# National Award for Polar science &Ocean Technology

## Dr.Atmanand

Dr.Atmanand contributed in setting up of an impulse turbine based wave energy converter as part of wave energy project at Vizhinjam, Kerala. Data collection and analysis of the performance of flipping and fixed guide vane impulse turbine used for energy conversion. He is involved with the 1 MW floating Ocean Thermal Energy conversion project mainly in the electrical, instrumentation and control aspects. Data analysis of various intermediate tests like open cycle ammonia test etc. He initiated activities related to deep sea mining by participating in the design and development of a crawler for pumping of sand slurry from a depth of 500m after equipping the ORV SagarKanya with a Dynamic Positioning (DP) and Launching and Retrieval system (LARS). He developed and tested Remotely Operated Artificial Nodule Laying System. To meet the grand challenges of designing the underwater mining system at a depth of 6000m, it required to develop an underwater in-situ soil property measuring system andDesign, implement and test the system in hostile location (at a depth of 5462m in the Central Indian Ocean Basin). The above was successfully designed, fabricated and tested in the Central Indian Ocean basin. India's first Polar Remotely Operable Vehicle (PROV) was developed and tested. The Polar ROV was tested successfully at the Priyadarshinilake at Antarctica. Underwater videos were taken for the first time in the country with this vehicle. He played a major role in design and implementation of a work class Remotely Operable Vehicle (ROV) – again first for the country – that can be used for assisting the mining operations, gas hydrates site for validation of presence of methane, pipeline inspection etc. Setting up of low temperature thermal desalination plants in the islands of Agatti, Minicoy and Kalpeni in the Lakshadweep group of islands in Arabian Sea successfully.He brought to rail the Ocean observation buoy system with 12 buoys always available in the Indian seas to collect atmospheric and sub surface data, which gets disseminated to Indian National Centre for Ocean Information Services (INCOIS), thereby to Indian Meteorological Department (IMD). One of the reasons for improvement in Cyclone prediction in the country is due to this data being available to IMD. Arctic mooring program was initiated and continued for establishing link between Arctic and Indian monsoon. Later ambient noise measurement also was added to the mooring which detects ice cracking noise which is a useful data for climate change studies. Assessed the sea cage farming potential of the country and carried out a geospatial analysis of Indian seas to identify the prospective areas for marine finfish farming. The analysis revealed the availability of vast technically suitable areas between 5 and 100 m depth zone which is regarded as cost effective mariculture zone. Biodiesel was produced by base-catalysed transesterification reaction from the oil extracted form C. vulgaris. Test run of biodiesel (B-10) powered vehicle from Nellore to Chennai was successfully completed. Technology transfer to Industry was done for Remotely Operable Vehicles, wave powered data buoy, Autonomous underwater profiling drifter, Robo coastal observer, Drifter based on INSAT communication, Expandable CTD profiler etc.

In recognition to his outstanding contributions in the field of Ocean Technology, Ministry of Earth Sciences (MoES) honours Dr.Atmanandwith the "National Award in the field of Ocean Technology" for the year 2020