unrivalled benefits

Tailored Solutions for
MARINE PROPULSION

ALLEN GEARS
GEARED FOR THE FUTURE
Over the last 50 years Allen Gears has supplied more than 1350 main propulsion gear systems to the naval and commercial marine sectors. Every unit is bespoke; designed to meet each customers specific design criteria exactly.

Installations include:

- Fast Patrol Vessels for various world navies including British, German, Swedish, Malaysian and Norwegian
- Luxury yachts utilising complex systems demanding high speed, weight optimised solutions
- 980 epicyclic gear sets for Merchant Marine Installations, including a range of Very Large Crude Carriers (VLCC)

Arrangements

- Single-In Single-Out epicyclic and parallel shaft units
- Double In, Single Out arrangements for gas turbine, diesel and electric drive
- Special arrangements connecting shaft-lines

Our main areas of activity are:

- Fast Patrol Vessels
- Fast Luxury Yachts
- Naval and Commercial Hovercraft
- OPV’s
- Corvettes
- Frigates

Allen Gears works with all classification societies including DNV, ABS, Lloyds, Germanischer Lloyd, AGMA, RINA and NKK.
Allen Gears prides itself in producing tailored transmission systems that address our customers key design drivers in full. For each project we supply unique solutions, designed to operate with the utmost reliability.

Over the years, Allen Gears has gained the respect and confidence of the discerning marine propulsion market with great strength in critical areas;

• Application Expertise
• Flexibility
• Innovation.

**SHERGAR HIGH SPEED LUXURY YACHT**

'Shergar' high speed luxury yacht, built for the Aga Khan. The yacht is a 46m monohull with a maximum rated speed of 45 knots. The waterjets are propelled by two Allison 570 gas turbines with a total installed power of 10,800 kW.
Application Expertise

This is the foundation of our marine propulsion business. For over 50 years, Allen Gears has been solving its customers design problems, often minimising the weight and installation space of its transmissions beyond the ability of its competitors.

We have the confidence to approach the boundaries of engineering limits, while still ensuring the ultimate in reliability. This is a result of intimate application knowledge and successful installations over many years.

BASS TRADER (ghosted image)

1966. Sea Swan, a 255,350 tonne deadweight VLCC powered by Stal Laval turbine propulsion system utilising Allen epicyclic gearing. One of 980 gear sets supplied for this vessel type.


1988. Propulsion fan drives for Republic of South Korea Navy, LSFI hovercraft programme. Gearbox weight is minimised to 990kg per unit, each gearbox powered by a 2200kW Textron Lycoming TF40 Gas Turbine. Maximum speed 60 knots. Allen Gears also supplied lift fan gearboxes for this contract.

1996. Main gas turbine gearbox for KNM Skjold fast attack vessel for Norwegian Navy. Two x Allison 571 gas turbines driving through gearbox in C drive configuration. Total installed gas turbine power 6,000 kW.
Flexibility

For each new project we have no preconception or preference for any particular engineering solution. In the early stages, only our customers’ design issues are important and we are at their disposal to optimise engine, propulsor and machinery layout to guarantee that vessel performance is optimised.

Utilising our vast experience and expertise in the application of all types of gearing systems, Allen Gears will find a combination that enables employment of the desired machinery drive train.

Flexibility to enable co-axial machinery layouts

Where a co-axial arrangement of engine and driven shaft is the customer’s optimum layout, the most complimentary gearbox configuration is likely to be epicyclic. These offer the most power dense solution where a single-in, single-out gearbox is required.

Flexibility to enable the most power dense machinery layout whilst achieving desired shaft centres

Where the optimum machinery layout calls for large centre distances between drivers, whilst minimising gearbox weight and dimension, Allen Gears will offer a tailored solution that achieves both aims.

Flexibility to enable any machinery orientation

Allen Gears will design the drive train and casing to ensure that the driving machinery, the driven machinery and surrounding structures can be positioned as desired.
Innovation

Not only do we enable the use of your preferred drive train technology, by being flexible with regard to gearbox design. We will also go one significant step further, to optimise the gear design for the specific project.

Allen Gears is skilled in addressing customers’ key gearbox design criteria. Our track record of providing bespoke, power dense solutions, provides some excellent examples of innovation at work;

The challenge on Millennium 140 was to keep weight to a minimum and to minimise both the horizontal offset between the gas turbines and the gearbox width.

The solution was a special COGAG design that addressed the customer’s dimensional restraints by:

- Utilising low diameter epicyclic units immediately after the gas turbines.
- Mounting these units at an angle, to minimise horizontal offset.

Each epicyclic unit drives (via quill shaft and SSS clutch) a single helical pinion. The lower pinion drives direct onto the final gearbox bull gear driving the waterjet. Power from the upper gas turbine is applied via the lower pinion and an intermediate wheel. This arrangement permitted the customer to install the gas turbines exactly in their desired position. SSS clutches allow the use of either or both gas turbines.
Electron Beam Welding is applied in the construction of geared rotors and shafts to produce an extremely power dense solution. Allen Gears has worked closely with leading aerospace companies to develop designs and welding processes that ensure a robust and reliable product. The result is components weighing as much as 50% less than alternative lightweight marine solutions.

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Electron Beam Welding allows precision gearwheels to be constructed from thinner section gear rims, side plates and shafts without generating the high levels of distortion prevalent with other welding practices.

- Electron beam welding does not use filler material
- Only parent material is utilised, providing a high level of weld integrity and strength properties
- Only highly localised heating is applied, minimising distortion.

The Visby Class corvettes for the Swedish Navy are 73m vessels, with 600 tons full displacement and a speed of 15 knots long distance and 35 knots short distance. The propulsion system consists of 2 x CODOG units in a C drive configuration.
Our dedicated Service facility provides gearbox inspections, overhauls, repairs, refurbishments and upgrades.