



PAKISTAN COUNCIL FOR SCIENCE AND TECHNOLOGY

BOOKLET OF PRODUCTS / TECHNOLOGY DEVELOPED

BY

**THE ORGANIZATIONS OF MINISTRY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD**

Blue Martin



NuVent



**Spray
Drone**

First Industrial National Innovation Survey

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Products developed by CDLE Lab of PCSIR

1. Crucible Furnace 1000 °C

Specifications **Model No. (CF -1/02)**

Temp. Range: up to 1000 °C
Control: Energy Regulator
Muffle Size: Ø90 x
120mm Operating Voltage: 220 V-
50Hz
Power: 1200 W



Description of Product/Technology:

Furnace feature, uniform temperature, fast heat up, Temperature controlled by energy regulator.

Main usage of product/Technology:

Designed for vertical heat processes and laboratory melting applications.

2. Cylindrical Furnace 1000 °C

Specifications **Model No. (CF -1/02)**

Temp. Range: up to 1000 °C
Control: Energy Regulator
Muffle Size: Ø66 x
200mm Operating Voltage
220V-50Hz
Power: 1200 W



Description of Product/Technology:

Furnace feature, uniform temperature, fast heat up, Temperature controlled by energy regulator.

Main usage of product/Technology:

Designed for vertical heat process, and laboratory melting applications.

3. Cylindrical Water Bath

Specifications **Model No. (CB -1/02)**

Capacity: 4 L
S.S. Vessel Size: Ø230 x 130mm with set of top cover
Rings min Ø57mm, max Ø185mm
Temp. Range: Ambient to Boiling
Control: Energy Regulator
Operating Voltage: 220 V- 50Hz
Power: 1000 W



Description of Product/Technology:

Stainless Steel Cylindrical Electric Water Bath fitted with concentric rings, Tubular immersion heater, drain cock water regulator, front panel and energy regulator.

Main usage of product/Technology:

Designed to gently warm samples, concentration and distillation of low boiling liquids.

4. Digital Cylindrical Water Bath

Specifications **Model No. (DCW -1/06)**

Capacity 4 L
Temp. Range Ambient to Boiling
Controller Digital
Operating Voltage 220V, 50 Hz
Power 1000W



Description of Product/Technology:

Stainless Steel Cylindrical Electric Water Bath fitted with concentric rings, Tubler immersion heater,

stirrer for uniform temperature front panel with digital temperature controller.

Main usage of product/Technology:

Designed to gently warm samples & biotechnology applications.



5. Bench Top Centrifuge

Specifications	Model No. (CG -1/07)
Capacity	6 x 15 ml. (Tubes)
Speed Range	3300 Rpm. (Adjustable)
Timer	15 minutes (adjustable)
Operating Voltage	220V, 50Hz

Description of Product/Technology:

Cast aluminum machined and balanced rotor for 6 test tubes of 15ml, sealed compartment to protect against aerosols and splashed. Motor shuts off when the cover is opened. Solid steel base and suction cup feet keep centrifuge firmly in place.

Main usage of product/Technology:

A centrifuge is an instrument that uses centrifugal force to separate colloidal particles or substances of different densities to remove moisture, for micro filtration, or to simulate gravitational effects.

6. Drying Oven 256 L. (Digital)

Specifications	Model No. (DOD-1-256/06)
Capacity (Chamber)	256 L (W76 x H76 x D45) cm
Chamber Material	Stainless Steel
Outer Body	Mild Steel Powder Coated
Shelves	3 Stainless Steel
Temp. Range	Ambient to 220°C ± 5°C
Control	Digital
Operating Voltage	220V, 50 Hz
Power	2500W



Description of Product/Technology:

Forced convection double door drying oven equipped with digital temperature controller, Temp indicator, ON/OFF switch, heavy gauge stainless steel chamber, Ventilation valve, 3 perforated shelves and stainless steel tube air cooled heating element fitted both sides the chamber in ducts, blowers moves air across shelves in horizontal path.

Main usage of product/Technology:

Ideal for shelf processing, drying, preheating, curing, dry sterilization, paper and rubber drying.

7. Drying Oven 108 L. (Digital) 300°C

Specifications	Model No. (DO-1-108/02)
Chamber Material	Stainless Steel
Outer Body	Stainless Steel
Capacity (Chamber)	108 L (W56 x H48 x D40) cm
Shelves	3 Stainless Steel
Max Temp	300°C ± 1°C
Power	220 Volts, 50 Hz
Watts	2500W



Description of Product/Technology:

Forced convection Drying Oven, uniformly distributed hot air horizontally on each shelf, heaters are located around the walls of chamber; temperature is controlled by digital temp controller.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.

8. Drying Oven 105 L. (Digital)

Specifications **Model No. (DO-1-105/02)**

Capacity (Chamber): 105 L (W52 x H45 x D45) cm
Temp. Range: Ambient to 220°C ± 5 °C
Control: Digital
Chamber Material: Stainless Steel
Outer Body: Mild Steel Powder Coated
Shelves: 2 Stainless
Steel Operating Voltage: 220 V- 50 Hz
Power: 1250 W



Description of Product/Technology:

Forced convection drying oven equipped with digital temperature controller, Temp indicator, ON/OFF switch, Stainless steel chamber, Ventilation valve, Perforated shelves, and stainless steel tube air cooled heating element fitted inside the chamber for energy saving and easy replacement.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.

9. Drying Oven 60 L. (Analogue)

Specifications **Model No. (DO-1-60/02)**

Capacity (Chamber): 60 L (W495 x H395 x D330) mm
Chamber Material: Stainless Steel
Outer Body: Stainless Steel
Temp. Range: Ambient to 220°C ± 10°C
Control: Thermostatic
Operating Voltage: 220 V- 50 Hz
Power: 750 W



Description of Product/Technology:

Gravity convection drying oven equipped with thermostatic temperature controller, dial gauge for Temp indication, ON/OFF switch, Stainless steel chamber, Ventilation valve, Perforated shelves, and stainless steel tube air cooled heating element fitted inside the chamber for energy saving and easy replacement.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.

10. Drying Oven 60 L. (Digital)

Specifications **Model No. (DDO-1-60/05)**

Capacity (Chamber): 60 L (W495 x H395 x D330) mm
Temp. Range: Ambient to 220 °C ± 5 °C
Control: Digital
Operating Voltage: 220 V- 50 Hz
Power: 750 W



Description of Product/Technology:

Gravity convection drying oven equipped with digital temperature controller, Temp indicator, ON/OFF switch, Stainless steel chamber, Ventilation valve, Perforated shelves, and stainless steel tube air cooled heating element fitted inside the chamber for energy saving and easy replacement.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.

11. Drying Oven 30 L. (Analogue)

Specifications **Model No. (DO-1-30/02)**

Capacity (Chamber): 30 L (W380 x H305 x D305) mm Chamber Material Stainless Steel
Outer Body Stainless Steel
Temp. Range: Ambient to 220 °C ± 10 °C
Control:

Thermostati

c Operating Voltage: 220 V- 50Hz

Power: 500 W

Description of Product/Technology:

Gravity convection drying oven equipped with thermostatic temperature controller, dial gauge for Temp indication, ON/OFF switch, Stainless steel chamber, Ventilation valve, Perforated shelves, and stainless steel tube air cooled heating element fitted inside the chamber for energy saving and easy replacement.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.



12. Drying Oven 30 L. (Digital)

Specifications **Model No. (DDO-1-30/05)**

Capacity (Chamber): 30 L (W380 x H305 x D305) mm Chamber Material Stainless Steel
Outer Body Stainless Steel
Temp. Range: Ambient to 220 °C ± 5 °C
Control: Digital
Operating Voltage: 220 V- 50 Hz
Power: 500 W

Description of Product/Technology:

Gravity convection drying oven equipped with digital temperature controller, Temp indicator, ON/OFF switch, Stainless steel chamber, Ventilation valve, Perforated shelves, and stainless steel tube air cooled heating element fitted inside the chamber for energy saving and easy replacement.

Main usage of product/Technology:

Ideal for wide range of heating and drying applications, like glassware drying, dry sterilization, plant tissue drying, aging/curing studies, epoxy/plastic curing, textile, paper and rubber drying.



13. Electro Mantle for Soxhlet Extraction 1L

Specifications **Model No. (SE-1/02)**

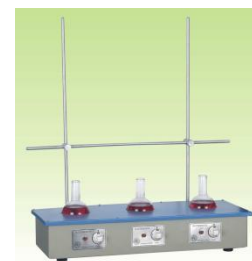
Capacity: 1 L
Temp. Range: Ambient to 200°C
Control: Energy
Regulator Operating Voltage: 220 V- 50 Hz
Power: 3 x 325W

Description of Product/Technology:

Specially designed for Soxhlet and other extractions tests with three electro mantles, accommodate different sizes glassware, fitted with individual energy regulator for heat control individual light indicator for heater and safety fuse.

Main usage of product/Technology:

A multi-pot heating system allows liquid with different boiling points to be heated adjacently; ideal for laboratory applications like repetitive extractions, refluxing and distillation applications.



14. Electro Mantle for Soxhlet Extraction 500mL

Specifications **Model No. (SE-1A/02)**

Capacity: 500mL
Temp. Range: Ambient to 200 °C
Control: Energy
Regulator Operating Voltage: 220
V- 50 Hz
Power: 3 x 250W



Description of Product/Technology:

Specially designed for Soxhlet and other extractions tests with three electro mantles, accommodate different sizes glassware, fitted with individual energy regulator for heat control individual light indicator for heater and safety fuse.

Main usage of product/Technology:

A multi-pot heating system allows liquid with different boiling points to be heated adjacently; ideal for laboratory applications like repetitive extractions, refluxing and distillation applications.

15. Electro Mantle for Soxhlet Extraction 250mL

Specifications **Model No. (SE-1B/02)**

Capacity: 250mL
Temp. Range: Ambient to 200 °C
Control: Energy
Regulator Operating Voltage: 220
V- 50 Hz
Power: 3 x 180W



Description of Product/Technology:

Specially designed for Soxhlet and other extractions tests with three electro mantles, accommodate different sizes glassware, fitted with individual energy regulator for heat control individual light indicator for heater and safety fuse.

Main usage of product/Technology:

A multi-pot heating system allows liquid with different boiling points to be heated adjacently; ideal for laboratory applications like repetitive extractions, refluxing and distillation applications.

16. Four in One Precision Hot Plate

Specifications **Model No. (4-1-PHP/07)**

Temp. Range: Ambient to 100°C $\pm 0.5^{\circ}\text{C}$
Control: PID-Digital control (independent for each hot plate)
Hot plate size: 165 x 165 x 25mm (Teflon coated)
Number of hot plates: 4 (four)
Chassis: Mild steel (powder coated)
Operating Voltage: 220 V- 50 Hz with 6 feet AC Power cord and independent fuse holder for each plate.



Description of Product/Technology:

Rectangular Cast aluminum hot plate with Teflon coated in application for R & D organizations, Electrical, Industrial & Pharmaceutical set-ups. Separate digital controls permit the each hot plate to be used simultaneously or independently.

Main usage of product/Technology:

Provides flameless heating digitally controlled within a 0.5°C for warming, boiling, refluxing, concentration & evaporation of materials and chemical reactants.

17. Heating Mantle 2L

Specifications	Model No. (HM-1C/05)
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Capacity:	2 L
Temp. Range:	Ambient to 200 °C
Control:	Energy Regulator
Operating Voltage:	220 V- 50 Hz
Power:	450W

Description of Product/Technology:

Cylindrical Mild steel powder coated table model Heating Mantle features a flexible heating element embedded in fiber glass allowing efficient heat transfer. Ceramic Fiber Thermal Insulation keeps the body cool and stable

Main usage of product/Technology:

Heating Mantles provides uniform and flameless heating of solutions, viscous materials and chemical reactants also for evaporation, refluxing, distillation and fractional distillation applications.



18. Heating Mantle 1L

Specifications	Model No. (HM-1/02)
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Capacity:	1L
Temp. Range:	Ambient to 200 °C
Control:	Energy Regulator
Operating Voltage:	220 V- 50 Hz
Power:	325W

Description of Product/Technology:

Cylindrical stainless steel table model Heating Mantle features a flexible heating element embedded in fiber glass allowing efficient heat transfer. Ceramic Fiber Thermal Insulation keeps the body cool and stable

Main usage of product/Technology:

Heating Mantles provides uniform and flameless heating of solutions, viscous materials and chemical reactants also for evaporation, refluxing, distillation and fractional distillation applications.



19. Heating Mantle 500 mL

Specifications	Model No. (HM-1A/02)
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Capacity:	500mL
Temp. Range:	Ambient to 200 °C
Control:	Energy
Regulator Operating Voltage:	220 V- 50 Hz
Power:	250W

Description of Product/Technology:

Cylindrical stainless steel table model Heating Mantle features a flexible heating element embedded in fiber glass allowing efficient heat transfer. Ceramic Fiber Thermal Insulation keeps the body cool and stable

Main usage of product/Technology:

Heating Mantles provides uniform and flameless heating of solutions, viscous materials and chemical reactants also for evaporation, refluxing, distillation and fractional distillation applications.



20. Heating Mantle 250mL

Specifications	Model No. (HM-1B/02)
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Capacity:	250mL
Temp. Range:	Ambient to 200 °C
Control:	Energy Regulator
Operating Voltage:	220 V- 50 Hz



Power: 180 W

Description of Product/Technology:

Cylindrical stainless steel table model Heating Mantle features a flexible heating element embedded in fiber glass allowing efficient heat transfer. Ceramic Fiber Thermal Insulation keeps the body cool and stable

Main usage of product/Technology:

Heating Mantles provides uniform and flameless heating of solutions, viscous materials and chemical reactants also for evaporation, refluxing, distillation and fractional distillation applications.

21. Heavy Duty Hot Plate (S.S Body) 300°C

Specifications	Model No. (HDHP-1A/04)
Top Plate:	25 x 300 x 450mm (Ceramic Coated)
Chassis:	Stainless Steel
Temp. Range:	Ambient to 300°C ±10°C
Control:	Thermostatic
Operating Voltage:	220 V- 50 Hz
Power:	1500 W



Description of Product/Technology:

Cast aluminum Teflon coated top plate with embedded heating elements and thick insulation provides fast heating. Temperature controlled by a thermostat and indicated by dial gauge.

Main usage of product/Technology:

Provides flameless heating for warming, boiling, refluxing, concentration & evaporation of materials and chemical reactants.

22. Heavy Duty Hot Plate (M.S Body) 300°C

Specifications	Model No. (HDHP-1/02)
Top Plate:	25 x 300 x 450mm (Cast Iron)
Chassis:	Mild Steel (Powder Coated)
Temp. Range:	Ambient to 300°C ±10°C
Control:	Thermostatic
Operating Voltage:	220 V- 50 Hz
Power:	1500 W



Description of Product/Technology:

Cast iron top plate with embedded heating elements and thick insulation provides fast heating. Temperature controlled by a thermostat and indicated by dial gauge.

Main usage of product/Technology:

Provides flameless heating for warming, boiling, refluxing, concentration & evaporation of materials and chemical reactants.

23. Digital Heavy Duty Hot Plate (M.S Body) 400°C

Specifications	
Top Plate:	25 x 300 x 450mm (Cast Iron)
Chassis:	Mild Steel (Powder Coated)
Temp. Range:	Ambient to 300°C ± 5°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	3000 W



Description of Product/Technology:

Cast iron top plate with embedded heating elements and thick insulation provides fast heating. Temperature controlled and indicated by digital temperature controller.

Main usage of product/Technology:

Provides flameless heating for warming, boiling, refluxing, concentration & evaporation of materials

and chemical reactants.

24. Horizontal Shaking Water Bath (04 Flasks)

Specifications	Model No. (HSW-1/06)
Bath Capacity	18 L / 4 Flask
250mL Bath Size (L x W x D)	(355 x 305 x 165) mm
Shaking Speed	200 Times / min (adjustable)
Shaking Stroke	20mm horizontal
Temp. Range	ambient to 100°C \pm 2°C
Control	Digital
Operating Voltage	220 V, 50 Hz
Power	1200W



Description of Product/Technology:

Stainless steel chamber and gable cover, stainless steel shaker tray with clamp retainers for glassware clamps, emersion type heater controlled with digital temp controller, mild steel powder coated exterior.

Main usage of product/Technology:

For shaking samples horizontally in both directions, uniformly from mild shaking to vigorous mixing, quietly in water at certain temperature.

25. Horizontal Shaking Water Bath (Large)

Specifications	Model No. (HSW-1/06)
Bath Capacity	40 L / 12 Flask 250mL
Bath Size	(L x W x D)(554 x 420 x 186)mm
Shaking Speed	200 Times / min (adjustable)
Shaking Stroke	20mm horizontal
Temp. Range	ambient to 100°C \pm 2°C
Control	Digital
Operating Voltage	220 V, 50 Hz
Power	1200W



Description of Product/Technology:

Stainless steel chamber and gable cover, stainless steel shaker tray with clamp retainers for glassware clamps, emersion type heater controlled with digital temp controller, mild steel powder coated exterior.

Main usage of product/Technology:

For shaking samples horizontally in both directions, uniformly from mild shaking to vigorous mixing, quietly in water at certain temperature.

26. Heated Circulating Bath 100 L

Specifications	Model No. (HSW-1/06)
Main Chamber	Stainless Steel
Outer Body	M.S. Sheet (Powder Coated)
Temp Range	Ambient to 80°C \pm 1°C
Control	Digital
Operating Voltage	220 V, 50 Hz
Power	2500 W



Description of Product/Technology:

Heated circulating bath features built-in water heating emersion heaters. Powerful pressure pumps ensure efficient heat exchange required for temperature accuracy. Touch pad input simplifies operation of a PID temp controller.

Main usage of product/Technology:

These baths are used to warm samples of fruit & vegetables for testing in food and agriculture laboratories.

27. Magnetic Stirrer Hot Plate

Specifications Model No. (MSHP-1/02)

Speed Range: 100 to 1200 rpm
Temp. Range: Ambient to 300°C
Top Plate: 25 x 165 x 165mm (Teflon Coated)
Operating Voltage: 220 V- 50 Hz
Power: 500 W



Description of Product/Technology:

Rectangular Cast Aluminum Hot Plate With Built in Magnetic Stirrer Suitable in Applications for R&D Organizations, Electrical, Industrial & Pharmaceutical Set-ups. Separate Stepless Controls Permit the Hot Plate and Stirrer to Be Used Simultaneously or Independently.

Main usage of product/Technology:

A Combination Of Hot Plate and Stirring System, Ideal for Heating and Stirring of Viscous/Semi-Viscous Liquids, Distillation, Evaporation and Digestion applications

28. Magnetic Stirrer Hot Plate

Specifications Model No. (MSHP-1/02)

Speed Range: 100 to 1200 rpm
Temp. Range: Ambient to 300°C
Top Plate: 25 x 165 x 165mm (Teflon Coated)
Operating Voltage: 220 V- 50 Hz
Power: 500 W



Description of Product/Technology:

Rectangular Cast Aluminum Hot Plate With Built in Magnetic Stirrer Suitable in Applications for R&D Organizations, Electrical, Industrial & Pharmaceutical Set-ups. Separate Stepless Controls Permit the Hot Plate and Stirrer to Be Used Simultaneously or Independently.

Main usage of product/Technology:

A Combination Of Hot Plate and Stirring System, Ideal for Heating and Stirring of Viscous/Semi-Viscous Liquids, Distillation, Evaporation and Digestion applications.

29. Mini Magnetic Stirrer Hot Plate

Specifications Model No. (MMSHP-1/05)

Speed Range: 100 to 1200 rpm
Temp. Range: Ambient to 300 °C
Top Plate: Ø152 x 25mm (Ceramic Coated)
Operating Voltage: 220 V- 50 Hz
Power: 500 W



Description of Product/Technology:

Round cast Aluminum Hot Plate Ceramic Coated with built in Magnetic Stirrer suitable in applications for R&D Organizations, Educational, Industrial & Pharmaceutical set-ups. Separate stepless controls permit the Hot Plate and Stirrer to be used simultaneously or independently.

Main usage of product/Technology:

A combination of hot plate and stirring system, ideal for heating and stirring of viscous/semi-viscous liquids, distillation, evaporation and digestion applications.

30. Digital Hot Plate

Specifications	Model No. (DHP-1/10)
Temp. Range:	Ambient to 300°C ±5°C
Top Plate:	Ø152 x 25mm (Ceramic Coated)
Control:	Digital Temperature
Controller Operating Voltage:	220 V- 50 Hz
Power:	500 W



Description of Product/Technology:

Rectangular Cast Aluminum Hot Plate Suitable in Applications for R&D Organizations, Electrical, Industrial & Pharmaceutical Set-ups. Separate Stepless Controls Permit the Hot Plate and Stirrer to Be Used Simultaneously or Independently.

Main usage of product/Technology:

A Combination of Hot Plate System, Ideal for Heating of Evaporation and Digestion applications.

31. Digital Magnetic Stirrer Hot Plate

Specifications	Model No. (DMSHP-1/11)
Speed Range:	100 to 1200 rpm
Temp. Range:	Ambient to 300 °C
Top Plate:	25 x 165 x 165 mm (Ceramic Coated)
Control:	Digital Temperature Controller
RPM:	Digital RPM Indicator
Operating Voltage:	220 V- 50 Hz
Power:	500 W



Description of Product/Technology:

Rectangular Cast Aluminum Hot Plate With Built in Magnetic Stirrer Suitable in Applications for R&D Organizations, Electrical, Industrial & Pharmaceutical Set-ups. Separate Stepless Controls Permit the Hot Plate and Stirrer to Be Used Simultaneously or Independently.

Main usage of product/Technology:

A Combination Of Hot Plate and Stirring System, Ideal for Heating and Stirring of Viscous/Semi-Viscous Liquids, Distillation, Evaporation and Digestion applications

32. Melting Point Apparatus (analogue)

Specifications	Model No. (MP-1/02)
Temp. Range:	Up to 360 °C
Operating Voltage:	220 V- 50 Hz
Power:	100 W



Description of Product/Technology:

A mini heating device has been provided with low voltage heating element with thiristier circuitry for step less heat control. The sample is sandwiched between two micro glass discs, placed on the micro hot plate. Melting point is observed by a mercury thermometer through adjustable magnifier with a light beam on the stage to aid observation.

Main usage of product/Technology:

Ideal for Melting point determination of crystalline materials up to 360°C.

33. Melting Point Apparatus (Digital)

Specifications	Model No. (DMP-1/07)
Temp Range	Up to 360°C
Temp. Indicator	Digital
Operating Voltage	220V, 50Hz
Power	200 W



Description of Product/Technology:

A mini heating device has been provided with low voltage heating element with thiristor circuitry for

stepless heat control. The sample is sandwiched between two micro glass discs, placed on the micro hot plate. Melting point is observed by a Digital Temperature Indicator through adjustable magnifier with a light beam on the stage to aid observation.

Main usage of product/Technology:

Ideal for Melting point determination of crystalline materials up to 360°C.

34. Muffle Furnace 1000 °C

Specifications	Model No. (MF-1/02)
Capacity:	2.6 L
Muffle Dimension (WxHxD):	(100 x 120 x 220)
mm Temp. Range:	Up to 1000°C ±5°C
Temp Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	1500 W



Description of Product/Technology:

Furnace features Nichrome Wire Embedded-heating elements on three sides of muffle with ceramic fiber insulation for fast heat up and reduced energy consumption. Temperature controlled and indicated by Digital Temperature Controller. Door safety switch disengages power to heating element when door is opened.

Main usage of product/Technology:

Heat treatment of ferrous and non-ferrous metals, ashing, ignition, fusion of rocks and minerals, and annealing of glass.

35. High Temperature Muffle Furnace 1200°C

Specifications	Model No. (HTMF-1/07)
Temp Range	upto1200°C ±5°C
Muffle Size	(100 x 125 x 200) mm
Temp Control	Digital
Operating Voltage	220V, 50Hz
Power	3000W



Description of Product/Technology:

Furnace features silicon carbide heating elements in side the muffle with ceramic insulation for fast heat up and reduced energy consumption. Temperature controlled and indicated by Digital Temperature Controller. Door safety switch disengages power to heating element when door is opened.

Main usage of product/Technology:

Heat treatment of ferrous and non-ferrous metals, ashing, ignition, fusion of rocks and minerals, and annealing of glass.

36. Orbital Shaker

Specifications	Model No. (OS-1/02)
Speed Range	50-350 rpm
Electronic Timer (Optional)	adjustable up to
100 hrs Orbital Size	10mm
Platform Dimensions	(330 x 280) mm / 9 Flask 250mL
Operating Voltage	220V, 50 Hz
Power	100W



Description of Product/Technology:

Suitable for operation on Bench Top. Solid-state speed control provides accurate regulation of Shaker speed from 30 to 350 rpm. Operate continuously or set timer for few seconds to 100hrs. Four prongs stainless steel clamps hold flasks for 250ml.

Main usage of product/Technology:

Ideal for studies requiring a continuous shaking motion. Useful for solubility, mixing, bacterial suspension, also for the propagation of bacteria, mould, plant cells and other microbes.

37. Digital Orbital Shaker

Specifications	Model No. (DOS-1/11)
Speed Range	50-350 rpm
Electronic Timer (Optional)	adjustable up to 100 hrs
Orbital Size	10mm
Control:	Digital RPM Indicator
Platform Dimensions	(330 x 280) mm
Operating Voltage	220V, 50 Hz
Power	100W



Description of Product/Technology:

Suitable for operation on Bench Top. Solid-state speed control provides accurate regulation of Shaker speed from 30 to 350 rpm. Operate continuously or set timer for few seconds to 100hrs. Four prongs stainless steel clamps hold flasks for 250ml.

Main usage of product/Technology:

Ideal for studies requiring a continuous shaking motion. Useful for solubility, mixing, bacterial suspension, also for the propagation of bacteria, mould, plant cells and other microbes.

38. Digital Oil Bath Magnetic Stirrer

Specifications	Model No. (OBMS-1/07)
Bath Capacity	4L
Temp Range	Ambient to 300°C ±1°C
Temp Control	Digital
Speed Range	up to 1000 rpm.
Operating Voltage	220V, 50Hz
Power	1200W



Description of Product/Technology:

Oil bath features a digital temperature control-heating element fitted around the bath for indirect heating. A magnetic stirrer system for the sample to stir. A set of concentric cover rings for required opening.

Main usage of product/Technology:

Oil bath magnetic stirrer is used for research applications such as stability testing, conditioning, preheating and tempering.

39. Over Head Stirrer

Specifications	Model No. (OHS-1/06)
Speed Range	100 – 2800rpm
(Adjustable) Stirrer Shaft Size	Ø6mm x 200mm
(Stainless Steel) Operating Voltage	220V, 50Hz
Power	75W



Description of Product/Technology:

Equipped with DC motor, operates through a speed control, and provides speed from 100rpm to 2800rpm. Chuck adjusts to fit shaft up to Ø10mm.

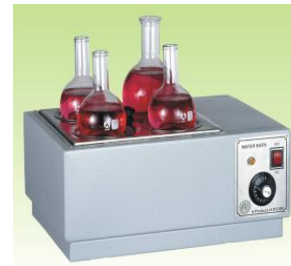
Main usage of product/Technology:

General purpose mixing or homogenizing stirs a wide variety of low viscosity liquids in small or large volumes.

40. Rectangular Water Bath

Specifications **Model No. (RW-1/02)**

Capacity (Chamber):	12L (L330 x W330 x D125) mm
Number of Holes:	4 x Ø115mm
Temp. Range:	Ambient to Boiling
Control:	Thermostatic
Operating Voltage:	220 V- 50 Hz
Power:	1200 W



Description of Product/Technology:

Electrically heated concentric-ring water Bath is equipped with stainless steel chamber, stainless steel tube immersion heater, thermostatic Temp. Control and ON/OFF switch.

Main usage of product/Technology:

Designed to gently warm samples, concentration and distillation of low boiling liquids.

41. Rotamantle 1L

Specifications **Model No. (RM-1/02)**

Capacity:	1 L
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200°C
Control:	Energy Regulator for Heat
Control Operating Voltage:	220 V- 50 Hz
Power:	350W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

42. Rotamantle 500mL

Specifications **Model No. (RM-1A/02)**

Capacity:	500 mL
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200°C
Control:	Energy Regulator for Heat
Control Operating Voltage:	220 V- 50 Hz
Power:	275 W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

43. Rotamantle 250mL

Specifications	Model No. (RM-1B/02)
Capacity:	250 mL
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200°C
Control:	Energy Regulator for Heat
Control Operating Voltage:	220 V- 50 Hz
Power:	225W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

44. Digital Rotamantle 1L

Specifications	Model No. (DRM-1/11)
Capacity:	1L
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200°C ±5°C
Control:	Temperature Controller for Heat Control
RPM:	Digital RPM Indicator
Operating Voltage:	220 V- 50 Hz
Power:	350W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

45. Digital Rotamantle 500mL

Specifications	Model No. (DRM-1A/11)
Capacity:	500 mL
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200°C ±5°C
Control:	Temperature Controller for Heat Control
RPM:	Digital RPM Indicator
Operating Voltage:	220 V- 50 Hz
Power:	275W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

46. Digital Rotamantle 250 mL

Specifications	Model No. (DRM-1B/11)
Capacity:	250ml
Speed Range:	100 to 1200rpm (Adjustable)
Temp. Range:	Ambient to 200 °C
Control:	Temperature Controller for Heat Control
RPM:	Digital RPM Indicator
Operating Voltage:	220 V- 50 Hz
Power:	225W



Description of Product/Technology:

Cylindrical stainless steel housed table model Rotamantle features step less speed control and an energy regulator for heat control. Permits heating and stirring separately or simultaneously, stirrer is driven by motor mounted at the base of mantle; heating element is embedded in fiberglass to provide uniform temperature.

Main usage of product/Technology:

Useful for simultaneous heating and/or stirring of liquids in round bottom flasks for refluxing and distillation applications.

47. Thermostatic Dry Bath

Specifications	Model No. (TDB-1/02)
Size of Heating Blocks:	50 x 75 x 90mm(Interchangeable)
Size of Test Tube Expected:	Ø7.9, Ø10.3, Ø13.5mm
Temp. Range:	Ambient to 150°C ±2°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	200 W



Description of Product/Technology:

Special purpose aluminum construction blocks for different sizes of test tubes. Uniform heat is provided by embedded heater in aluminum casted hot stage with digital temperature controller and indicator.

Main usage of product/Technology:

Versatile dry bath provides controlled dry heat for wide variety of clinical and general chemistry applications. Ideal for warming filled tubes.

48. Tube Furnace 1000°C

Specifications	Model No. (TF-1/02)
Tube Dimension:	Ø40 x L400 mm
Hot Zone:	100mm
Temp. Range:	Up to 1000°C ±5°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	1500 W



Description of Product/Technology:

Bench top unit ideal for performing research in chemical and industrial labs, accepts Ø25mm process tube. Embedded heating element around the tube with efficient heat insulation, temperature controlled & indicated by digital temperature controller.

Main usage of product/Technology:

Single zone versatile combustion furnace, ideal for annealing, hardening and reduction of oxide minerals.

49. Tube Furnace Large Size 1000°C

Specifications	Model No. (TF-1A/05)
Tube Dimension:	Ø63 x L800 mm
Temp. Range:	Up to 1000°C ±5°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	3000 W



Description of Product/Technology:

Bench top unit ideal for performing research in chemical and industrial labs. Embedded heating element around the tube with efficient heat insulation, temperature controlled & indicated by digital temperature controller.

Main usage of product/Technology:

Single zone versatile combustion furnace, ideal for annealing, hardening and reduction of oxide minerals.

50. High Temperature Tube Furnace 1200°C

Specifications	Model No. (HTTF-1/06)
Tube Dimension:	Ø25 x L600 mm
Temp. Range:	Up to 1200°C ±5°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	3000 W



Description of Product/Technology:

Bench top unit ideal for performing research in chemical and industrial Labs, accepts Ø25mm process tube. Silicon carbide heating element around the tube with efficient heat insulation, temp controlled & indicated by digital temperature controller.

Main usage of product/Technology:

Single zone versatile combustion furnace ideal for high temperature reaction under controlled atmosphere and catalytic material experimentations.

51. High Temperature Tube Furnace 1400°C

Specifications	Model No. (HTTF-1/06)
Tube Dimension:	Ø25 x L600 mm
Temp. Range:	Up to 1400°C ±5°C
Control:	Digital with Ramp,soak and delay time
Operating Voltage:	220 V- 50 Hz
Power:	3000 W



Description of Product/Technology:

Bench top unit ideal for performing research in chemical and industrial Labs, accepts Ø25mm process tube. Silicon carbide heating element around the tube with efficient heat insulation, temp controlled & indicated by digital temperature controller.

Main usage of product/Technology:

Single zone versatile combustion furnace ideal for high temperature reaction under controlled atmosphere and catalytic material experimentations.

52. Vertical Muffle Furnace

Specifications	Model No. (HTTF-1/06)
Tube Dimension:	Ø25 x L600 mm
Temp. Range:	Up to 1200°C ±5°C
Control:	Digital
Operating Voltage:	220 V- 50 Hz
Power:	3000 W

Description of Product/Technology:

This unit is ideal for performing research in chemical and industrial Labs. Silicon carbide heating element around the Muffle with efficient heat insulation, temp controlled & indicated by digital temperature controller.

Main usage of product/Technology:

This furnace ideal for high temperature reaction under controlled atmosphere and catalytic material experimentations.

53. Vortex Mixer

Specifications

Speed	up to 2500rpm
Agitator Cup Size	Ø40mm or Ø90mm
Operating Voltage	220V, 50 Hz
Power	100 W

Model No. (VM-1/07)



Description of Product/Technology:

Vortex Mixer allows you to control speed intensity by a variable speed control, to adjust the shaking speed from gentle to rigorous vortexing. Interchangeable platforms with Ø1½” and Ø 3½” allows you to adapt your shaker to a variety of applications.

Main usage of product/Technology:

Vortex Mixer is laboratory equipment required for mixing of small sample in Test tubes, centrifuge tubes, colorimetric Tubes, being widely used in the R&D Labs. Of research institutions, educational institutions, industrial organization and clinical Labs.

54. Hot & Cold Water Bath 35 L.

Specifications

Chamber Capacity:	35 L.
Chamber Size:	(L56xW46xD23) cm
Temp. Range:	+15°C to +80°C ±1°C
Control:	Digital
Compressor Size:	1/5 HP
Operating Voltage:	220v-50Hz
Power:	3500Watt

Model No. (CS-1/06)



Description of Product/Technology:

Heated circulating bath features built-in water heating emersion heaters and cooling unit for working below ambient temperature. A water stirrer ensures efficient heat exchange required for temperature uniformity. Touch pad input simplifies operation of a PID temperature controller.

Main usage of product/Technology:

These baths are used to cool & warm samples of small volumes for their testing to study the effect of different temperature on the outer surface material like electric cable insulator i.e. PVC material.

55. Hot & Cold Heavy Duty Water Bath 800L.

Specifications

Chamber Capacity:	800 L.
Chamber Size:	(L100xW100xD80) cm
Temp. Range:	+20°C to +80°C±1°C
Control:	Digital
Compressor Size:	1/2 HP
Operating Voltage:	220v-50Hz
Power:	8000Watt

Model No. (HDWB-1/06)



Description of Product/Technology:

Hot & Cold Heavy Duty Water Bath features built-in water heating emersion heaters and a cooling unit

for working below ambient temperature. A powerful circulating pump ensures efficient heat exchange required for temperature uniformity. Touch pad input simplifies operation of a PID temperature controller.

Main usage of product/Technology:

These baths are used to cool & warm samples of large volumes for their testing to study the effect of different temperature on the outer surface material, like electric cable insulator i.e. PVC material.

56. General Purpose Utility Bath

Specifications	Model No. (GPUB-1/06)
Chamber Capacity:	12 L.
Chamber Size:	(L330 x W330 x D120) mm
Temp. Control:	Thermostatic.
Temp. Range:	up to 100°C
Operating Voltage:	220v-50Hz
Power:	1200Watt



Description of Product/Technology:

Rugged, Seamless deep drawn stainless steel bath chamber, outer body powder coated for longer life, maintains water temperature with thermostat for 5°C above ambient to 100°C with stainless steel gable cover fitted with stainless steel cooling coil as heat exchanger for sub ambient temperature applications with external coolant and circulators provided with stainless steel test tube rack.

Main usage of product/Technology:

Useful for wide variety of applications. Samples can be directly immersed into the bath, in beakers & flat bottom flasks placing on the perforated tray above the heating element or in the removable test tube rack.

57. Hot and cold Shaking Bath

Specifications	Model No. (HSW-1/15)
Bath Capacity	6 Flask 250mL
Shaking Speed	50-150 Times / min (adjustable)
Temp. Range	5°C to 50°C
Control	Digital
Operating Voltage	220 V
Power	300W
Temp. Control	Digital

Description of Product/Technology:

Hot and Cold shaking water bath features built in water heating emersion heaters and cooling units for working bellow ambient temperature. A powerful circulating pump ensures efficient heat exchange required for temp. uniformity. Touch pad input simplifies operations of a PID temperature controller.

Main usage of product/Technology:

Ideal for studies requires a continuous shaking motion with control temperature. Useful for the solubility mixing bacterial suspensions also for the propagation of bacterial, mould, plants cell and other microbes.

58. Adiabatic Bomb Calorimeter

Specifications	Model No. (ABC-1/08)
Dual stirrer	
Adiabatic system	
Hot bath reservoirs	
Digital temperature read out	
Temperature accuracy	0.1°C
Manual data calculation	

Double jacket isolated
Auto water filling and drain

Description of Product/Technology:

This Instrument is equipped with trolley and ideal for performing research labs as well as testing in industrial labs. Hot water reservoirs provide efficient hot water to accumulate temperature of water, digital temperature controlled with 0.1°C resolution.

Main usage of product/Technology:

To determine the calorific value of fuel, food items and ideal for such type of other materials. It is widely used in fuel testing and research lab, fob labs and cement factories.

59. Walk through metal detector gate

Specifications Model No. (WMD-02)

High penetrating power up to 9" each side

Description of Product/Technology:

This Instrument is easy to operate with low noise frequency, double beep buzzer as well as light indication. Gate is made up of unbreakable box, with data recording system, light weight and can work on both low and high power efficiency. This gate is also capable to record DVR and gate has one year warranty.

Main usage of product/Technology:

Instrument is used for security purpose

60. Hand held metal detector

Specifications Model No. (HMD-01)

Recharge able battery voltage 9V

High penetrating power up to 9" each side

Description of Product/Technology:

This Instrument is easy to operate with low noise frequency, double beep buzzer as well as light indication. Metal detector is made up of unbreakable box, with data recording system, light in weight and can work on both low and high power efficiency. Instrument has long battery time with rechargeable backup of one month due to low battery consumption. This instrument is also capable to record DVR and gate has one year warranty.

Main usage of product/Technology:

Instrument is used for security purpose

61. Ozone generator

Specifications Model No. (PESONIC-01)

Voltage 220/240VAC50/60Hz

Power 35W

Ozone output 150ml/h

Digital Timer 40 min

Air flow rate 150ml/h

Weight 250gm

Description of Product/Technology:

This unit is designed to treat air, vegetables, Fruit, meat and water only, at high ozone concentration levels For any application just place the unit in a room and turn it on for 30 minutes Concentration will reach 0.2 ppm approximately in 30 minutes in a room size of 100 sq ft.

Main usage of product/Technology:

Can be used for Hotels, Room Air treatment, Office, Air treatment. Home and Nursery homes, Air treatment, Basement, Remove Mold and Odors, Kitchen, remove food odor such as onion, spices,

burned oil and more. Kill bacteria in Air. Air Treatment, Kill Bacteria and Pollen. Doctor and Dental Office Applications. Smoke remover, Remove Smoke and smoke order right away.

62. Drying Oven 130 L. (Digital)

Specifications **Model No. (DOD-1-130/10)**

Capacity (Chamber)	130 L (W760 x H760 x D450) mm
Chamber Material	Stainless Steel
Outer Body	Mild Steel Powder Coated
Shelves	3 Stainless Steel
Temp. Range	Ambient to 220°C ±5°C
Control	Digital
Operating Voltage	220V, 50 Hz
Power	2500W



Description of Product/Technology:

Forced convection double door drying oven equipped with digital temperature controller, Temp indicator, ON/OFF switch, heavy gauge stainless steel chamber, Ventilation valve, 3 perforated shelves and stainless steel tube air cooled heating element fitted both sides the chamber in ducts, blowers moves air across shelves in horizontal path.

Main usage of product/Technology:

Ideal for shelf processing, drying, preheating, curing, dry sterilization, paper and rubber drying.

63. Digital Over Head Stirrer

Specifications **Model No. (DOHS-1/11)**

Speed Range	100 – 2800rpm
(Adjustable) Stirrer Shaft Size	Ø6mm x 200mm
(Stainless Steel) Operating Voltage	220V, 50Hz
Power	75W



Description of Product/Technology:

Equipped with DC motor, operates through a speed control, provides speed from 100rpm to 2800rpm. Chuck adjusts to fit shaft up to Ø10mm.

Main usage of product/Technology:

General purpose mixing or homogenizing stirs a wide variety of low viscosity liquids in small or large volumes.

64. Shaking Incubator

Specifications **Model No. (SI-1/17)**

Bath Capacity	6 Flask 250mL
Shaking Speed	50-150 Times / min (adjustable)
Temp. Range	5°C to 50°C
Control	Digital
Operating Voltage	220 V
Power	300W
Temp. Control	Digital

Description of Product/Technology:

Hot and Cold shaking incubator features built in fan heaters and cooling units for working below ambient temperature. A powerful circulating fan ensures efficient heat exchange required for temp. uniformity. Touch pad input simplifies operations of a PID temperature controller.

Main usage of product/Technology:

Ideal for studies requires a continuous shaking motion with control temperature. Useful for the solubility mixing bacterial suspension also for the propagation of bacterial, mould, plants cell and

other microbes

65. Two Stage Digital Orbital Shaker

Specifications	Model No. (TSDOS-1/11)
Speed Range	50-350 rpm
Electronic Timer (Optional)	adjustable up to 100 hrs
Orbital Size	10mm
Platform Dimensions	(330 x 280) mm x 2 9
	Flask 250mL each
Operating Voltage	220V, 50 Hz
Power	100W



Description of Product/Technology:

Suitable for operation on Bench Top. Solid-state speed control provides accurate regulation of Shaker speed from 30 to 350 rpm. Operate continuously or set timer for few seconds to 100hrs. Four prongs stainless steel clamps hold flasks for 250ml.

Main usage of product/Technology:

Ideal for studies requiring a continuous shaking motion. Useful for solubility, mixing, bacterial suspension, also for the propagation of bacteria, mould, plant cells and other microbes.

66. Hot and cold thermocouple calibrator

Specifications	Model No. (H&CT-1/18)
Temp	-10.0 °C to 150.0 °C
Temperature control	Digital
Over head stirrer	
Operating Voltage	220AC
Power	300W
Moveable trolley	
Speed Range	50-150 rpm

Description of Product/Technology:

Hot and Cold thermocouple calibrator's features built in water heating emersion heaters and cooling units for working bellow ambient temperature. A powerful circulating pump ensures efficient heat exchange required for temp. uniformity. Touch pad input simplifies operations of a PID temperature controller.

Main usage of product/Technology:

Ideal for studies requires a continuous shaking motion with control temperature. Useful for the solubility mixing bacterial suspension also for the propagation of bacterial, mould, plants cell and other microbes.

67. Bioreactor (CSTR) UV Cabinet

Specifications	Model No. (BOR-1/18)
Temp	Ambient to 150.0 °C
Temperature control	Digital
Over head stirrer	
Operating Voltage	220AC
Power	300W
Moveable trolley	
Speed Range	50-150 rpm

Double Jacket S.S Reactor

Description of Product/Technology:

The continuous stirred-tank reactor (CSTR), also known as vat- or back mix reactor, or a continuous stirred-tank reactor (CSTR), is a common model for a chemical reactor in chemical engineering. A CSTR often refers to a model used to estimate the key unit operation variables when using a

continuous agitated-tank reactor to reach a specified output. The mathematical model works for all fluids

Main usage of product/Technology:

The CISTR model is often used to simplify engineering calculations and can be used to describe research reactors. In practice it can only be approached, in particular in industrial size reactors. These types of reactor are equipped with stirrer motor, circulating pump, heating reservoir, temperature controller etc.

Contact information for further information

DG PCSIR LLC Email: cdlepcsir@gmail.com Phone no.:+92-42-99230688-95 Fax:+92-42-99230705

Products Developed by National University of Technology

68. NuVent (NUTECH Ventilator)

Specifications Model (NUVENT)

Ventilation Modes:	7
Air Temperature:	37
Humidity:	100%
Adjustable Patient monitors alarms:	ECG, BP, SPO ₂
Air ventilation Volume:	Max 1.5 liters/ breath
Standby mode time:	3 Hours
State of the Art:	Graphical User Interface



Description of Product/Technology:

It is expected that “Mechanical Ventilator” will have all the necessary approvals from appropriate local regulatory bodies in few months and will be ready for marketing. Brief specifications are attached as Annex A.

Main usage of product/Technology:

It is expected that finished equipment will be a complete ICU support unit with all WHO standard.

Contact information for further information

Dr. Umair Manzoor. Dean of Research, NUTECH, Email: Umair.manzoor@nutech.edu.pk, Phone No.051-5476722, 051-5476809 Fax : 051- 5476769.

Products Developed By Pakistan Science Foundation

69. Rich Seeds Technology for Improving the Performance of Crops (NSLP-489)

Description of Product/Technology:

This is Seed pelleting technology using indigenous materials. Seed pelleting is the process of adding inert materials to seeds increasing their weight, size and shape. Pelleting can help making planting significantly easier different equipment especially for a crop that grows from small or irregularly shaped seeds, such as lettuce, carrots and onions. It also improves the germination percentage.

Main usage of product/Technology:

To optimize seed pelleting and coating technology to make planting easier and spacing more precise for small seeded crops. To evaluate the efficiency of coated and pelleted seeds in green houses and field conditions .To investigate shelf life of treated seeds under optimum storage conditions

Contact information for further information

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70. Package of Technology for Poultry Feed Irradiation (NSLP-82)

Description of Product/Technology:

Poultry feed is the one of the major carriers of disease causing microorganisms in the flocks. Gamma irradiation is a relatively newer technology to kill microorganisms of poultry feeds. A package of technology has been developed at NIFA Peshawar for commercial application of irradiation for low cost and safe poultry feed.

Main usage of product/Technology:

This low cost package of technology has been developed for irradiation of poultry feed to make it safe

Contact information for further information

Dr. Aurangzeb, Ex-Director, NIFA, Peshawar Phone no.:+92-333-9014498

Products developed by National University of Science and Technology

71. Parabolic Trough Collector for Solar desalination

Specifications

Mirrors	Multiple small sized mirrors
Frame	Rotatable frame
Gearing System	Manual Tracking

Description of Product/Technology:

The product works on the principle of concentrating incident solar irradiance on the focal axis of parabolic trough. Multiple small sized mirrors are bent to a parabolic profile and attached to a sturdy space frame. The frame is also equipped with shaft and bearing arrangement so that the frame is rotatable. A gearing system is also attached to the frame to aid in the manual tracking of the parabolic trough's aperture with respect to the sun's movement.

Main usage of product/Technology:

Main purpose of the product is to heat the fluid passing through a pipe with high thermal conductivity located at the focal axis of the trough.



72. Parabolic Trough Collector for Solar desalination

Specifications

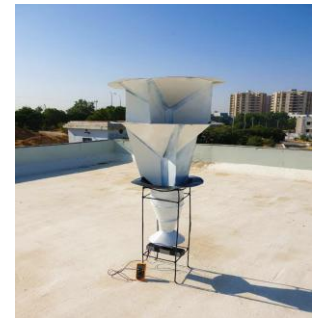
Wind turbine	Omni directional
Wind velocity	High speed
Design	Concealed blade
Maintenance	Less than conventional turbines

Description of the product/Technology:

It is an unconventional wind turbine which is omni directional (can capture wind from any direction) and direct the flow to a flow duct where wind flow is developed and then to a Venturi Section which increases wind velocity up to two times. This high speed wind then rotates the blades of turbines. As there is only one moving part that is turbine it will need much less maintenance than conventional turbines.

Main usage of product/Technology:

It can be used at commercial and domestic areas without any damage to humans or wildlife. We can install our turbine anywhere in the city at any altitude thus benefitting masses of society. People can use VENTURBO on their houses, office building, camp sites, rural areas etc. and store and produce electricity.



73. Atmospheric Water Generator (AWG) by Liquid Desiccant

Specifications

Relative humidity	> 30%
Temperature	> 35 °C
Absorbance capacity	high pace
Operation	cyclic

Description of Product/Technology:

Atmospheric Water Generator converts the moisture into liquid water and is modeled to work independently without any water reserve. The product extracts water at extreme weather conditions with relative humidity as low as 30% and temperature below 35 °C. This is achieved by a relatively new concept of liquid desiccants where desiccant is a hygroscopic element. It absorbs moisture from the surrounding at a higher pace. Next the extraction process yields out all the water from desiccant that it has absorbed from atmosphere and regenerated to further continue the cycle.



Main usage of product/Technology:

Main purpose of the technology is to provide an alternate method against available water generation techniques that is independent of water resources, adaptive to all locations and climate conditions. The system is designed to produce 15 liters of water per day.

74. Blue Martin - Autonomous Vertical Take-off and Landing (VTOL) Unmanned Aerial Vehicle (UAV) with Self-reconnaissance

Specifications

Relative humidity	> 30%
Temperature	> 35 °C
Absorbance capacity	high pace
Operation	cyclic

Description of Product/Technology:

Blue Martin is an autonomous hybrid UAV. This design has the capability to take off and land vertically like a rotary wing design UAV, and simultaneously possess the capability to cruise like a fixed wing design UAV. The UAV works on electric propulsion system, and is equipped with 3 electric motors. The UAV holds the capability to tilt the front two motors (using the customized tilting mechanism). These tilting motors help in the transition of UAV from rotary wing to fixed wing. With motors tilted upwards, the UAV takes off vertically. After the attainment of a specific safe height, the UAV is made to switch its mode to horizontal flight. For landing back, the UAV makes its transition to VTOL mid-flight by tilting its motors upwards. This tilting mechanism makes it capable of having the advantages of both the designs, i.e. rotary design and fixed wing design, and eliminates the flaws of both. The overall assembly of the UAV is modular, and comprises of a V-tail tail assembly, pod and boom fuselage, balsa and ply wing structure with carbon fiber load bearing spars. The UAV is also equipped with the capability of reconnaissance.



Main usage of product/Technology:

The drone technology is a game changer in the field of agriculture, disaster management, wildlife monitoring and surveillance. The hybrid design itself is a revolution in this already growing industry. The mid-flight horizontal to vertical flight switching capability makes it best suited to access congested places at remote locations. Blue Martin is equipped enough that it can carry out surveillance and monitoring missions, results of which can be easily utilized by law enforcement agencies and disaster management teams in the times of need. Also, it can be equipped to carry payload for certain destinations – making it useable for supplying immediate relief kits without having any human interaction.

75. Set of machines interlinked to produce recycled products using waste plastics (PET)

Specifications

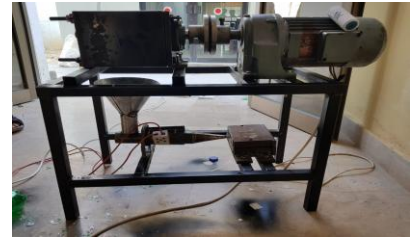
Working units	Potable 2 units
Shredding Unit	Cut and make small sized pellets
Injection unit	Plastic Melting place

Description of Product/Technology:

It is a small-scale portable plastic bottle (PET) recycling cell. Which will recycle plastic PET bottles and make useful products from them. This will be done by two set of machines namely Shredding unit and Injection unit. Shredding unit will convert the plastic bottle into small sized pellets which will be then fed into the injection unit. Injection unit is the unit where melting of plastic takes place. This melted plastic will enter the mold where it will solidify, and variety of products can be obtained depending upon the shape of mold. These two units will be interconnected and provide useful plastic (PET) products at a good rate. We aim to make the recycling cell portable so it can be installed in variety of locations and promote plastic recycling. Hence making plastic recycling more accessible for the public.

Main usage of product/Technology:

Main Usage is to recycle waste plastics at homes or public places at your own convenience instead of plastic being dumped into oceans. To create awareness among people about plastic pollution and to promote the culture of recycling. Also, it can also be used to produce threads which are used in 3D printers and in clothing industry.



76. Quadruped Robot

Specifications

Working	four-legged robotic platform
Operation	autonomous and remotely controlled Usage
	Multipurpose

Description of Product/Technology:

A robust and versatile four-legged robotic platform designed to operate in challenging environments. Inspired by nature, based on a structure that can imitate legged mammals to perform its motion. Each leg is actuated electrically resulting in 12 Degrees-Of-Freedom, giving it the versatility to traverse across different landscapes. Manipulation both over and across obstacles and the ability to travel staircases, sets this robot apart from others. With onboard computation and sensors to perform an autonomous operation as well as remotely controlled. It's multipurpose application base is defined by its expandable tooling kits like robotic arms, stereo cameras, etc.

Main usage of product/Technology:

The application of legged robots is most apparent in fields that are by the nature of their work, a danger to human lives. Work in dirty, hazardous environments that require heavy safety measures or are difficult for humans to access present the best opportunity for a quadruped for surveillance, inspection and manipulation. Military operations for reconnaissance, demining booby-trapped fields etc. Hazardous environments like nuclear power plants, mining exploration, catastrophe areas etc. Remote Location Explorations like volcanoes, reconnaissance missions on planets or even as simple domestic companions.



Quadruped Robot
<http://rdsi.pnec.nust.edu.pk/projects/quadruped.html>

77. Thermal Management of Photovoltaic Cells & Panels

Specifications

Temperature sensitivity	High
Photovoltaic cells efficiency	13-25%
Monocrystalline cells efficiency	0.08%/K



Description of Product/Technology:

Commercially available photovoltaic cells have a reported efficiency of 13-25% which decreases with increase in temperature and it has been shown that for monocrystalline cells the conversion efficiency drops by 0.08%/K. At ambient temperature of 40 C the cell temperature can rise to 80 C causing a significant drop in efficiency. We offer technology to improve the efficiency of PV cells by decreasing temperature of cell using passive thermal management techniques designed for client needs.

Main usage of product/Technology:

Improve efficiency of photovoltaic cells and panels.

78. Hybrid Darrieus Savonius Hydrokinetic Turbine

Specifications

low-pressure-head and low-flow rates

Energy production Capacity 350 MW

Description of Product/Technology:

The total installed capacity of hydropower utilization in Pakistan is around 15% of the 60,000 MW identified potential resources, of which the irrigation network (consisting of canals and barrages) can contribute over 350 MW. Our patented hybrid design, merges the advantages of Darrieus and Savonius turbines for low-pressure-head and low-flow rates; enabling investors to exploit this 350 MW potential for clean energy production.

Main usage of product/Technology:

Clean energy production from canals and streams. Little or no civil works required.

79. Intelligent Scalp Bike Helmet

Specifications

low-pressure-head and low-flow rates

Energy production Capacity 350 MW

Description of Product/Technology:

Smart helmet is designed to ensure bike rider's safety during collision or accidents. It is equipped with combination of sensors linked with android app which continuously monitors bike rider's acceleration and tilt angle from the road. In case of accident real time location of bike rider will be shared to the given number through text message so that emergency services can be reached on time.

Main usage of product/Technology:

General public – large number of motor bike users. Fleet management companies. Bike delivery services

80. CrasAir- An Urban Air Quality Monitoring solution based on Internet of Things

Specifications

Price Cost effective

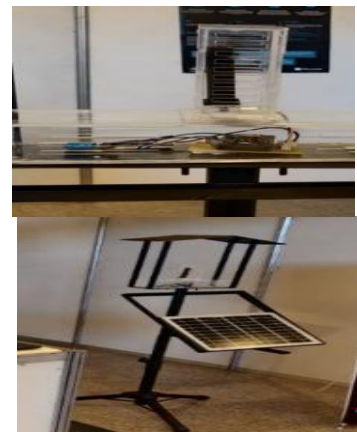
Air pollution Scalable Monitoring

Powered Solar energy

Description of Product/Technology:

Pakistan is facing many environmental issues such as increasing temperatures, air pollution, dry weather, inadequate rainfall etc.,

and among these problems, the poor air quality in urban regions is a major concern owing to its detrimental impacts on the environment and public health. To remedy this, CrasAir provides a sustainable and scalable IoT-based air quality monitoring system which will help to



collect data across the city in a near ubiquitous fashion to overcome the limitations of conventional costly and inefficient methods of air quality monitoring

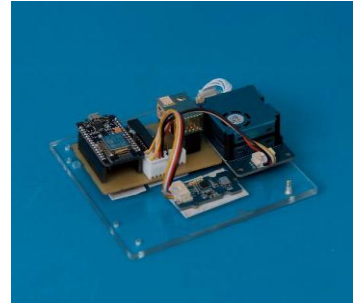
Main usage of product/Technology:

Cost effective and scalable air pollution monitoring solution as compared to its alternatives.

81. NIAQ- An Indoor Ambient Air Quality Monitoring and Control System

Specifications

Price and Size	Low-cost and small sized
Technology	latest technology
Operation	Web portal and mobile
Monitoring	Multiple sensors



Description of Product/Technology:

Indoor air quality typically alludes to the ambient conditions inside the buildings such as shopping complexes, hospitals, classrooms, offices etc. that may affect human health, and work performance. To overcome this issue, NIAQ provides a platform that can measure a variety of parameter indoor and provide helpful information to the individuals to better understand the air they are breathing in.

Main usage of product/Technology:

The main usage is to monitor Air Quality of the ambient environment.

82. Surface Water pollution monitoring using Internet of Things (IoT) for predictive healthcare

Specifications

Price and Size	Low-cost and small sized
Technology	latest technology
Operation	Web portal and mobile



Description of Product/Technology:

This technology solves the problem of water wastage due to overflow of tanks and avoids the hassle of manual working of the motor. It addresses the problem of water wastage in households and manages the water in tanks using automatic control. Moreover, being an IOT based solution it records the consumption of water by consumers and also helps users to monitor their motor status, water levels etc.

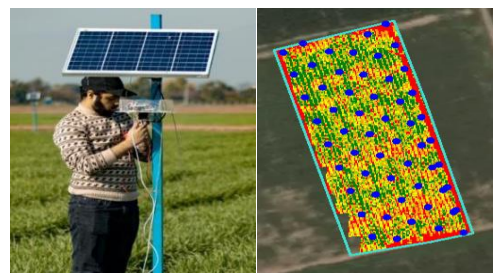
Main usage of product/Technology:

The main usage is to monitor water pollution and identifying areas and sources of water pollution. Helpful for water experts, environment specialist to take preemptive and remedial measures in the event of water contamination.

83. CroHMI: Crop health monitoring using the Internet of Things (IoT) and Low altitude imaging platform

Specifications

Technology	integrating drone technology
Operation	GSM signal as well solar energy
Mapping and Monitoring	
Web portal for data visualization	



Description of Product/Technology:

Pakistan is an agricultural country but unable to produce surplus

for national and international market needs. Moreover, monitoring of crops on a field becomes a challenge especially if agriculture land covers a large area and monitoring is solely dependent on farmer's knowledge-base and experience. To cater these problems CroHMI provides an IOT based solution which monitors GSM signal zone as well Powered by solar energy levels, and ammonia gas. In Addition, an UAV is also used to capture optical and multispectral images, which helps in mapping the chlorophyll level of the plants at certain areas, which helps in prediction of yield.

Main usage of product/Technology:

Monitoring and provides long range communication of agriculture data and minimizes crop ground surveys effort by integrating drone technology. Generates crop health maps at every stage of crop development. Useful in taking remedial measures for preventing crop damage and maximizing the crop yield by real time monitoring and decision making.

84. EKKO-Wave Therapeutic Device

Specifications

Technology High-tech electronic device
 Operation Artificial neuro-transmissions
 Neurotransmission Cognitive Therapy



Description of Product/Technology:

EKKO is a high-tech electronic device to generate artificial neuro-transmissions that are advancement in cognitive rehabilitation - a modern concept to rehabilitate patients suffering from neurogenic disorders. This concept is based on a new therapeutic procedure titled "Neurotransmission Cognitive Therapy" to implement neuro-transmission cognitive theory innovated by Mr. Shahbaz Khalid Ranjha, a renowned psychologist and speech pathologist.

Main usage of product/Technology:

This device can only be used by the consultation of qualified speech therapist/pathologist, neuro physician, occupational therapist and physiotherapist who deal in the area of neuro rehabilitation. All above mentioned specialists will apply EKKO device as per their specialty and job assigned by their discipline.

85. HESS Screening System for Squint Analysis

Specifications

Technology Digital Hess Chart Screen
 Operation Al-Basr Hess Chart
 Diagnostic Software Computer system and printer
 Procedure duration 25-30 min.



Description of Product/Technology:

The components of product are Digital Hess Chart Screen: On this square shaped screen, there are LEDs of red color which the patient points out with the laser. Chin rest: Here the patients place their chin in position of the equipment made for proper fixture of eye in front of the screen. Al-Basr Hess Chart Diagnostic Software: This software helps in coding the data that is gathered from where the patient points on the screen and according to that, the point/s of deviation of the eye from the mean position is found. Computer system and printer: A computer can be connected with the system both manually with a wire and also wirelessly. It is also connected with the printer which helps in getting image of misalignment of eyes to check how far away the eye needs to be stretched or relaxed to correct the vision.

Main usage of product/Technology:

Hess screening system is used to test eye squint, to identify eye muscles, which are responsible for squint and for measurement of paralytic strabismus. Strabismus is the state of eye in which eyes are not properly aligned with each other and patient complaint for double vision. Hess screening systems include a Hess screen and manually marking of points on Hess graph by the doctors.

86. Solar Panel Cleaning Robot

Specifications

Technology Battery powered-motorized wheels

as well as solar panel

Efficiency 10% increase

Cleaning Wet and dry

Operation Automated



Description of Product/Technology:

It utilizes a brush cleaning system that cleans on set cleaning cycles. It uses a rolling brush to clean as it horizontally translates across an array of panels. The device is mounted on a set of battery powered-motorized wheels. Beyond improving the efficiency, we hope that our design will continue to expand the growth of solar energy globally. An efficient cleaner would not only help communities' transition into using cleaner alternative fuel sources, but help society, as a whole, move closer toward providing everyone the opportunity to harness reliable energy.

Main usage of product/Technology:

It increases the efficiency of the solar panel, it can clean solar panel at a speed of 5 sec per meter with currently providing 10% increase in efficiency, it can be wet cleaning as well as dry cleaning, if wet it takes 250 ml of water per panel which is very less as compared to manual cleaning which takes up 1-2 liter per panel, it is made in assembly with all parts being easily manufactured and assembled so it has a very good ease of manufacturability, it is fully automated just requires labor for installation. The whole product can be powered with battery as well as its own solar panel and its life is 5 years.

87. Spray Drone

Specifications

Technology Unmanned aerial vehicles (UAVs),

Efficiency high operational efficiency

High speed low drift

Operation Remotely controlled



Description of Product/Technology:

An agricultural drone is an unmanned aerial vehicle used to help optimize agriculture operations, increase crop production, and monitor crop growth. Sensors and digital imaging capabilities can give farmers a richer picture of their fields. Using an agriculture drone and gathering information from it may prove useful in improving crop yields and farm efficiency. Unmanned aerial vehicles (UAVs), as emerging plant protection machinery, have the advantages of high operational efficiency, high speed, and low drift.

Main usage of product/Technology:

The use of such spraying unit enables small and medium size farmers to spray on their crops or orchards effectively and efficiently. The aerial spraying unit use to spray nutrition, pesticide, insecticide, herbicide and fungicide on different crops like cotton crop, sugarcane crop, citrus orchard, guava orchards, maize crop, wheat crop, and to control the locusts.

88. Fruit Maturity Device

Specifications

Technology low-cost optical device

Efficiency high

Description of Product/Technology:

A low-cost optical device for estimation of mango fruit harvest maturity and quality, to prevent early harvest of fruit that results in delivery of poor eating quality fruit to market with consequent loss of purchases, while also avoiding late harvest of fruit which may result



in post-harvest loss by delivery of over ripe fruit to markets.

Main usage of product/Technology:

An affordable instrument that mango growers can use anywhere, from the field to the packing houses to the retailers. This instrument can give non-destructive accurate maturity and ripeness data from anywhere that mango is.

89. InSole

Specifications

Technology Thermoplastic Polyurethane (TPU)

Efficiency high flexible and durable

Description of Product/Technology:

The insoles are made of highly flexible and durable Thermoplastic Polyurethane (TPU). Since a person's foot profile varies, custom insoles are developed while taking into consideration all the features of the foot profile like foot size, weight, foot arch, and pronation angle to make the insoles that best suit your need.

Main usage of product/Technology:

The Purpose of the insoles is to help support the feet and improve foot posture while also relieving the patient of any chronic foot or leg pain.



90. Live Line Cleaning Bot

Specifications

Technology Semi-automated motorized

Efficiency high

Powered 12V car battery

Cleaning Human-free

Description of Product/Technology:

Power transmission poles have insulators that isolate transmission lines. Due to humidity and dust accumulation, the insulators have chances of getting short and sometimes, arcs are also seen due to high voltages. To avoid any hazard, insulators are cleaned periodically using high pressure ionized water jet. For this purpose, a person must climb the power poles.

Main usage of product/Technology:

It is a semi-automated motorized control of monitor. It is Human-free cleaning of insulator and can be powered up with any 12V car battery.



Contact information for further information

Director Innovation and Commercialization (National University of Sciences and Technology) Phone no 051-90856245

Products developed by PCRET

91. Mono crystalline solar PV Panel

Specifications

Wattage Range: 40 to 320W

Description of Product/Technology:

Mono crystalline solar PV panel of different wattages with particular range,

Main usage of product/Technology:

Designed for generation of electric power from Sunlight (photons).

92. Poly crystalline solar PV Panel

Specifications

Wattage Range: 40 to 320W

Description of Product/Technology:

Poly crystalline solar PV panel of different wattages with particular range,

Main usage of product/Technology:

Designed for generation of electric power from Sunlight (photons).

93. Solar mobile charger

Specifications

Voltage: 4V

Current: 1.5 Amp

Description of Product/Technology:

Solar mobile charger is used for charging mobiles. The embedded solar panels are designed and connected so that they can be folded just like book for better protection and be unfolded to use for charging of mobile phone

Main usage of product/Technology:

The solar mobile charger is used to charge mobile phones using small solar panels

94. Solar mobile Lantern

Specifications

Voltage: 6V

Description of Product/Technology:

Solar lantern which is chargeable through solar panels is used for charging mobiles. The embedded solar panels are designed and connected so that they can be folded just like book for better protection and be unfolded to use for charging of mobile phone

Main usage of product/Technology:

The solar lantern is designed to charger through solar panels during the day time and used for provisioning of light during the night time.

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Mr. Saddam Hussain, AD Email: sadam1044@gmail.com Phone no.:+92-51-9265356

95. Solar dryer

Specifications

Dryer capacity range: 350-1000kg

Description of Product/Technology:

Parabola dome type solar dryer with a particular capacity range

Main usage of product/Technology:

The solar dryer is used to drying fruits and vegetables.

96. Solar desalination system

Specifications

Purification capacity range: 5-6L

Description of Product/Technology:

One square meter solar still can purify 5-6 liters of water.

Main usage of product/Technology:

To purify the water for drinkable purpose.

97. Solar Cooker double dish type

Specifications

Temp. range: 150-200 °C

Description of Product/Technology:

Solar Cooker double dish type for baking of food

Main usage of product/Technology:

This cooker can be used to cook any food by utilizing two dish type reflectors to concentrate the sun light on a focal point. The said cooker can only be used outdoor

98. Solar Cooker box/oven type**Specifications**

Temp. range: 80-100 °C

Description of Product/Technology:

Solar Cooker Box/oven type for baking of food/rice/cack etc

Main usage of product/Technology:

This cooker is designed as replacement of a conventional oven for rural areas. The said cooker can be used outdoor or indoor.

99. Solar Cooker with auto sun tracker**Specifications**

Temp. range: 300-400 °C

Description of Product/Technology:

Solar cooker with single dish type reflector. tracks the sun to increase the efficiency

Main usage of product/Technology:

This cooker is designed with single but big dish type reflector as compared to solar cooker. Moreover it includes solar sun tracker which helps to automatically move dish in direction of sun throughout the day and keep the sunlight concentration exactly on the focal point. This process does not only increase the temp. range also the efficiency of the cooker.

100. Solar Cooker foldable type**Specifications**

Temp. range: 50-80 °C

Description of Product/Technology:

Solar Cooker is foldable and hand carried easily.

Main usage of product/Technology:

The cooker is developed with light weight material which provides the ease to carry it in hand. It can be used to cook food back the rice and cake

Contact information for further information

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101. Fiber material biogas plant**Description of Product/Technology:**

Biogas plant made of ordinary fiber waste tank

Main usage of product/Technology:

For generation of biogas from animal waste.

102. Gasifie plant for kitchen**Description of Product/Technology:**

Gasification technology for provision of cooking fuel

Main usage of product/Technology:

Syngas generation from burning of biomass waste materials in limited supply of oxygen

Contact information for further information

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103. Solar Sun tracker

Specifications

Battery system 12V, 18 Ah
Microcontroller Arduino uno
Motor control Relay motor driver
Stopping System Proximity limit sensor
Motor Array movements
Battery Efficiency Solar charge controller

Description of Product/Technology:

Tracker has above mentioned specification with high working efficiency

Main usage of product/Technology:

Fir auto tracking sun

Contact information for further information

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Mr. Saboor Abbasi, F.O, Email: saboorabbasi67@gmail.com Phone no.:+92-51-9265353

Products developed by COMSATS University Islamabad

104. Autonomous portable ventilator (APV)

Description of Product/Technology:

In the wake of the recent global pandemic due to the Novel Coronavirus, WHO (World Health Organization) has declared a worldwide health emergency. According to the World Health Organization (WHO) The body's immune system detects this and expands blood vessels so more immune cells enter. But this can cause fluid to enter the lungs, making it harder to breathe, and causing the body's oxygen levels to drop. To alleviate this, a mechanical ventilator is used to push air, with increased levels of oxygen, into the lungs. The ventilator also has a humidifier, which modifies adds heat and moisture to the medical air so it matches the patient's body temperature.

The APV, works on the standard voltage of 220 V. The Main micro-controller which serves as the brain of the device controls the slave controllers which are used to operate valves and oxygen flow control. Connecting the powersupply will turn on the Inhalation and Exhalation compressors. Supplies from both these compressors are shut off using Air Valves which are controlled by Relay. Once the Raspberry Pi powers on, the system automatically opens the GUI which consists of a Preset Mode and Manual Mode

Main usage of product/Technology:

Designed for generation of electric power from Sunlight (photons). With the COVID-19 pandemic advancing so fast, many countries are facing shortages of ventilators, forcing doctors on the frontline to make difficult choices about who gets them and who doesn't. Our product will be vital in the current situation on an emergency basis ventilator takes over the body's breathing process when a disease has caused the lungs to fail. This gives the patient time to fight off the infection and recover. In these severe cases, the virus causes damage to the lungs, causing the body's oxygen levels to drop and making it harder to breathe. To alleviate this, a ventilator is used to push air, with increased levels of oxygen, into the lungs.

105. Real-Time Android Based System for Student's Attendance and Location Updates (RASSAL):

Description of Product/Technology:

It is an Android-based intelligent system, which uses real-time biometrics and location updates to identify and confirm a student's presence in their claimed location. This assists the faculty members

in maintaining the attendance of present students. Such a system largely reduces the time wasted in the manual attendance system and helps reduce the discrepancies created between the teacher and the students about the attendance maintenance.

Main usage of product/Technology:

Designed for generation of electric power from Sunlight (photons). There is a need for attendance maintenance of every student by every school, college, and university. The the previously used method is the old conventional method, The manual old system is not much efficient and has a lot of loopholes in it as well as time-consuming. In his method, many students are helping their friends by proxy-signing in their attendance in case of their absence in the institute, In our fast-moving world, we require such a system which will be fast, efficient and fool proof, as to benefit both, the student as well as the faculty members. Thus, there is a need for an automated system which will not just be able to do that, but also let the faculty know for how long a student has attended the lecture's.

106. Accurate Position Marking (APM):

Description of Product/Technology:

APM is a mobile application, which enables gait rehabilitation for the community and helps in exercises relating to any hand injury and the dislocated shoulder. By using this application on a smart phone, affected patients can improve their way of walking within the context of their everyday environment. In the future, the accuracy of APM's algorithm will be improved for better customer satisfaction. This application has won **Pakistan Mobile Application Award 2016**.

Main usage of product/Technology:

The said product is a gait action correction software that helps us correct the gait/posture disabilities in children who were born disabled, the people who have gait/posture disabilities due to some accident as well as for any hand injury and fractured bones. This application does the tasks the same as those of other complex and expensive systems. It provides checking whether the posture is correct or not depending on the user's gait action.

107. Smart Home Solution (S.H.S):

Description of Product/Technology:

It is a new and intelligent wireless multi-option home system using state of the art technology, the system uses an embedded micro-web server, with IP connectivity for accessing and controlling devices, as well as keeping our homes secured using an android-based application. It is a remote-controlled monitoring and operating system. This system intends to control the electrical appliances with a user-friendly interface and ease of installation.

Main usage of product/Technology:

The solar lantern is designed to charger through solar panels during the day time and used for provisioning of light during the night time. It provides an access to control appliances in the home using a mobile device/mobile phone or a network server or cloud monitoring service. The Mobile Device (MD)/Mobile Phone (MP) referred to in this disclosure may be a Cellular Telephone (CT), Wireless Phone, Smart Phone, Tablet Computer, handheld computer, touch screen enabled user computing device, a multifunction wireless device with software applications, Voice over IP Wireless Device or Wireless Video Phone. Various embodiments of the Mobile Device/Mobile Phone may be created.

108. Real-Time Android Based Biometric Action Testing System (RABBATS)

Description of Product/Technology:

This application explains Bowling, in terms of cricket, is defined as the action of propelling the ball towards the wicket behind a batsman. The person propelling the ball is known as the bowler. Due to human error, sometimes an umpire calls for the third umpire, who gives the decision according to the calculations performed by the machines. These machines run an algorithm on the images captured by the most sophisticated cameras. Such equipment is also used in bowling practices by international and national team coaching. This equipment is expensive and cannot be used by local

cricket clubs. Herein, we introduce our RABBATS application, which will do the same thing as this expensive equipment, at a cost so low, that every street cricket could be turned into a professional game with proper implications. This, in turn, will help Pakistan's cricket team's recruitment to be of a greater standard than the rest of the teams in the world. This would also help the Pakistan Cricket Board to greatly reduce the budget required on such equipment. RABBATS will be one of its kind and will serve to bring an umpire is present in each match as a judge to deem a ball unworthy and illegal, hence it's a revolution to professional bowling. **(It has won Best IT Innovation Award 2016 (BITA)).**

Main usage of product/Technology:

The said product is a bowling action correction software that helps us do the tasks the same as those of other complex and expensive systems. It provides checking whether the bowler's bowling is correct or not depending on the bowler's arm action and angle of bowling. It analyzes the elbow angle for the detection of legal or illegal action in bowling.

109. Sample Verification System (SVS):

Description of Product/Technology:

This is an Android-based intelligent system that uses real-time pictures and location updates to identify and to ensure a food sample's presence in their claimed location. This assists the Food Organizations in maintaining the count/record of the samples without any difficulty. Such a system greatly reduces the time and inaccuracy wasted in the manual system. No such work is being done in Pakistan yet. Our work is not unique, but is also being implemented by PCSIR Karachi.

Main usage of product/Technology:

This system is made up of a capture system, a GPS system, a real-time feedback system, and a database server connectivity. All of these requirements are present in the latest mobile phones and are ready to be exploited. The system is real-time web-based and is user-friendly. It requires a database. The database includes but is not limited to sample pictures, user IDs, CNIC information, previous records, and the user's location according to his/her sample.

110. Augmented Reality Teaching (A.R.T)

Description of Product/Technology:

The purpose of this project is to facilitate teachers and students to extend the physical world with a virtual overlay. With Augmented Reality students, Students can access models from any device at any time. Whether they are at home or in the classroom, students can study and interact with the course materials. Incorporating Augment Reality into lessons will make students excited about learning. Born in the digital era, students will be continuously stimulated with augmented reality and the main objective is to provide an interactive and accessible platform for students to learn and for teachers to learn.

Main usage of product/Technology:

A.R.T will provide a platform for both the educators and scholars to benefit from an the interactive educational environment provided by AR.

111. Mobile Hypnotism Project

Description of Product/Technology:

This is an android-based application, which will run as an administrative application. Our mobile is always in our control. We can hypnotize our mobile by using any other mobile phone. If we forget our phone at home then we can turn ON and OFF the Wi-Fi, Bluetooth, and mobile data of that mobile directly from any other phone. Also, we can retrieve the contacts of that phone and lock that phone with a password so that no one can use or access any data from our mobile. If the mobile phone gets lost then we can wipe all the data on that mobile. Sending personal commands in SMS can trigger all these features are. Those commands are stored in the app, which is password protected. The development of a customized Android Operating System is also part of this project.

Main usage of product/Technology:

Remote communication through mobile devices gives us an edge to communicate in a completely offline mode by using smart message service.

112. Smart Wheel Chair (SWC):

Description of Product/Technology:

This application aims to provide aid to those handicapped, and physically challenged persons by providing them with some sort of mobility, which would greatly help them. Smart Wheel Chair will be designed to have self-mobility with the help of the user commands like brain and face directions. There will be a Medical kit, which can be used by the patient in an emergency phase. This Chair will also be capable of providing the location. It will provide an opportunity for physically impaired persons to move from one place to another. The wheelchair is also provided with an obstacle detection system, which reduces the chance of collision while on the journey.

Main usage of product/Technology:

It provides hands free mobility to handicapped or elderly people. Specifically, people who suffer from quadriplegia, so with the increasing number of patients.

113. Death Detector

Description of Product/Technology:

This is a bomb detection integrated system based on Electromagnetic or microwave sniffing mechanism, we implement our Design To detect bombs or many hazards as per the detection Scheme, the main key principle of the project is to design a product secretly fixed in walls and Gates by which this Product provide guaranteed Security. Another hand our best concern to program Mobile applications to deal with any critical condition or alert for the public. This project has golden worth against the century of terrorism in which the Nation is going through the sheds of blood.

Main usage of product/Technology:

This project aims at providing comfort and ease to law enforcement agencies by its cost effective, efficiently designed hardware and flawless controlling mechanism, due to which the lives of Bomb Disposal Security members will be much more secure.

114. Smart Mali (SM)

Description of Product/Technology:

This is an automated robot using artificial intelligence modern technique and ubiquitously detects the PH of soil, Humidity of leaves, harvesting of grass, Digging, and Image Processing. All the robotic functions can be controlled by a smart application installed on any android-based mobile device. In short, we can introduce the world a smart fully automated non-complaining, Hardworking Gardener (Smart Mali).

Main usage of product/Technology:

For generation of biogas from animal waste. Smart Mali is a robot that makes use of Artificial Intelligence to carry out certain robotic functions. It is built with 4 wheels connected to the body where the rear 2 wheels are powered by a DC motor. Directed by an android application, it digs the soil, records the measurements, and display the information on the mobile screen. This information includes data about moisture in the soil, PH, temperature of the soil, and humidity of it.

115. Intrusive Sprint

Description of Product/Technology:

This research includes the connection between the physical activities and First-Person Shooter Games based on Virtual Reality which will provide an immersive feel to the users. It will provide a benediction to the gamers because of its distinct sensation of being in that dimension instead of the one they're actually in. We are headed towards the physical movements of the gamers that will control the game characters in the virtual world through physical gun and shoes that will move the gun and player in the game accordingly. This allows VR to establish itself into many disciplines owing to its easy data perception.

Main usage of product/Technology:

This product solves the problem of the sluggishness of the E-gamers as the users have to move physically. Another satisfactory feature of Intrusive sprint is the "Army Training Simulator" which is a new and unique technology allowing the cadets to train by only shooting the graphical game bullets.

116. Intelligent Memory System

Description of Product/Technology:

Losing your valuables is casual but when it comes to finding it, it's like a treasure hunt. The main aim of our project is to assist those people who lose their possessions frequently. Through this IoT project, we expect to find basic valuables (such as keys, glasses, etc.) without human exertion. IMS (Intelligent Memory System) is capable of storing, maintaining, and manipulating data structures that are captured from the live feed. It then sends the particular information to the application's database which further works on it and provides the last location of the object user is finding. IMS increases memory functionality to better balance the time spent in searching for data with less physical effort.

Main usage of product/Technology:

The average person spends 10-15 minutes a day looking for things they own but cannot find them hence they are forced to replace that item. Through IMS a platform is being provided to the users, which will aid them to conserve their time and effort. IMS will even reduce the frustration of finding the lost valuables which will lead to people being more mentally at peace.

117. Life Enhancement System (LES)

Description of Product/Technology:

The general aim of this project is to implement a safe and secure plan for public activities so that the security can be enhanced. The purpose of this project is to detect an imminent threat and to provide ways for tackling a suicide bomber so that calamities can be avoided beforehand. The system consists of 2 gates; the first gate measures the height and weight of the corresponding person using the respective sensors, while the second gate will be installed with a walk-through detection sensor for detecting any suspicious metallic object. The axis of the revolving gate is placed on a dc gear motor which will be operated through the specified instructions.

Main usage of product/Technology:

The present invention provides a walkthrough detection circuit that includes a power source. At least one transmitter circuit is electrically coupled to the power source while a transmit coil is electrically coupled to the transmitter circuit. At least one receiver coil is provided along with an amplifier to be electrically coupled to the receiver coil. An integrator is electrically coupled to the amplifier and a track/hold circuit is electrically coupled to the integrator. A filter is electrically coupled to the track/hold circuit and output.

118. Thoughts Can Shout

Description of Product/Technology:

Our Project Thoughts Can Shout is an application of the Brain-Computer Interface (BCI) technique. We are exploring this fact to the world that thoughts can be expressed without speaking. So, the people who can't speak can also express their thoughts. We are going to design a device that will have the ability to read the brain waves of the person. The software will include AI (Artificial Intelligence) part in it that allows the device to learn things. It also consists of the Mobile Application interfaced with the hardware having multiple features like login, live streaming of brain wave, display output graph, Notifications on any abnormal Brain Waves and we can also use this app for learning purposes.

Main usage of product/Technology:

This project will make people lives easier and will save their valuable time at the right moment of the day when the time of the essence while also fulfilling the wants and needs of child, pets and aged

persons (who can't speak) by capturing the brain signals and observing the physical conditions. The idea of the project occurred to us when we observed that those people (who can't speak) hard to survive in your life or can't do anything in your life. Another reason for the idea of this project came from the fact that the doctor can't watch 24 hours of patient condition continually even the patient in critical condition.

119. ABABEEL(Reforestation Drone)

Description of Product/Technology:

Drones of different shapes, sizes, and with various useful features have been made over the past few decades, and their civilian applications are getting more appealing. In the recent few years, drones are used to fight wildfires, military purposes, and to drop relief materials in time of natural disaster. But now they are being used to repair deforested lands. The world wants to ensure efficient coverage of a large area in the least possible time. So, seed bombing by drones is increasingly being looked upon as a feasible solution. Drone reforestation is the technique in which we used a drone for dispersing seeds in the desired area. The purpose of this paper is to describe the working applications of aircraft vehicles in forests or on lands where trees need to be planted and few applications that are to map forests, planning management of forests and measuring forest gaps, etc.

Main usage of product/Technology:

A remote-controlled drone that is capable of dispensing seeds in different regions of the world to increase the efforts for reforestation.

120. Abduction Redemption System

Description of Product/Technology:

The research is concerned with finding out a suitable means to protect the victim against this phenomenon of abduction using tracking systems like GSM, GPRS. The research aims at illustrating the advantages of the tracking systems that are used in locating missing or lost children and also tracking the child movements outside of the safe area. The new method helps in following up the kidnapped child for a long time as the used system is connected with the parents via sending messages to their mobile phones when the child changes the defined location as it defines the location more accurately. The system can also be used to locate women who are in danger. The GPS is combined with one of the basic services of a smartphone which is GSM more specifically SMS in one system. Our proposed model contains various sensors that measure different parameters regularly. In case of emergency, a message will be sent to parents and/or police, by pressing the panic button.

Main usage of product/Technology:

Restrict unlawful activities such as kidnapping, stealing, robbery, and rape by monitoring humans and valuable belongings into real-time by the use of web pages in Smart phones. If a human/valuable possessions are traced on a wrong doubtful path then the system generates an alert message which appears on the guardian's smart phone. The next step is of storing the real-time database of the human/device like its Speed, Time, Location, and Date which is useful in case of human/appliance theft detection on the case of a vehicle's accident. Identification of the kidnapper using a pi camera would help to recognize the multiple thefts. It provides a safe environment to the human and appliances by using a heartbeat and speed sensor.

121. Danger Care Security System

Description of Product/Technology:

Losing your valuables is casual but when it comes to finding it, it's like a treasure hunt. The main aim of our project is to assist those people who lose their possessions frequently. Through this IoT project, we expect to find basic valuables (such as keys, glasses, etc.) without human exertion. IMS (Intelligent Memory System) is capable of storing, maintaining, and manipulating data structures that are captured from the live feed. It then sends the particular information to the application's database which further works on it and provides the last location of the object user is finding. IMS increases memory functionality to better balance the time spent in searching for data with less physical effort.

Main usage of product/Technology:

The average person spends 10-15 minutes a day looking for things they own but cannot find them hence they are forced to replace that item. Through IMS a platform is being provided to the users, which will aid them to conserve their time and effort. IMS will even reduce the frustration of finding the lost valuables which will lead to people being more mentally at peace.

122. Implementation of Servers and Foot

Description of Product/Technology:

Virtual reality is an ever-growing market that provides an immersive and interactive experience. In this paper, we modified the existing VR based version of Intrusive Sprint with the additional feature of a multiplayer game. With the predicted growth of this market, we wanted to make the future more fun and demanding by creating a multiplayer VR game. The main objective of this project was to create a framework for multiplayer online VR games. We also facilitate the simple creation of a multiplayer virtual reality environment. On the hardware side, we implemented a WIFI module instead of the Bluetooth module due to the failure of JavaScript for unity 3D. For networking of multiplayer, we connected the players with game and the game is connected online through servers so the data is exchanged. We had done our interfacing between hardware and software through the Arduino ESP32 as it is capable of Wi-Fi communication. We enhanced the hardware equipment by assembling them with accurate sensors. All these changes increased the user experience. We developed an exciting virtual reality multiplayer game that involves player-to-player interaction with more game features and lots of more hidden fun.

Main usage of product/Technology:

This product solves the problem of the sluggishness of the E-gamers as the users have to move physically. Another satisfactory feature of Intrusive sprint is the "Army Training Simulator" which is a new and unique technology allowing the cadets to train by only shooting the graphical game bullets.

123. Creation Watcher

Description of Product/Technology:

The period which starts from conception and ends to birth. After the egg is fertilized by a sperm and is then implanted in the lining of the uterus, it develops into the placenta and embryo, and later into a fetus. Pregnancy usually lasts 40 weeks and is divided into three trimesters, each lasting three months. Every pregnancy has its share of health problems. These health problems can be conditions that were already there in you or are developed afterward during pregnancy. So, it is important to take care to ensure that the health of the expectant mother and the unborn baby is good and is free from complications. So, for taking care and eradicating the problems caused to women during pregnancy in remote areas where there are not many facilities of health care, we are introducing a pregnancy monitoring device with enhanced software and hardware. We have presented a device for monitoring the Contraction counts, Heart rate of fetus, Kick counts, Pulse rate of the mother, Bp of the mother, Heart rate of the mother, Emergency location update, Emergency notification via, SMS and Ultrasonic image of the fetus. We have used better quality hardware and enhanced software to monitor the growth of baby mothers' health in a better way possible than before.

Main usage of product/Technology:

We have presented a prototype for monitoring the Kick count, Heart rate of fetus, Contraction count, The pulse rate of the of the mother, Bp the of the mother, Heart rate of mother, Emergency location update, Emergency notification via SMS and Ultrasonic image of the fetus. Ultrasound makes use of an electronic device referred to as a transducer to send and receive sound waves. For the analysis the results of ECG device are compared with CTG.

Contact information for further information

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Products developed by national Institute of Oceanography

124. Coastal Hydraulic & Seabed Survey

Description of Product/Technology:

Oceanographic surveys, Seabed Bathymetric surveys, Coastal surveys, Coastal Erosion, Coastal protection, Site selection for Ports, Jetties, Harbors, Power Plants and Desalination Plants.

Main usage of product/Technology/Service:

Establishment and maintenance of Port and harbor .Coastal development activities

125. Oceanographic Survey**Description of Product/Technology:**

Currents, Waves, Tides and Meteorological observations. Tidal level measurements and Prediction, Numerical Modelling, Bio-Resource Mapping.

Main usage of product/Technology:

Setting up and maintenance of coastal industries. Various development and monitoring activities of Environmental protection agencies (Pak-EPA, Balochistan EPA, Sindh EPA)

126. Environmental Survey**Description of Product/Technology:**

Environmental Impact assessment, Contingency Planning, Natural Resource Damage Assessment, Remediation Plans, Marine Mammal Observers.

Main usage of product/Technology:

Implementation national, regional and Global programme of Ministry of Climate Change in the field of marine and coastal area.

127. Marine Pollution Survey**Description of Product/Technology:**

Water Quality Monitoring and Assessment, Dilution and Dispersion of pollutants, Thermal Plume Study.

Main usage of product/Technology:

Various activities of Pak Navy, MSA, KPT

128. Feasibility Studies**Description of Product/Technology:**

Coastal surveys for site selection, Shrimp Farming, Power & Desalination Plants, Underwater Search and Surveys, Ports & Harbours.

Main usage of product/Technology:

Academia research and education activities. Site surveys for offshore structures, Harbours, Jetties, Navigational Buoys etc.

129. Shrimp Hatchery and Farming**Description of Product/Technology:**

Expertise in Shrimp Farming, Algal Culture Lab, Artemia culture Facilities, feed for larvae, consultancy & training.

Main usage of product/Technology:

Submarine cable and pipeline route surveys

130. Marine Exploration & Geo-Engineering Survey**Description of Product/Technology:**

Site surveys for offshore structures, Harbours, Jetties, Navigational Buoys etc. Submarine cable and pipeline route surveys, Mineral exploration in the coastal water, Geo-Resource Mapping. Establishment and maintenance of Port and harbor. Coastal development activities. Implementation

national, regional and Global programme of Ministry of Climate Change in the field of marine and coastal area.

Main usage of product/Technology:

Academia research and education activities. Site surveys for offshore structures, Harbours, Jetties, Navigational Buoys etc.

131. Oceanographic Data Services

Description of Product/Technology:

Oceanographic Data Services for Pakistan's maritime areas.

Main usage of product/Technology:

Living and non-living resource exploration and Resource Mapping.

132. Training Offered

Description of Product/Technology:

General Oceanography and Marine Instrumentation, Ocean Dynamics and Coastal Hydraulics, Low of the Sea, Marine Seismic Data Management, Marine Aquaculture Techniques, Laboratory and Large Scale Phytoplankton Culture etc.

Main usage of product/Technology:

Oceanographic Data Services for Pakistan's maritime areas.

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Products developed by national institute of electronics

133. PCB Design

Description of Product/Technology:

PCB Designing is a process of Layout drawing of a Board after finalization of schematic of a circuit. PCB designing incorporates board dimension, measurements and routing of copper tracks and planes, components/IC packages selection and placement, selection of connectors/interface, vias, inserting drill holes, board thickness and material selection. All above mentioned parameters are precisely calculated and routed to make sure functionality of hardware and proper Signal Integrity and avoid any loss in electric or RF signal. Final step of PCB designing is generation of Gerber files or CAD format standard files which are delivered to PCB Manufacturer. Comprehensive Designing facility is available at NIE by using state of the art tools like OrCAD - Cadence, Altium Designer, Eagle and Proteus

Main usage of product/Technology:

PCB designing is the basis for any hardware that a device may equipped. A good design and analysis is basic element for a success of any electronic device or gadget in market. Briefly, PCB designing is applicable to all electronics

134. PCB Fabrication

Description of Product/Technology:

NIE offers fabrication of Single sided, Double sided and Multilayer PCBs. PCBs are made from a variety of substrates, NIE stocks and uses most widely used substrate a form of Fiber glass known as FR4. This provides a reasonable degree of stability under temperature variation and it does not breakdown badly, while not being excessively expensive. Moreover, NIE also fabricate PCBs on Rogers for high performance radio frequency designs, Aluminum based PCBs where heat dissipation is an issue and Flexible PCBs as per modern standards. However, NIE does not stock these materials and these are provided by customer itself. Producing a PCB is a complex process that involves many steps. We guarantee and ensure that our products meet our promises through more

stringent product specifications and quality controls than other suppliers. NIE accepts Gerber data from designers in all standard formats. Our production parameters are published for PCB designer's reference at: [http://www.nie.gov.pk/pcb-design-lab/NIE PCB Lab Production Parameters](http://www.nie.gov.pk/pcb-design-lab/NIE_PCB_Lab_Production_Parameters).

Main usage of product/Technology:

The PCB fabrication is an essential element of the electronics production lifecycle. PCBs are considered to be backbone of Electronics production. PCB fabrication employs many new areas of technology that have led to significant improvements in reducing the size of the components and rails used and the reliability of the board. PCB fabrication is associated to each and every electronic product that can be seen in market.

Contact information for further information

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135. Long Range video transmission system

Description of Product/Technology:

Long range video transmission system is designed for video surveillance. It consists of main camera with C-Band transmitter and a receiver with LCD to view the video. For remote access of video a mixer is used to down convert the signal in L-band and then transmit to remote receivers. The range of system is 5KM (line of sight)

Main usage of product/Technology:

Long range video surveillance system is an indoor system, mainly developed for law enforcing agency for the surveillance of buildings and carry out operations

136. Long Range signal transmission system

Description of Product/Technology:

Long range signal transmitter system is an RF based, secure transmission system. The system consists of one transmitter and multiple receivers. A single transmitter can trigger multiple receivers. The transmitter is password secure and user friendly. Operational range of the system is 5KM (Line of sight)

Main usage of product/Technology:

Long range signal transmission system is a point to multipoint communication system which is used to trigger devices remotely up to 5KM

137. Design and development of auto gas switch

Description of Product/Technology:

Auto gas switch is an electronic device connected with gas pipe-line. Auto gas switch is capable of turning off gas when gas pressure decrease from a certain level to avoid leakage of gas. It is also capable of sensing gas in the atmosphere and generates an alarm in case of gas leakage.

Main usage of product/Technology:

The device is most suitable to use for domestic purpose to address the issue related to gas leakage.

138. Power factor improving device

Description of Product/Technology:

Power factor improvement device is R&D project for proper utilization of energy by power correction methods.

Power factor correction can be extremely beneficial. Benefits include reduction of electricity bills, increase in load carrying capabilities of existing circuit and overall reduction of power system losses. The system is developed for 1KVA load (single phase).

Main usage of product/Technology:

The device is used to efficiently use electricity for domestic user

139. Design and development of FMCW radar

Description of Product/Technology:

RADAR (FMCW) is used for ranging and detection similar to Doppler RADAR. The RADAR is designed in X band (8GHz – 12 GHz) Range resolution of FMCW RADAR is 3cm.

Main usage of product/Technology:

Agriculture: - To measure liquid or solid level in silo as well as to detect insects in food silos:
Shipping: The bearing and distance of ships to prevent collision with other ships, to navigate, and to fix their position at sea when within range of shore or other fixed references such as islands, buoys, and lightship. Defence: It can be used in defence sector including air force, navy and army for detection, ranging and velocity measurement of enemy and allied targets. Meteorologists use radar to monitor precipitation and wind. Aviation: Aircraft anti-collision systems can be made using radar system

140. Radio Frequency based Indoor Positioning System

Description of Product/Technology:

Indoor Positioning System (IPS) is an advanced technology which is used to locate a person or object in indoor environments i.e. building, industry, hospital etc. IoT applications will require seamless and ubiquitous indoor positioning of both static and mobile devices. Based on the location of a person different location based services can be provided i.e. home and building automation, patients monitoring, geo-fencing etc.

Main usage of product/Technology:

Automation of electrical appliances according to the person position in home, office and industry. IPS is also used for old people and patient monitoring in old homes and hospitals respectively. IPS is also used for tracking and navigation in shopping malls. Tracking of assets in industry can also be performed by IPS, which helps to automate different systems in industry.

Contact information for further information

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141. Smooth power line condition technology

Description of Product/Technology:

National Institute of Electronics has developed the technology of smooth power line conditioner to provide pure sinusoidal wave with regulated voltage output and to streamline the voltage fluctuations, frequency disturbance and harmonics filtration in power line. The Technology will have the following features: Surge Protection, Noise Filtration (Active Line Filter, Harmonics Filter), Smart Short Circuit Protection, Extreme Voltage Shutdown (EVS) (Under / Over Voltage Protection) and Over Heat Protection

Main usage of product/Technology:

The Technology have the following features: Micro Controller based Power Factor Correction (PFC)Fast Switching Response, Soft Start Function, Surge Protection, Noise Filtration (Active Line Filter, Harmonics Filter), Smart Short Circuit Protection, Extreme Voltage Shutdown (EVS) (Under / Over Voltage Protection),Over Heat Protection. Conditioners specifically work to smooth the sinusoidal A.C. wave form and maintain a constant voltage over varying and fluctuating loads.

Contact information for further information

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142. Smart parking management system

Description of Product/Technology:

Solar Cooker is foldable and hand carried easily. Wireless Sensor Networks (WSN) is the network of intelligent sensors which are self-configured. Sensors observe the raw data, computational intelligence transform it to useful information and then wirelessly communicate to control station. NIE has developed Smart Parking Management System (SPMS). Which is one of the application area of WSN technology. In large parking lots, e.g., air ports and mega malls placement, management and security of vehicles is a great challenge. Vehicle detection sensors are placed in the parking bays. When a vehicle is parked in the parking Bay, sensor automatically detects the vehicle and inform the remote control station wirelessly.

Following are few features of SPMS: Automatic detection of each individual space in multi-level parking. Exact time (land/depart) observation of parked vehicle. Reduces congestion during rush hours due to quick placement. Integrate able with existing parking toll systems. Managers at remote control station can easily view the status of the parking lot remotely. Following features can also be incorporated; Display information about number of occupied/free spaces of each level at entrance. Driver guidance through directional arrows (Quick searching of empty slot) or through smart navigation. Traceability of driver and car vice versa. Remote reservation of parking space.

Main usage of product/Technology:

WSN technology has wide area of applications like monitoring environment conditions e.g. temperature, sound, vibration, pressure, motion, pollutants etc. These networks have also wide applications in health care, surveillance, defense, homes and agriculture. Usage of SPMS is in large parking lots like airports and mega shopping malls etc, for automatic detection, management and security of parked vehicles.

Contact information for further information

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Products Developed By PCRWR

143. Microbiological Testing Kit

Description of Product/Technology:

PCRWR's microbiology testing kit is easy to use. Through this kit water test may be performed at an affordable price in field or at home even without incubator

Main usage of product/Technology:

Testing of bacteriological contamination of water



144. Arsenic Testing Kit Technology

Description of Product/Technology:

Excessive intake of arsenic through contaminated ground water beyond the safe limit of 10 ppb may result in serious health impacts including cancer. Due to lack of arsenic testing facility in remote areas of Pakistan, people may unknowingly drink arsenic contaminated water. To bridge this gap, PCRWR has developed a field testing kit for arsenic. This kit can test 100 water samples and provides test results in the range of 0-250 ppb.

Main usage of product/Technology:

Testing of arsenic in water



Contact information for further information

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145. Mehfooz Pani Disinfection Tablets*

Description of Product/Technology:

Mehfooz Pani ® disinfection tablets are used to treat microbial contamination. These are available in a pack of 30 tablets, where one tablet is sufficient for treatment of 20 liters of water in 30 minutes. These tablets may be used in water



cooler/can/bottle and Safe Water Filter manufactured by PCRWR.

Main usage of product/Technology:

Disinfection of water

146. Mehfooz Pani Disinfection Tablets*

Description of Product/Technology:

Mehfooz Pani ® disinfection tablets are chlorine tablets used to treat microbial contamination in 500 gallon of water. They are available in a pack of 10 tablets, where one tablet is sufficient for a single treatment. These tablets can be used in concrete, ceramic, fiber glass, PVC water tanks.

Main usage of product/Technology:

Disinfection of water

Contact information for further information

Mr. Masood Ahmed, masoodahmad48@yahoo.com



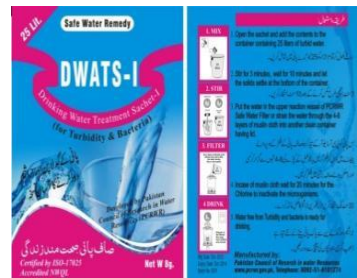
147. DWATS-I Sachet*

Description of Product/Technology:

Drinking Water Treatment Sachet-I (DEWATS-I) contains 8 g mixture with capacity to treat bacterial contaminants and turbidity in 25 liters of water

Main usage of product/Technology

This sachet may be used to treat highly turbid water at household level in any water container or Safe Water Filter of PCRWR.



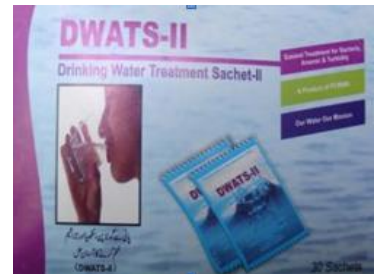
148. DWATS-II Sachet*

Description of Product/Technology:

Drinking Water Treatment Sachet-II (DEWATS-II) contains 9 ml liquid with capacity to treat arsenic, bacterial contaminants and turbidity in 18 liters of water.

Main usage of product/Technology:

This sachet is used in combination with Safe Water Filter of PCRWR



149. Safe Water Filter *

Description of Product/Technology:

PCRWR's Safe water filter has multiple uses and can be used as treatment apparatus for removal of bacteria, turbidity and arsenic by adding PCRWR's DEWATS-I or II Sachet, Mehfooz Pani® tablets or Chlorine granules. Water along with one of these products is added into top chamber having 18 liters capacity. Treated water filters out through ceramic cartridge into lower chamber and then used for drinking purpose.

Main usage of product/Technology

Decontamination of turbidity, bacteria and arsenic with use of Mehfooz pani tablet, DWATS-I or DEWATS-II



Contact information for further information

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150. Tensiometer

Description of Product/Technology:

PCRWR has developed a soil moisture monitoring instrument known as tensiometer. This instrument is basically designed for irrigation scheduling by the farmers themselves. This instrument tells that when to irrigate and



when to not.

Main usage of product/Technology:

It is mainly used by the farmers. For the purpose of ease, PCRWR has developed its gauge with different colours. Each colour gives a specific guidance about the need of irrigation.

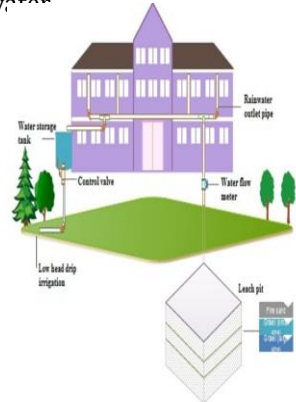
151. Water bird

Description of Product/Technology:

PCRWR has developed an electronic devise to reduce water losses from overhead water tanks due to overflowing.

Main usage of product/Technology:

This device can be used at the domestic overhead water tanks.



152. Rainwater harvesting for groundwater recharge

Description of Product/Technology:

Rainwater is a precious source of water. At one time, we are facing urban flooding and on the other side are facing water shortage. Rainwater harvesting technique is being used worldwide for various purposes. For the last 3 years, PCRWR demonstration this technique in urban areas for groundwater recharge.

Main usage of product/Technology

Rainwater from the rooftop or catchment areas can be diverted to a single point where inverted well/soak way with/without filtration system is built. Rain water is directly moved into ground to be part of groundwater aquifer at some point.

Contact information for further information

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153. Hydra Ramp Pump

Description of Product/Technology:

PCRWR has reversed engineered this pump which does not need any kind of fuel/electricity. It has no operational cost. It can lift water up to 200 feet using 20 feet input water head.

Main usage of product/Technology:

This pump is suitable for hilly areas where cultivated land is located on higher altitude than water source.



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