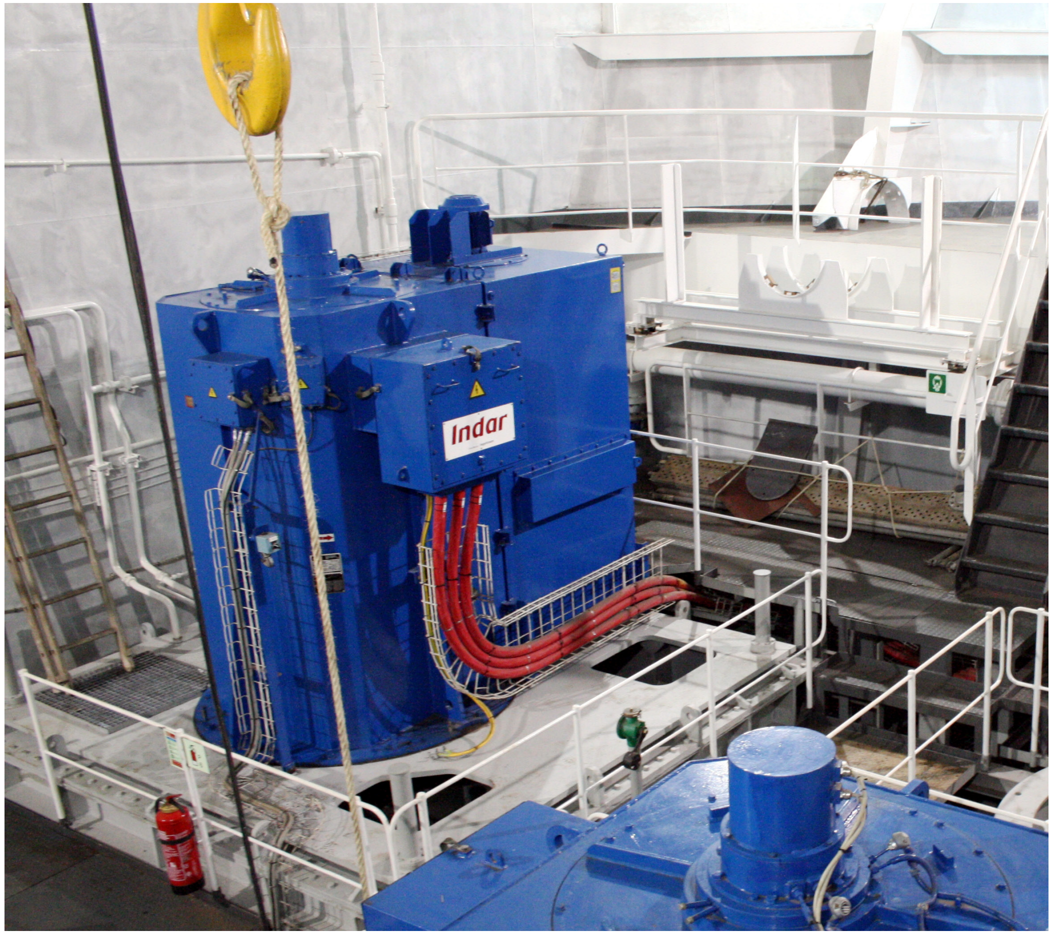
- Length 142 m / 466 ft
- Beam 18 m / 59 ft
- Draft . 4,7 m / 15,3 ft
- Guest capacity (double occupancy) up to 264 PAX
- Cruising Speed . 16 knots
- Normal Crew Size . 136
- Ice class . 1 C
- Fleet of expedition Zodiacs® (Mark V HD)
- Classification Bureau Veritas
- Gross tonnage 10 700 UMS
- Flag . French
- Electric motors . 2 x 2300 KW
- Guest Decks . 6
- Installed power . 6 400 KW
- Construction . Fincantieri-Ancona-Italy

FALL PIPE

SIMON STEVIN - JDN

The 191 m long vessel will be used for precise rock dumping to a depth of 2,000 m. The system for the unfolding of the fall pipe is extremely advanced and operates fully automatically. At the bottom of the fall pipe there is an ROV (Remote Operated Vehicle) that accurately corrects the position of the lower end of the fall pipe. The vessel has a 33,500 tons loading capacity and makes it possible to dump 2,000 tons of rock per hour at a depth of 2,000 m. The vessel can accommodate 70 persons. The fall pipe vessel Simon Stevin will mostly be deployed in the offshore industry in which oil and gas pipes have to be installed at large depths: the Simon Stevin can level the seabed and dump rock up to a depth of 2,000 m. The fall pipe can process boulders with a diameter up to 400 mm, which is more than any other fall pipe vessel on the market. This vessel is being built by the shipbuilding yard ‘La Naval’ in Sestao (Bilbao, Spain) and will be brought into operation at the end of 2009.

Main Characteristics of the Motor



Vessel main characteristics

- Capacity 32,500 t
- Depth moulded 13.20 m
- Length overall 191.5 m
- Design draught 7.50 m
- Breadth moulded 40.0 m

- **Indar delivery**
- 5 Main generators 5,625 MVA, 720 rpm
- 2 Retractable azimuthing propulsion motors 2,000 kW, 0-750 rpm
- 4 Azimuthing thruster motors 3,350 kW, 0-1000 rpm
- 2 Bow thruster motors 2,000 kW, 0-750 rpm
- Delivery 2009

50 T BP ICEBREAKING TUG BOAT

5 vessels – CASPIAN OFFSHORE CONSTRUCTION

The vessels are designed by Finnish Design Bureau Aker Artcics Technology and are built at the STX yard in Braila, Romania.

The vessels are being designed for year round operation in the Kashagan project in the North Caspian Sea.

The 50t bollard pull vessels have a LOA of 66 meters, breadth of 16.4 meters and shallow design draft of 2.5 meters with icebreaking performance in up to one meters ice.

Diesel - electric propulsion IS provided by Caterpillar high speed engines driving three Schottel azimuth propulsion units and two Schottel pump jets to provide redundant DP capability.

50 T BP ICEBREAKING TUG BOAT

5 vessels – CASPIAN OFFSHORE CONSTRUCTION

Anticipated ICE CLASS notation will be 1A Super, with Special Service - NORTH CASPIAN SEA ICEBREAKER with icebreaking capability up to 0.6 meters level ice thickness.

In addition to towing and pushing she is intended for ice management operations in astern working mode in ice rubbles reaching the sea floor. In addition, the tug is provided with arrangements and equipment for evacuation up to 300 people in environment where Hydrogen Sulphide (H S) risk is present, rescue operations, fire fighting and oil recovery. At the Summer Load Line draught she is able to carry up to 300 tonnes cargo on deck. The machinery is diesel electric with azimuthing thrusters for propulsion. The vessel is designed environmentally friendly, has no pollutant tanks adjacent to sea, has provisions for zero dumping, no waste emissions, etc.

Main Characteristics of the Motor

Indar delivery

- 3 Azimuthing thruster motors - 1600 kW - 1000 rpm - 660 V
- 2 jet pump propulsión motors - 550 kW - 1100 - rpm 660 V
- Delivery 2010 - 2011

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