CASE STUDY 2:

DUE DILIGENCE INVESTIGATION AZIMUTH PROPULSION DRIVES

SAGA CRUISE LINES

Client:	**Saga Cruise Lines**
Industry:	**Marine**
Plant Type:	**Cruise Ship**
Project:	**Due Diligence Study**
Contract:	**Lump Sum**
Date:	**2016**

"A due diligence investigation into azimuth drive propulsion technology for two new cruise ships."

SPE was contracted by Saga Cruises to undertake a due diligence study for a proposed electrical azimuthing propulsion drive system for two new cruise liners currently under production, as the ship builder had proposed to use two 6.5MW, 6.6kV azimuthing, podded electric drives instead of the conventional rudder with twin diesel engines. Azimuthing electric propulsion technology has been available for several decades, but has been beset by problems of equipment failure. The end client was unfamiliar with this type of technology and wanted an independent consultant to review the suitability and reliability of the technology before agreeing to its use in their cruise vessels.

SPE undertook a detailed analysis of the manufacturer's proposal, including analysis of the individual components of the azimuthing technology including a PEM motor, slip ring transmitter, VSD unit and converter transformer to ensure that the proposed system was technically reliable and robust, and that it had a proven track record free of major faults. As part of the study SPE investigated potential common mode failures where loss of a single component could result in complete system failure. SPE also visited several of the manufacturer's main construction facilities and an operational vessel with two of the propulsion units already installed.

After the investigation, SPE prepared a detailed technical report providing clearly worded technical and non-technical summaries of the proposed system, and potential strengths and weak-points in the system design. Saga technical group reviewed the report prepared by SPE, and advised their management that the report had addressed all the main points, and that Saga should proceed in adopting azimuthing drives as their new propulsion technology.

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