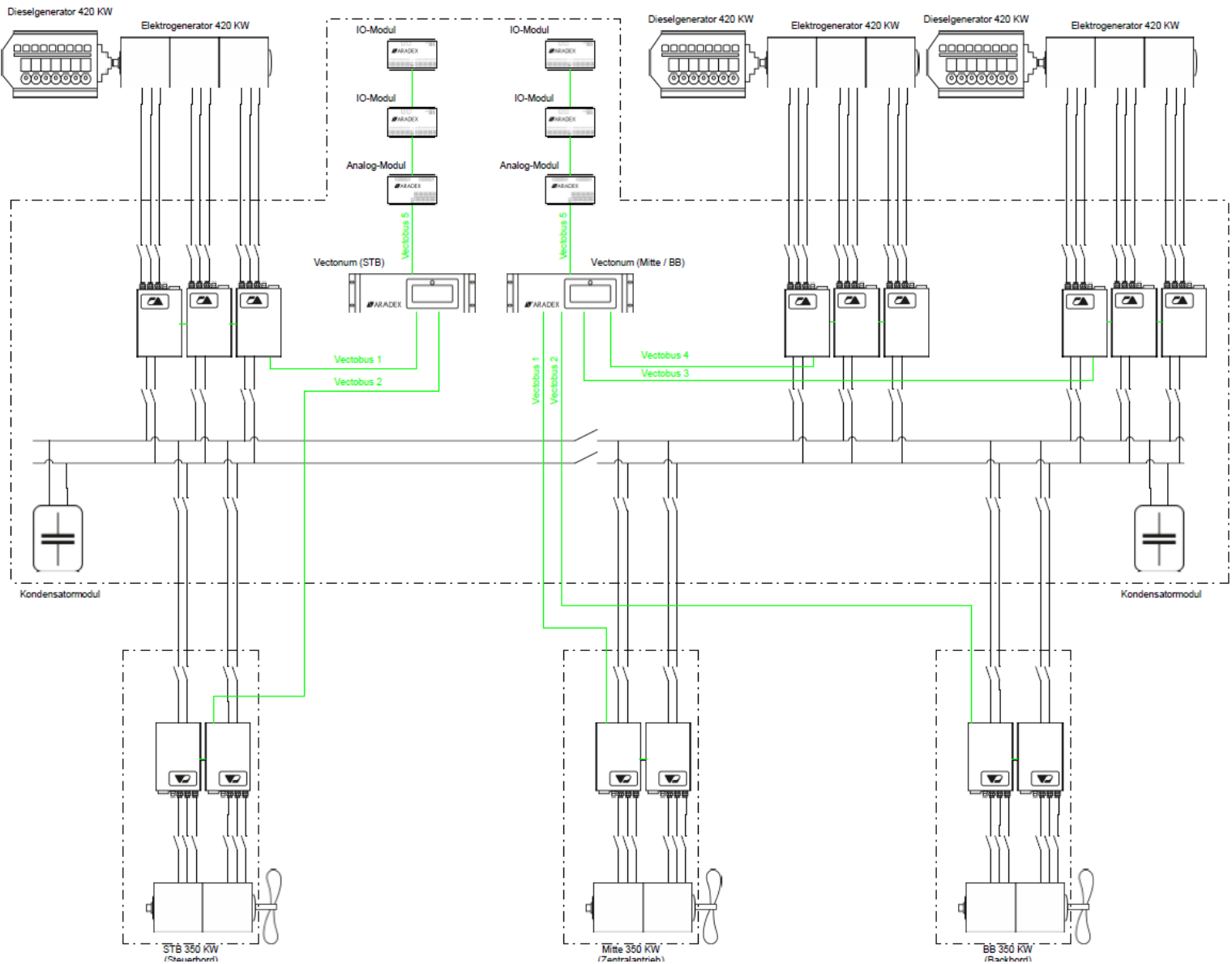


196 TEU DUAL FUEL CONTAINER-SHUTTLE VESSEL FOR COASTAL SERVICE

TORQUEMARINE Antriebssystem für 3 x 350 KWe Ruderpropeller
 Redundante Generatoren + Umrichter (je 33,33% Last) Redundante Antriebsmotore (je 50% Leistung)



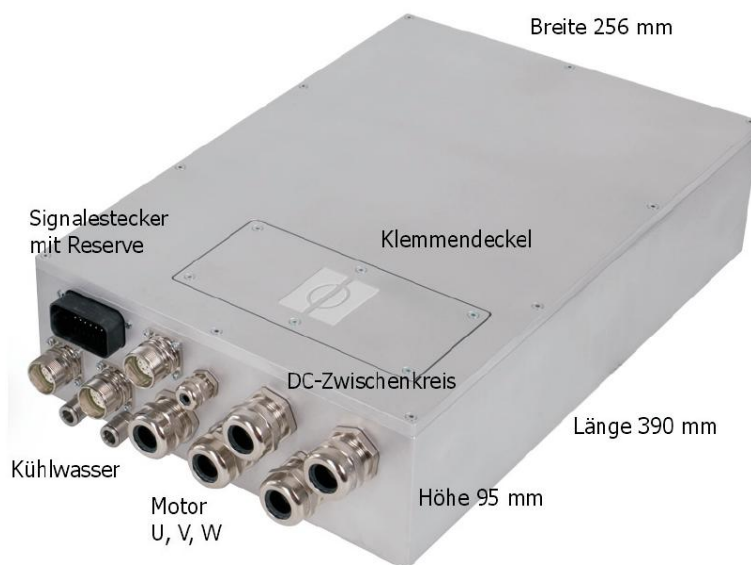
Agenda:

1. Die 3 Generatoren werden von Diesel Aggregaten mit 1800 rpm konstanter Drehzahl angetrieben.
2. Die Einspeisung der Umrichter erfolgt mit jeweils 140 KW max. Leistung zur Schaltanlage.

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3. In der Schaltanlage sind „redundant“ pro Generator 3 d.h. gesamt 9 wassergekühlte Umrichter, die Steuerung sowie die Schienen für den Gleichstrom Zwischenkreis untergebracht.
4. Die Ausgänge zu den Fahrmotoren werden „redundant“ vom Gleichstrom Zwischenkreis eingespeißt. Der Abgang erfolgt über Sicherung – Lasttrenner.
5. Die wassergekühlten Antriebsmotore sind mit 2 wassergekühlten Umrichter (je 50% ges Leistung) ausgerüstet, die erforderliche Auslegung wird von Torquemarine geliefert. Die Umrichter und Motore haben ein gemeinsames F.W. Kühlsystem.

Wassergekühlte TORQUE MARINE Umrichter



1. zum Einbau direkt im Antriebssystem (Klemmkasten), integrierte Wasserkühlung.
2. zum Einbau in eine bordseitige Schaltanlage, Einspeisung Generator für Stromversorgung Gleichstrom Zwischenkreis

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Front view PCS Operator panel



1 Torque Marine PCS Propulsion Control System: General Description

**Torque Marine PCS Propulsion Control System:
for three electrical main engines, two azimuth one stationary with fixed pitch propellers.**

The Torque Marine Propulsion Control System fully automates the control of the main propulsion motors, and fixed pitch propellers from the bridge and control room. The remote control system fulfills the rules of the classification societies and includes local engine control, telegraph functions, safety system and RPM/Pitch indication.

The Torque Marine PCS Propulsion Control System consists of three independent systems:

1. Portside shaft line
2. Center shaft line
3. Starboard Shaft line.

The Torque Marine PCS Propulsion Control System for each shaft line consists of the following main components:

a) Location: Bridge and Control Room

PCS Operator Panels with a Speed/Trust and direction setting lever with built-in position change over pushbuttons, emergency stop pushbutton and telegraph(center Panel).

RPM/Pitch indication is provided as well on an 7" TFT panel with 12 pushbuttons for start/stop, etc.

b) Location: Engine Room

PCS Control Cabinet for controlling and monitoring of the main propulsion motors by hard wired IO signals and via serial communication link to the drive units

Note:

We presume that the emergency control will be included in the Frequency drive via emergency control solenoids.

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The reliable PCS Control Cabinet for each shaft line provides hardwired IO signals and/or a serial communication link to control and monitor the main propulsion motors.

The PCS Control Cabinet receives orders from the Speed/Trust setting lever in the center and Speed/Trust/thruster direction for the Port and Starboard side control panels on the Bridge and Control Room. The PCS Control Cabinet activates starting, stopping and gives a Speed/Trust setpoint to the main motor frequency drives. The PCS Control Cabinet provides output signals to connect to e.g. RPM and/or Pitch indicators and includes a Telegraph Repeater as well.

The following Modes are available:

-a- Remote Control from the Bridge during Maneuvering:

Portside and Starboard side Azimuth thrusters are individually controlled by the Port and Starboard levers located on the Bridge.

With these levers not only the Speed/Trust can be controlled but also the direction of the Thruster
Both functions are integrated in the lever.

-b- Remote Control from Bridge during Sailing

Speed/trust of all three thrusters is controlled by the set-point output of the Center-lever.

Note that in this case the Azimuth thrusters are in fixed forward position.

Steering will be by means of the Rudder position only (not Torquemarine supply)

-c- Remote Control from the ECR during Maneuvering:

Portside and Starboard side Azimuth thrusters are individually controlled by the Port and Starboard levers located in the ECR.

With these levers not only the Speed/Trust can be controlled but also the direction of the Thruster
Both functions are integrated in the lever.

-d- Remote Control from ECR during Sailing

Speed/trust of all three thrusters is controlled by the set-point output of the Center-lever.

Note that in this case the Azimuth thrusters are in fixed forward position.

Steering will be by means of the Rudder position only (not Torquemarine supply)

-e- Emergency(Local Control)

Both On Bridge and ECR a pushbutton panel is available which are hard wired connected to the emergency control, solenoids (increase/decrease)

In addition a telegraph panel will be installed near the emergency control (not Torquemarine supply).