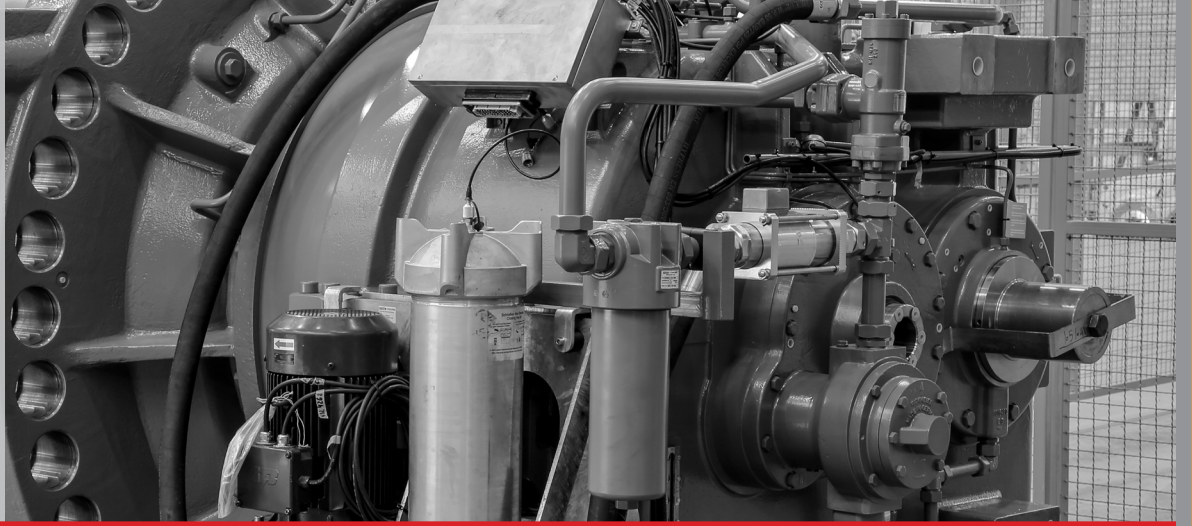




2.5 MW, class 2 wind turbine gearboxes

MAPNA TURBINE ENGINEERING & MANUFACTURING Co. (TUGA)



2.5 MW, class 2 wind turbine gearboxes

MAPNA Group started its activities in the field of wind energy production in 2009 and eventually signed a licensing and know-how agreement and entered into a contract with Fuhrländer to buy a handful of sample 2.5 MW turbines. As Gearbox is one of the most crucial parts of wind power chain and requires a high level of technology, TUGA was assigned to supply, manufacture, and test wind turbine gearboxes; and accordingly signed a contract with ZOLLERN for technology transfer and manufacturing wind turbine gearboxes. ZOLLERN has been active in wind turbine gearbox manufacturing since the 80s.

This gearbox has been successfully customized and added to TUGA product portfolio. Wind turbine gearbox is a three-stage, speed-increasing gearbox and transfers the power from wind turbine blades to the generator. The first two stages of this gearbox consist of a helical planetary gear set and the third one of a helical gear. This gearbox has the efficiency of 97% and got certified by Germaisher Lloyd (GL2010) after it was revised in 2010.

Product specifications

No.	Parameters	Unit	Value
1	Mechanical Efficiency	%	>97
2	Number of Stages	-	2Planetary+ 1 Helical Stages
3	Direction of rotation	-	CW Facing High Speed shaft
4	Lubrication System	-	Forced and Splash
5	Viscosity of Oil	-	ISO VG 320
6	Oil Type	-	PAO
7	Cooling System	-	External Oil Cooler
8	Design Code	-	Acc. to the GL2010
9	Gearbox Life Time	hours	180000
10	Ratio	-	1:79.2
11	Weight	tonnes	20.6
12	Oil Capacity	lit	430
13	Rated Output	Kw	2500
14	Input	rpm	9.4 to 17.1



Advantages

- High efficiency and low level of noise and vibration
- Less frequent repair and maintenances
- Proper functionality at site conditions
- Design life of at least 20 years
- 5 and 6 class gear design and manufacture according to DIN standard

Testing

All manufactured gearboxes are tested under load and the following factors are constantly controlled:

- Gearbox sound level
- Gears and bearings vibrations
- Bearings and oil tank temperature
- Gear teeth contact pattern

After-sales services

TUGA, the major and local manufacturer of various power plant gearboxes such as wind turbine and ACC gearboxes, offers holistic services to ensure liable operation of these products. These services include spare part supply, as well as repair and maintenance; and are provided based on customer requirements, utilization plan, site limitations, functional conditions and unit utilization records.

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