SHUBHANKAR SINHA

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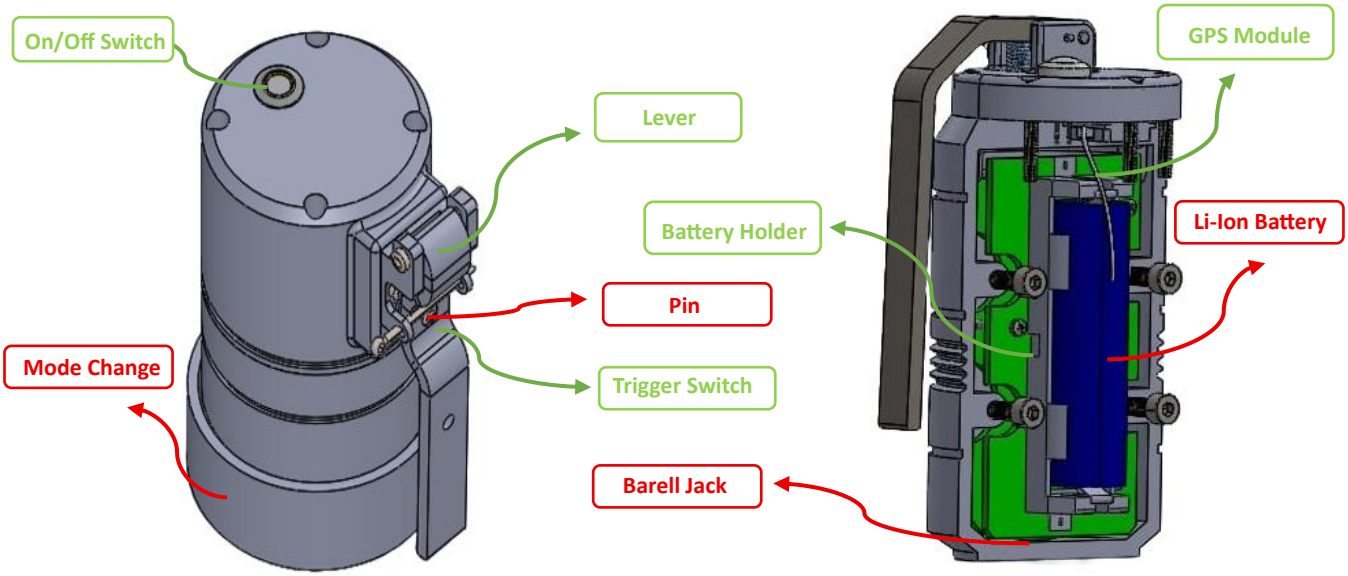
INFRARED GRENADE – NAVYUG INFOSOLUTIONS



What?
- Designed and 3D printed IR grenade for practicing tactical engagement under real conditions
- Two modes; Stun and fragmentation
- Software controlled

How?
- Designed on SolidWorks
- Applied GD&T on all drawings
- Implemented DFA principles to reduce product assembly cost and time

Result
- Mimics actual grenade and activated after the pin is pulled (rechargeable and waterproof)
- GPS enabled for live time location
- Nylon was used for production

3D Printed Grenade - 1

3D Printed Grenade - 2

Rechargeable ↔ Waterproof ↔ Near Real Condition ↔ GPS ↔ Rugged

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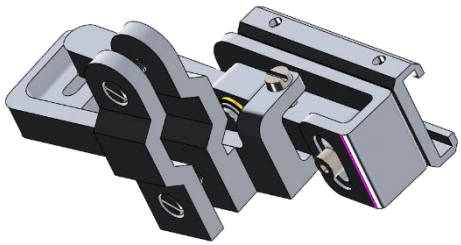
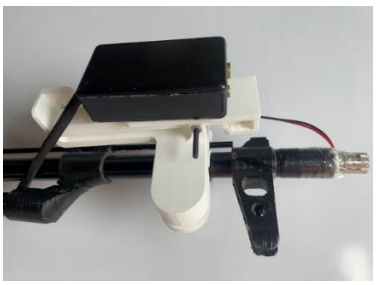
TACTICAL ENGAGEMENT TRAINER (TET) - NAVYUG INFOSOLUTIONS



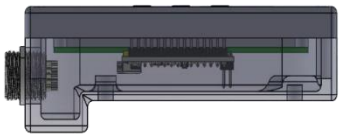


What?
- Manufactured a low cost, rugged lightweight bracket for **Ak-47 Sim**
- Consists of two lasers (**visible laser** and **infrared laser**) for target

How?
- Made a 3D CAD **model** and detailed **2D engineering drawings** in **SolidWorks**
- Fabricated using **rapid prototyping** methods (**3D Printing**)

Result
- Implemented **DFM principles** to reduce overall part production cost
- Contacted manufacturers in India to produce the bracket

INDEPENDENT DISPLAY UNIT (IDU) – NAVYUG INFOSOLUTIONS



Iteration 1

Iteration 2

What?
- Designed **2 models** for an independent display unit
- Used for displaying information on ammo, health, and other parameters regarding performance index

How?
- Used **SolidWorks** to design the upper case and the lower case
- Installed **electronic components** (display unit, Arduino nano, tactile switches, and connector pin)
- Tested the 3D printed model for waterproofing

Result
- Woven into the bullet proof jacket
- Designed for **easy handling** and **installation**
- Iteration 2 uses 38% less material and is 44% lighter than Iteration 1

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LAND MINE SIMULATORS – NAVYUG INFOSOLUTIONS

Type 1: Nipun Mine

Type 2: M14

Type 3: M16

What?

- **Nipun Mine:** Anti-personnel mine designed to cause disabling leg injuries, not fatalities.
- **M14 Mine:** A small, low-metal, anti-personnel blast mine, designed to destroy a victim's foot.
- **M16 Mine:** Anti-personnel mine that launches and detonates in the air, scattering fragments.
- Software controlled mines, works on **pressure-based sensors** with manual over ride

How?

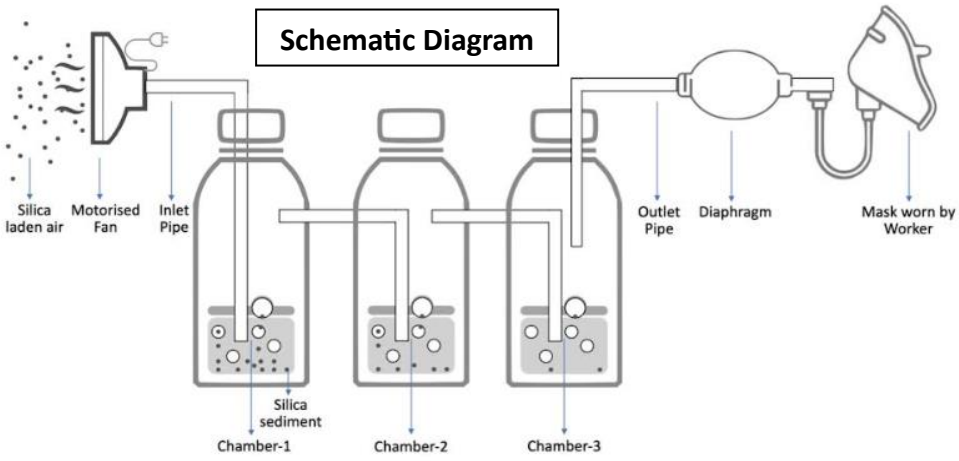
- Designed using **SolidWorks**
- Used **Blender** to render images
- Easy installation, waterproof, rugged, low-cost design

Result

- Electronic components will be selected after the design is approved
- Followed by testing of the 3D-printed model

AIR FILTRATION UNIT (MARBLE WORKER) – NAVYUG INFOSOLUTIONS

Schematic Diagram



Proposed Design

What ?

Suggested a compact and portable design for air filtration used by workers in marble mines

Made a schematic for the filtration process

How?

Designed a fixture for holding the chambers

Ergonomic design, light weight, easy to carry

Further modelling is going on to assemble it into a wearable unit like scuba diving suits