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121.	WOMEN ORBIT- EASY METHOD FOR UNDERSTANDING MENSTRUAL CYCLE.	123
122.	CANDLE ELECTRICAL POWER GENERATOR SYSTEM (CEPSIS)	124
123.	3D PRINTED LOWER-LIMB SOCKET FOR PROSTHETIC LEG	125
124.	DUAL USAGE TOILET BOWL	126
125.	MCYCLE EBOX	127
126.	RASPBERRY IOT LEARNING KIT WITH ANDROID APP	128
127.	EARLY DROWSINESS DETECTION SYSTEM	129
128.	FISH SCALE REMOVER MACHINE	130
129.	PERPUSTAKAAN SPA RETOSC	131
130.	WATER QUALITY MONITORING SYSTEM	132
131.	MARITEAM (EMPOWERING LOCAL FISHERY WITH THE NEW TECHNOLOGY)	133
132.	COLLEGE ACTIVITY ATTENDANCE REGISTRATION & SCRUTINIZATION SYSTEM USING BARCODE SCANNER (COLLAARS)	134
133.	TOYS SCOOPER	135
134.	SUPERVISION ELECTRICITY ENERGY USING IOT SYSTEM	136
135.	GO N DRINK	137
136.	SMART AUTOMATIC FISH FEEDER 4.0	138
137.	SAFETY EARTH LEAKAGE CIRCUIT BREAKER	139
138.	ECO POT	140
139.	SMART GARDENING SYSTEM	141

## **INVENTION CATEGORY**

140.	EDUCARD (ENGLISH EDUCATION CARD) THE SOLUTION TO LEARN GRAMMAR EASILY	143
141.	BIO-INSPIRED NOVEL HYBRID VERTICAL AXIS WIND TURBINE	144
142.	“COCOGO” THE ANTIDIABETIC CARBONATED COCONUT DRINK INNOVATION ADDED BY THE EXTRACT OF ALBEDO FROM WATERMELON AND PUGUNTANO LEAF AS COMMODITY OF NORTH SUMATERA	145
143.	EGI (ELECTRIC GREEN INNOVATION): DEVELOPMENT TECHNOLOGY DYE-SENSITIZED SOLAR CELL (DSSC) MADE FROM KIAMBANG CHLOROPHYLL AND CYANOBACTERIA IN RANU PANI LAKE CONSERVATION AS ECO-FRIENDLY ELECTRIC ENERGY	146
144.	A TECHNOLOGY-BASED SMART TECH NECKLACE AS A BREAKTHROUGH FOR AN INTEGRATED INCLUSIVE DEAF EDUCATION (OR ENVIRONMENT)	147
145.	SABUN STICK SARA ANN 2.0	148
146.	V-SHOCK PEN	149
147.	SISTEM PENGURUSAN AKTIVITI PELAJAR	150
148.	SMART HYDROT ( SMART HYDROPONICS ROTATING TOWER )	151
149.	BAPEL “BAKSO APEL” THE INNOVATION OF BAKSO THAT USES APPLE TO INCREASE THE CONSUMPTION OF APPLE AND BAKSO WHICH CAN DECREASE THE RISK OF CANCER	152
150.	GLORY AQUA	153

# INVENTION

## CATEGORY

# BIO-INSPIRED NOVEL HYBRID VERTICAL AXIS WIND TURBINE

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Today several countries are investing their resources on the development of renewable energy, the focused sector of development in renewable energy is wind power generation. Energy harvested by the wind turbine are relative to wind speed potential regardless the type or configuration of wind turbine used. Design modification were done on wind turbine by engineers in order to adapt the wind speed of the desired geographical area. In Malaysia studies indicated that the average wind speed potential is 2.1 *m/s* dependent on season and geographical area, which is not adequate in harvesting energy in megawatt scale. Researches indicates that, drag driven wind turbines VAWTs are suitable in harvesting wind energy in low wind speed potential. The objective of this research is to present the aerodynamics performance of a novel bio-inspired hybrid drag driven wind turbine and with two sub objective; operational under low speed wind potential, and low manufacturing cost. In this research, the novel hybrid design were created by the hybridizations of three design elements inspired by nature; Albatross bird's wing, Pitcher plant, and Tulip flower. The novel wind turbine were design based on the principals of VAWT's design parameters, in order to maintain design's practicality and performance. Ansys fluent were used to perform aerodynamic performance study on the design. The usefulness of this research is to broaden the knowledge and understanding of bio-mimicry design implementation and adaptation into wind energy harvesting machinery.



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