## **PhD Proposal Resources, Facilities and Field Work – FESS for VWT – Written by Afsaneh Cooper**

## **Methodology**

1. Literature Survey for years 2013 – 2017
2. Risk Analysis for FESS Materials for the Rim and Shaft including Nano-Tube Rope/other Composites/Fiberglass and Steel
3. Quality Assurance for the Optimization of Dimensions, Materials, Bearings, Generator, Vacuum Case, Turbine Blades, Wind Generator, Coupling, Control System, etc. for parts to either purchase or manufacture them
4. Project Information, Communication and Technology [ICT] Management, by applying software SimWise – 4D for Simulation of the movement and Forces [FEA] of the FESS. This software is suitable for engineers who lack enough experience using FEA Software’s. Also application of TurboCAD software for the Geometrical and Solid Modelling of the FESS and VWT.
5. Ordering parts from an online store retailer, which sells FESS Parts [6 – link 6]
6. Construction of the prototype of the FESS and ordering parts from online stores
7. Construction of the VWT prototype for producing electricity from wind and feeding it through a cord to the motor of the FESS. Also ordering a Wind Generator from online store [cheap]. The wind turbine blades would be made of TEAK [Blackwood]
8. Supervision of Apprentices at TAFE to construct the FESS prototype using CNC Machine.
9. Testing the two prototypes of FESS and VWT to verify the Design
10. Testing of the FESS with various rims with different materials such as composites/polymers/steel/Nano-Tube
11. Publication of 6 articles during the first two year
12. Testing the equipment with various bearings, rims, speed, etc. using University Lab. equipment, or by ordering a Smart Monitoring System from VYCON.
13. Testing the energy efficiency for the system FESS & VWT, FESS & PV, FESS & VWT & PV
14. Video Recording of all activities, which can be presented as Webinar on ewindfly website.
15. I am prepared to pay for the cost of VWT and build its blade, but buy its wind generator
16. **I am prepared to pay for a trip to do my testing and data gathering over the FESS Equipment in Canada and USA in my own cost, as I have relatives in these two countries and can stay with them in Lost Angeles, Texas, Miami, Minnesota, Virginia and Toronto. I know the locations of these FESS Equipment gathered from my previous PhD at Murdoch and 2016-2017 links in ewindfly website.**
17. Publication of six articles about:
18. Project FESS & VWT Management
19. Materials testing for FESS Safety: Radial and Hoop Strains in FESS using spin test meter
20. Bearings Testing for FESS
21. Energy Efficiency for the system FESS & VWT, FESS & PV, FESS &VWT & PV
22. Advanced applications of FESS such as TAH, RHKT, EV, VWT, PV, Motorbike, Bicycle, Rower, charging station, Electric Lifting car, etc.
23. FESS for VWT thesis outcomes [PhD thesis]