

# 1 UNIT 1 – Technology in use.

## 1.1 Vocabulary

Word	Meaning
Drift alarms	A device that indicates when the anchor of a ship is dragging.
Man overboard button	is an exclamation given aboard a vessel to indicate that a member of the crew or a passenger has fallen off of the ship into the water and is in need of immediate rescue.
Topographical surveying	Mapping surface features.
Geological exploration	Applications in mining and the oil industry.
Avionics equipment	Air traffic control, navigation and autopilot systems.

## 1.2 GPS

GPS stands for Global Positioning System.

GPS function is to locate your precise geographical position.

GPS uses satellites that orbits the earth.

## 2 UNIT 2

### 2.1 Materials technology

#### 2.1.1 Materials

Material	Composition	Information
Stainless Steel	Iron + chromium + nickel	A type of steel not needing a protective coating, as it doesn't rust.
Aluminum		
Copper		Excellent thermal & electrical conductor. Corrosion resistant.
Bronze	Copper + tin	Copper alloy.
Brass	Copper + zinc	Copper alloy. Color (Red to Yellow).
Zinc		A metal used to make brass, and in galvanized coatings on steel
Iron		Predominant metal in steel.
Lead		Dense, poisonous metal.

#### 2.1.2 Vocabulary

Word	Meaning
Timber	It is wood, it can be: Hardwood that comes from deciduous trees. Softwood that comes from pine trees.
Ore	Rocks from which metals can be extracted.
Ironmongery	Parts of a door.
Scrapping cars	The process of deconstructing a car to extract valuable and recyclable components.

#### 2.1.3 Product phases

- Pre-use: covers the life of the product from conception to the delivery.
- In use: concerns the period when the product is being used by the customer.
- Post-use: comprises the period when the product's functional life at the hands of the customer has ended.

## 2.2 Categorizing materials

### 2.2.1 Types of materials

- Metals.
  - Ferrous metals.
  - Non-ferrous metals.
- Non-metals.
  - Thermoplastics.
  - Elastomers.
- Ceramics.
  - Glass.
- Composites.
  - Polymers.

### 2.2.2 Vocabulary

Word	Meaning
Compounds	Combinations of materials.
Regenerative braking	Also known as ‘kinetic energy recovery’, which recovers energy generated during deceleration, and stores it as a source of power.
Exotic	Extraordinary.
Heat soak	Thermal absorption by the chassis.

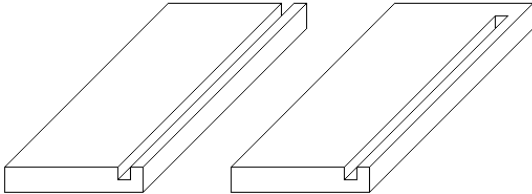
### 2.2.3 Types of brakes

- Disc brakes.
- Drum brakes.
- Anti-lock brakes.



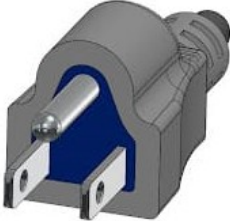


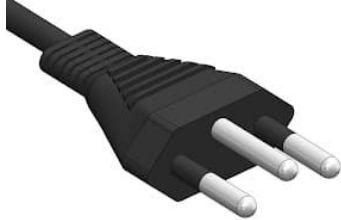
# 3 UNIT 3

## 3.1 Components and assemblies

### 3.1.1 Vocabulary

Word	Meaning
Groove	A long, narrow cut or depression in a hard material. 

### 3.1.2 Electrical plug types

Plug type	Image	Plug type	Image
A		E	
B		K	
C		N	

## 3.2 Manufacturing techniques

### 3.2.1 Examples of manufacturing techniques

- Drilling.
- Milling.
- Sawing we use a saw (the saw is a flexible steel band with teeth on one edge).
- Shearing and we use the press machine.
- Flame-cutting (uses oxygen and a fuel source to create a flame to melt material).

### 3.2.2 Vocabulary

Word	Meaning
Metal bashing	Technical term for hammering.
Grinding	Is a process that uses abrasives.
Kerf	Is the width of material that is removed by a cutting process, such as CNC milling or hand-cutting with a saw.
Punch	Makes holes by applying pressure to shear the metal.
Guillotine	Makes straight cuts by applying pressure to shear the metal.
Abrasive-wheel	Has a hard and rough surface.

### 3.3 Explaining jointing and fixing techniques

#### 3.3.1 Types of fixing

- Mechanical fixing: screws, bolts, rivets, clips, etc.
- Non-mechanical fixing (adhesive): glue, welding, bonding, etc.

#### 3.3.2 Advantages of mechanical and non-mechanical fixing

Advantages	
Mechanical fixing	Non-mechanical fixing
Temporary fixing.	Are more rigid.
Can be removed easily.	Support high vibrations.
More resistant to environmental changes	

#### 3.3.3 Cons of mechanical and non-mechanical fixing

Drawbacks	
Mechanical	Non-mechanical
Doesn't support high vibrations.	Can't be removed easily.
Less rigid.	It requires skills.

## 4 Unit 9 – Theory and practice

### 4.1 Explaining tests and experiments

#### 4.1.1 Vocabulary

Word	Meaning
Full-scale testing	It is one of the primary means of demonstrating how successfully a structure meets the requirements.
CFD	Computational Fluid Dynamics.
Acid test	The true test of the value of something.
Trial run	A practical test of something new or unknown to discover its effectiveness.
Back-to-back testing	The aim of back-to-back testing is comparing the results to check if there are any divergences in the work.
Mock-up	3D model simulating shape and size, but without internal components.
Prototype	A prototype is an early sample, model, or release of a product built to test a concept or process.

## 4.2 Discussing causes and effects

### 4.2.1 Vocabulary

Word	Meaning
Cause	The reason why something, happens.
Effect	The result of a particular influence.

### 4.2.2 Questions

For cause, you say, why did this happen?

For effect, you say, what happens?

### 4.2.3 Transitional words

Because of / Owing to

Consequently

Caused

Due to

Result of (for cause)

Result it (for effect)



## 5 Unit 10 – Pushing the boundaries

Pushing the boundaries is trying to do things that have never been done before.

### 5.1 Discussing performance and sustainability

#### 5.1.1 Wind turbine

Function : Converting the mechanical energy to electrical energy.

Components : Blades, tower, generator, gearbox, and an anemometer.

Most suitable locations : Coasts, high lands, flat areas.

#### 5.1.2 Vocabulary

Word	Meaning
Performance	How well something performs.
Sustainability	How suitable something is for the job.
Efficient	Working or operating quickly and effectively in an organized way.
Effective	Successful or achieving the results that you want.

#### 5.1.3 Adjectives

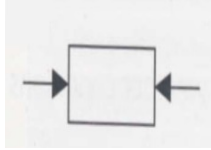
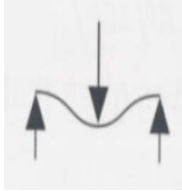
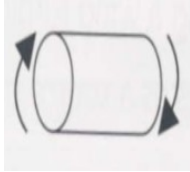
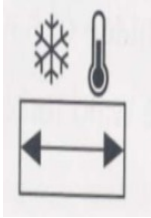

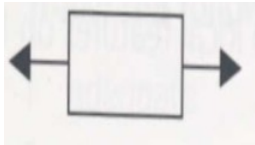
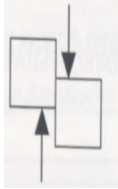
Non negative	Negative
Appropriate / suitable	Inappropriate / unsuitable
Effective	Ineffective
Consistent / reliable	Inconsistent / unreliable
Cost-effective / economical	- / uneconomical
Efficient	Inefficient
Sufficient / adequate	Insufficient / Inadequate

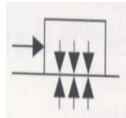
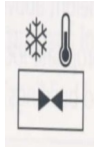
## 5.2 Describing physical forces

### 5.2.1 Vocabulary

Word	Meaning
Force	Is an influence that can change the motion of an object.
Solar tower	Is the idea of an Australian company to produce electrical energy.

### 5.2.2 Types of force

Type	Figure
Compression	
Bending	
Torsion / torque	
Expansion	
Pressure	
Tension	
Shear	

Type	Figure
Friction	
Contraction	
Centrifugal force	