Language summary

A Grammar

Present simple

The present simple verb form is the most commonly used verb form in technical communication. For example, it is used in technical descriptions, process explanations, scientific laws and principles, job descriptions and regular or routine actions.

Active
*The sensor **consists of** two main components. The fluid **passes** into the chamber, but **does not remain** there. The Seawater greenhouse **uses** natural processes such as gravity, evaporation and condensation. Oil platform workers **work** four days on and four days off.*

Passive
If an active sentence is changed into the passive, (1) the *subject* of the active verb becomes the agent of the passive verb (*is / are* + past participle), and (2) the *object* of the active verb becomes the *subject* of the passive verb.

The insertion of oxygen (subject) *produces* (active) *the high temperature in the furnace* (object). ➜ *The high temperature in the furnace* (subject) ***is produced** (passive) **by** the insertion of oxygen* (agent).

The agent is often omitted if it contains no new or important information: *First, the vessel **is tilted** towards the charging aisle. Next, scrap steel **is poured** into it.* Here, the reader is not interested in the mechanism which causes the vessel to be tilted, or the machinery that causes the scrap steel to be poured, but is more interested in the stages of the process (*tilting the vessel, pouring in the scrap steel*), and so the agent is omitted.

Using the passive has two effects on the reader: it focuses their attention on
* the *process* or *action* (tilting, pouring)
* the *person or thing affected by the action* (vessel, scrap steel).

Note that the above points are relevant for the passive forms of all verb tenses.

Deciding when to use the active or passive

In texts describing or explaining a technical process, the passive is usually the default verb form. This is because the focus is mainly on the process or action (expressed in the verb) and the thing acted upon (the subject of the passive verb): *First of all, bauxite*

*is extracted from the ground and **is carried** from the mine on conveyor belts to crushers, where it **is ground** into powder.*

However, even in texts dealing with a process, the active will sometimes be used:
* if the verb is intransitive, it cannot take an object and therefore cannot be used in the passive. *The bauxite **goes into** / **enters** the crushers, where it is ground and **becomes** powder.* The verbs *go, enter* and *become* are intransitive, and therefore have to be active.
* the ability to switch between active and passive (and vice versa) gives more options to the writer for making the meaning clear, especially when a relative clause is linked to the main clause:
*Archimedes' cylinder **contains** revolving blades, which **are turned** by hand.*
*The pedal **is connected** to the throttle by a cable, which **releases** the valve.*

Present continuous

The present continuous is used to talk about an activity which is happening while the speaker is speaking, or during the current time frame. It is also used to talk about planned or intended future activities.

(See 'Future')

Active
*The fire alarm **is ringing** continuously, so we must leave the building now. I **am attending** a lot of training courses this year (current time frame). The rescue operation **is starting** in an hour's time.*

Passive
*A product recall operation **is being mounted** at this very moment. Ten million cars **are being recalled** as we speak.*

As with other tenses, the agent is normally specified only if it supplies new information: *A product recall operation **is being mounted** this week **by Komodo, one of the world's largest car manufacturers**.*

(See 'Present simple (passive)' and 'Deciding when to use the active or passive')

Future

The future is expressed in a variety of ways:
* *will* is used to talk about things that you think are certain to happen in the future
* the present continuous is used to talk about planned future events*

- *going to* is used to talk about intended future events*
- *on the point of* + *-ing* and *about to* are used to talk about events in the immediate future, expected to happen very soon.
- * the present continuous and *going to* are often used interchangeably without any important distinction between intentions and plans.

Active

*I **won't** see you next week because **I'll be** on a training course. The whole technical sales team **is travelling** to the conference tomorrow morning. We**'re going to** pump concrete into the oil well to try to stop the leak. The drills **are on the point of breaking** through into the oil reservoir, perhaps within the next hour.*

Passive

*The oil leak probably **won't be stopped** for many weeks, perhaps months. According to the schedule, the oil clean-up programme **is being started** at dawn tomorrow morning. First of all, robot submarines **are going to be sent down** to examine the damage. An announcement **is about to be made**, so please switch off your machines and listen.*

Past simple

The past simple is used to talk about events and actions in the past which are now finished. The time of the event is either specified using time expressions (*five minutes ago, last month, during the previous inspection*), or understood from the context.

Active

*The inspectors **visited** the damaged turbine hall at 9.30 yesterday morning. During their visit, they **spoke** to the managers, but **did not speak** to the rest of the staff.*

Passive

*The project **was completed** last year. The fault in the brakes **wasn't noticed** when the car **was brought** into the workshop for a routine service.*

(See 'Present simple (passive)' and 'Deciding when to use the active or passive')

Past continuous

The past continuous is used to talk about situations in progress in the past. It is often combined with *when* + past simple to show that a sudden short action interrupted the situation in progress. When used with a time expression, it indicates that the situation was in progress at a specific date or time in the past.

Active

*The miners **were working** at a depth of 150 metres **when** the explosion **occurred**. At 14.05 yesterday afternoon, the time of the accident, the morning shift **were starting** to leave the factory.*

Passive

*The last of the oil workers **were being taken off** the drilling platform by the helicopter, **when suddenly** part of the platform burst into flames.*

Present perfect simple

The present perfect is used to talk about actions or events that happened at an unspecified time or date during a period of time lasting from the past right up to the present time.

The present perfect simple is often used with the following adverbs: *for* (focusing on the length of a period of time), *since* (focusing on the starting point of a period of time), *just* (emphasising that the event happened recently), *yet* (in questions and negatives only, emphasising the period of time to the present) and *already* (mainly in positives, emphasising speed of completion before the present, but also in questions, expressing surprise at completion speed).

Active

*We**'ve looked at** the engine, but we **haven't found** the fault **yet**. The forklift truck driver **has worked** here **for** ten years / **since** he left school. The exploration team **have just arrived**, but they**'ve already found** evidence of oil. **Have** they **found** oil **already**? That was quick!*

Passive

*It **has just been reported** that the factory fire **has been extinguished**. Although the project **has been completed**, the report **has not been written yet**. Basic oxygen furnaces **have been used for** many years, **since** the 1950s, in fact.*

(See 'Present simple (passive)' and 'Deciding when to use the active or passive')

Present perfect continuous

The present perfect continuous (*has / have (not)* + *been* + present participle) emphasises the length of time that an action has continued right up to the present. The present perfect continuous is often used with the following adverbs: *for* (focusing on the length of a period of time) and *since* (focusing on the starting point of a period of time).

Active

*Our company **has been using snake wells for** a number of years. I**'ve been working** on this project **since** 2009.*

The passive is very rarely used in this tense.

Future perfect

The future perfect is used to make a prediction about an action or situation that will be completed before (or *by*) a specified time in the future.

Active: *will (not)* + *have* + past participle

*By the end of next week, the inspectors **will have tested** more than 20 components. The engineers **won't have finished** the job **by this time tomorrow**.*

Passive: *will (not) + have + been + past participle*

*By the time the new bridge is ready, the approach road **will have already been constructed**. You can't start the construction work tomorrow, because the materials **won't have been delivered by then**.*

Question forms

Note: the first line of examples for each tense is active; the second line is passive.

Present simple
*How **does it work**? When **do** they **come**?*
*How **is** the device **activated**? When **are** the machines switched off?*
*Who **operates** the boiler room?* (The question word is the subject)

Present continuous
*What **are** you **doing**? When **are** they **coming**?*
*Why **is** the product **being recalled**? How **are** the parts **being shipped**?*
*What **is causing** this problem?* (The question word is the subject)

Future with *will*
*When **will** the engineers **begin** the project?*
*How **will** the shipwreck **be lifted** to the surface?*
*Who **will be taken** from the shipwreck first?* (The question word is the subject)

Past simple
*When **did** they **leave**? Why **didn't** he **press** the stop button?*
*How **was** the drill **repaired**? When **were** the machines **built**?*
*Who **went** to the conference?* (The question word is the subject)

Past continuous
*When **was** he **working** in the oil industry?*
*Why **were** the winches **being used** at that time?*
*Who **was managing** the plant during the crisis?* (The question word is the subject)

Present perfect active
*Have they **repaired** the car yet? How long **has** he **worked** here?*
*Have the safety crew **been trained** properly?*
*How many people **have applied** for the job?* (The question word is the subject)

Present perfect continuous (active only)
*How long **has** your company **been using** snake wells?*
*What **has been going on** for the last week?* (The question word is the subject)

Future perfect
*When **will** they **have finished** the repair?*

*By what time **will** the repair **have been finished**?*
*What **will have happened** by then?* (The question word is the subject)

Modal and semi-modal verbs

Modal and semi-modal verbs express functions such as ability, permission, obligation, certainty and possibility.

Modal verbs (*must, may, might, should, can, could, will, would*) do not take *-s* in the third person singular, or *do / does* in the question or negative: *Everyone **must** wear personal protective clothing on this site. **Should** she put on her safety goggles now? They **cannot** repair the fault.*

Semi-modal verbs (*have to, need to*) are like modals in meaning, but have the same form as normal verbs, taking *-s* in the third person singular and using *do / does* in the question or negative: *Everyone **has to** wear protective clothing on this site. **Does she need to** put on her safety goggles now?*

The form of *ought to* is similar to that of other modal verbs; in the negative, *not* comes between *ought* and *to*: *People **ought not to** work with such strong chemicals.*

The negative forms of *have to* and *need to* (but not *ought to*) have a different meaning from the negatives of *must* and *should*:
- *You must / need to / have to do it* = it is essential (necessary) to do it.
- *You mustn't do it* = it is essential (necessary) not to do it.
- *You should / ought to do it* = it is recommended that you do it.
- *You don't have to / don't need to do it* = it is unnecessary to do it.

Passive
Must, should, have to, need to and *ought to* are often followed by passive infinitive verbs (*be + past participle*) in safety rules and procedures. *Hard hats **must be worn** at all times. This package **has to be kept** frozen. Mobile phones **should not be used** here.*

Past tense
Ability in the past: *could / couldn't* or *was / were + able to / not able to / unable to*: *I'm sorry I **couldn't repair** your car. I **was unable to find** the correct parts.* In the passive, only *could/couldn't* is used: *The gate **couldn't be closed** in time, so the water rushed into the penstock.*

Necessity in the past: *had to / needed to*: *We **had to finish** the job yesterday. The job **needed to be finished** yesterday.* Note that *didn't have to / didn't need to* mean it was unnecessary to: *Although we **had to finish** the job yesterday, we **didn't have to write** the report.*

(See 'Necessity in the past')
(See 'Speculating about the past')

Conditionals

Zero conditional

The *zero conditional* is used for things which always happen (or what to do) under certain conditions.

Clause 1: *if* + present simple Clause 2: present simple
If water **is heated** to 100°C, it **boils**.
Clause 1: *if* + present simple Clause 2: imperative
If the alarm **sounds**, **evacuate** the building.

First conditional

The *first conditional* is used for possibilities in the future.

Clause 1: *if* + present simple Clause 2: *will (not)*
If the conference **is** in Germany, **I'll go** to it.

Second conditional

The second conditional is used for unreal situations in the present.

Clause 1: *if* + past simple Clause 2: *would (not)*
If I **had** an instruction manual, **I'd be able** to repair the fault.

(But I don't have a manual, so in reality I can't repair the fault.)

Third conditional

The third conditional is used for unreal situations in the past.

Active

Clause 1:
if + *had (not)* + past participle
If they **had replaced** the turbine bolts,

Clause 2:
would (not) + *have* + past participle
the accident **would not have happened**.

Passive

Clause 1:
if + *had (not)* + *been* + past participle
If the turbine bolts **had been replaced**,

Clause 2:
would (not) + *have* + *been* + past participle
the accident **would have been avoided**.

(But in reality the bolts were not replaced, so the accident actually happened.)

(See 'Conditions')

Linking

Relative clauses and participial phrases are useful ways of linking clauses together to form longer sentences. They are used most often in written language.

Non-defining relative clause

A non-defining relative clause does not provide part of a definition, or limit the meaning of the preceding word. It simply adds further information.

The non-defining relative clause uses relative pronouns such as *which*, *who* and *where*. A comma is used immediately before the relative pronoun.

A test was carried out. The test confirmed the results. ➔ *A test was carried out, **which** confirmed the results. The goods were taken to the warehouse. Here they were put away.* ➔ *The goods were taken to the warehouse, **where** they were put away.*

Defining relative clause

A defining relative clause limits the meanings of the preceding words and is often used in definitions.

*A sensor is a device **that** detects certain external stimuli and responds in a distinctive manner.*

(The sensor is not any kind of device: it is a limited type of device restricted to detecting certain stimuli and responding in a special way.)

Which is used with things, and *who* is used with people. In defining relative clauses (but not normally in non-defining ones), *that* can replace *which* or *who*. There is no comma immediately before *which / who / that*.

(See 'Definitions')

Present participial phrase

A present participial phrase can sometimes replace a clause or sentence when two actions by the same subject take place at the same time, or one action follows immediately after, or as a result of, another. The present participle ends in *-ing*, and is active in meaning.

The photons move up and down inside the ruby crystal. They travel at the speed of light. ➔ *The photons move up and down inside the ruby crystal, **travelling** at the speed of light.*

The blowout preventer was automatically activated. (As a result,) it shut down the well. ➔ *The blowout preventer was automatically activated, **shutting** down the well.*

When events happen in a clear sequence, *before* or *after* can precede the present participle:

The water flows through a network of pipes. Then it finally enters the storage tank. ➔ *The water flows through a network of pipes **before** finally **entering** the storage tank. **After flowing** through a network of pipes, the water finally enters the storage tank.*

Past participial phrase

The past participle can sometimes replace subject + passive verb. This method of linking clauses or sentences is very common in technical writing as it helps to make it more concise. The past participle is passive in meaning.

The oilfield is located 90 km off the coast of Brunei. It is an important resource. ➔ *The oilfield, **located** 90 km off the coast of Brunei, is an important resource.*

The past participial phrase can also occur at the beginning of a sentence: ***Located** 90 km off the coast of Brunei, the oilfield is an important resource.*