FOWPI (https://www.fowpi.in/)
FIRST OFFSHORE WIND PROJECT OF INDIA

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Crew Transfer Vessels

Crew Transfer Vessels (CTVs) are primarily involved in the transfer of wind personnel, technicians and cargos, from the local ports to the offshore wind turbines in cases of minor repairs and technical problems which can be solved without heavy equipment. They are also required during the installation phase of a wind farm, even in higher numbers than in the operating phase.

CTVs are usually aluminum catamarans accommodating 12 passengers. Transit speed range between 15-25 kn although some vessels have a top speed of up to 30 kn. CTVs can be used to take small amounts of cargo out to sites, such as components and equipment for servicing of wind turbines. Accessible foredeck space is required with a load capacity ranging from 1 ton to as much as 30 ton.

There are 6 types of CTVs classified based on their hull shape:

Monohull

The first CTVs that were used in offshore wind farms were monohull vessels modified from an existing pool of multi-purpose vessels, which were in use as pilot and merchant marine supportive crew boats. Their main advantages are their low cost and scalability. On the other hand, monohull CTVs can only operate safely up to sea states of significant wave height of 1.2 − 1.5m.

Catamaran

The majority of CTVs nowadays are aluminum catamarans. The main reasons behind their extensive usage are the high speeds that they can achieve and the good seakeeping behaviour in medium sea conditions as well as their improved stability when pushing against the boat landing of a wind turbine for offshore technician transfer. Their disadvantage compared to mono-hull vessels is their relative higher cost. Catamaran CTVs can operate satisfactorily at significant wave heights up to 1.5 − 2m.

Trimaran

In an effort to reduce fuel consumption and improve seakeeping behaviour of catamarans, trimaran CTVs have recently entered the market. After employing a gripper system in the bow, transfer of technicians is possible up to sea states of Hs of 2.5m.

Small Waterplane Area Twin Hull (SWATH)

The market share of SWATH CTVs is constantly increasing. SWATHs are catamaran-like vessels, which achieve greater stability by minimizing the hull cross section area at the sea's surface. Their disadvantage is higher cost and lower speed compared to catamarans. Their design allows comfort during sailing and safe access at significant wave heights of 2.0 − 2.5m.

Surface Effect Ship (SES)

The technology of SES has also been adopted for CTVs. The hull shape of SES CTVs is similar to catamarans but most of the vessel's weight is lifted by an air cushion, which provides high stability leading to high speeds, less fuel consumption and good seakeeping behaviour. This however comes with the disadvantage of design complexity and higher costs. Overall, maximum operable sea states vary from 2.0 to 2.5m.

TRI SWATH

The TRI SWATH Wind Farm Support Vessel is a new design which is intended to enable safer and more efficient offshore wind turbine servicing. The new design combines the seakeeping and fuel efficiency benefits of a trimaran hull configuration with a small waterplane area at rest, to deliver

low vessel motions both in transit and when alongside turbines. Their design allows comfort during sailing and safe access at significant wave height of 2m to 3m.

The below table shows an overview of typical values of the characteristics of the aforementioned CTV types.

	Monohull	Catamaran	Trimaran	SWATH	SES	TRI SWATH
Length (m)	21	20	18	20	28	27
Max. Speed (knots)	23	25	20	23	33	25
Passengers	12	12	12	12	12	12
Cargo (tons)	5	10	1	2	4	4.5
Significant Wave Height (m)	1.5	2	2.5	2.5	2.5	3

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- Crew Transfer Vessels

Sno.	Name of Vessel	Company	Builder	Year	Type	Length (m)	Deck Area (sq.m)	Max Load(t)	Crar
1	Iceni Victory	Iceni Marine Services	South Boats IOW	2013	MCA Cat 2, Class DNV 1A1 HSLC R2 Windfarm service 1	24.7	-	-	Dec Cran Palfing PK450 900k 5.1m re
2	Accomplisher	Northern Offshore Services AB	Grovfjord Mek Verksted Norway	2012	23 m High Speed Catamaran	22.4	63	15	Palfing PK 120(

3	Captain P	Offshore Turbine Services	-	2012	MPC19	18.5	Forward Deck Space : Up to 37 sq.m Aft Deck Space : Up to 34 sq.m	15	On req
4	Rhosneigr Bay	Turbine Transfers Limited	Neptune Shipbuilding	2013	DNV XSS Wind Farm Service Vessel	28.1	71	10	Crane be fitt
5	M/V KEM 2	KEM Offshore APS	-	2014	Wave Piercing Catamaran Crew Transfer Vessel	28.5	53	18	Founda availa
6	Offshire Taxi one	Offshore AXI GmbH & Co. KG	MatzelfeldtwerftCuxhaven, Germany	2015	Baltec A240	24	12	8	Palfing Typ PK450
7	Sea Fox	Enviro-serve	Navalu	2013	NXS 24	24	112	15	-

8	Wind Force I	FRISIAOffshore GmbH & Co. KG	Schiffsweft Diedrich	2009	Catamaran	22	35	10	1,5t Promac 20 E
9	Norfolk Tern	Norfolk Marine, Commercial Managers, EMAR Offshore Services B.V.	Aurora (Dalian) Yachts Co. Ltd	2013	Windfarm Support Vessel	17	18 / 27	5	-

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