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Modern Technology in Construction

NPTC • more than just an education

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Modern Technology

Technology is a broad concept that deals with human as well as other animal species' usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment.

Some Examples

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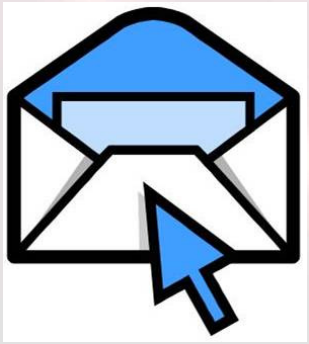

Modern Technology in Construction

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- Modern technology a hindrance or a benefit to construction?

- Construction ranks 87th globally among industries in the adoption of technology.

- When we talk about technology in construction, it cover a wide range of applications and uses.

- How could wireless technology benefit construction????

- In Groups discuss and feedback

Advantages

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- Can receive and download drawings on site instantly on laptops, smart phones PC tablets
- Drawings can be amended and sent to architect for approval.
- Orders can be mailed to suppliers.
- No need for project manager to be confined to office.
- Adobe files can be accessed and sent instantly.
- Photos can be mailed to client architect instantly.
- Search for specific items online.
- Microsoft Project can be updated on site with client, workers.

Good

- All on site meeting minuets can be recorded for future reference.

Laser Level

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A laser-based tool that enables plumb, level, or square measurements to be established quickly and accurately. Laser levels are used to set foundation levels, establish proper drainage slopes, square framing, align plumbing and electrical lines, and when hanging drop-ceilings.

A great advantages is that they enable one person to do a job that normally takes two. Instead of one person sighting through the optical scope taking readings while a second person holds a rod, the laser level is set up, turned on, and the same person can go around with the stick to take the readings.

- Also
- Reading mistakes are omitted

Research

- I Have given you some examples, now it is time for you to research 2 examples of modern equipment/programmes that benefit construction

MMC

- The term ‘modern methods of construction’ covers a broad range of construction types ranging from complete housing systems built in factories, through to new site-based technologies.

- Older terms such as ‘system building',' off-site assembly’, ‘industrialised construction’ and ‘modular construction’ are still used by many.

A simple classification of modern methods by built form is:

- Volumetric construction,
- Panel systems,
- Hybrid construction,
- Sub-assemblies and components,
- Site-based methods of construction

- Volumetric modules being assembled in a factory
- Volumetric unit being positioned on foundations

- Prototype volumetric dwellings by Britspace
- Volumetric units being stacked onsite

- **Panellised systems**

  - **Open panel system**

  This is a framing system (metal or timber) delivered to site before insulation,

  services, etc. are fitted.

  - **Closed panel system**

  This is a complex panel system that can have services, windows, doors,

  internal wall finishes and external claddings fitted at the factory.

- Panellised steel-framed building being erected

- Portable rolling mill

- **Timber panels**
- ‘Conventional’ timber-frame panels normally arrive on site with sheathing
- board fixed but with no insulation, etc. With modern systems insulation,
- service conduits, linings and window frames can all be factory-fitted

- **Concrete panels**

  Large concrete panels have been used since the 1950s in non-traditional construction, especially in flats and high-rise construction. Panels are usually two-dimensional, but can be more complicated.

- **Structural Insulated Panels (SIPs)**
- SIPs are essentially a sandwich construction comprising two layers of sheet
- material bonded to a foam insulation core.

Hybrid construction

This method of construction is also known as semi-volumetric as it

combines both volumetric and panellised approaches within the same Building. Volumetric units can be used for the highly serviced areas such as kitchens and bathrooms, with the remainder of the dwelling being constructed with panels.

Examples of hybrid construction have been built in a variety of materials, and it is feasible to use different construction materials for the different parts.

Modern methods of construction
Site-based modern methods of construction

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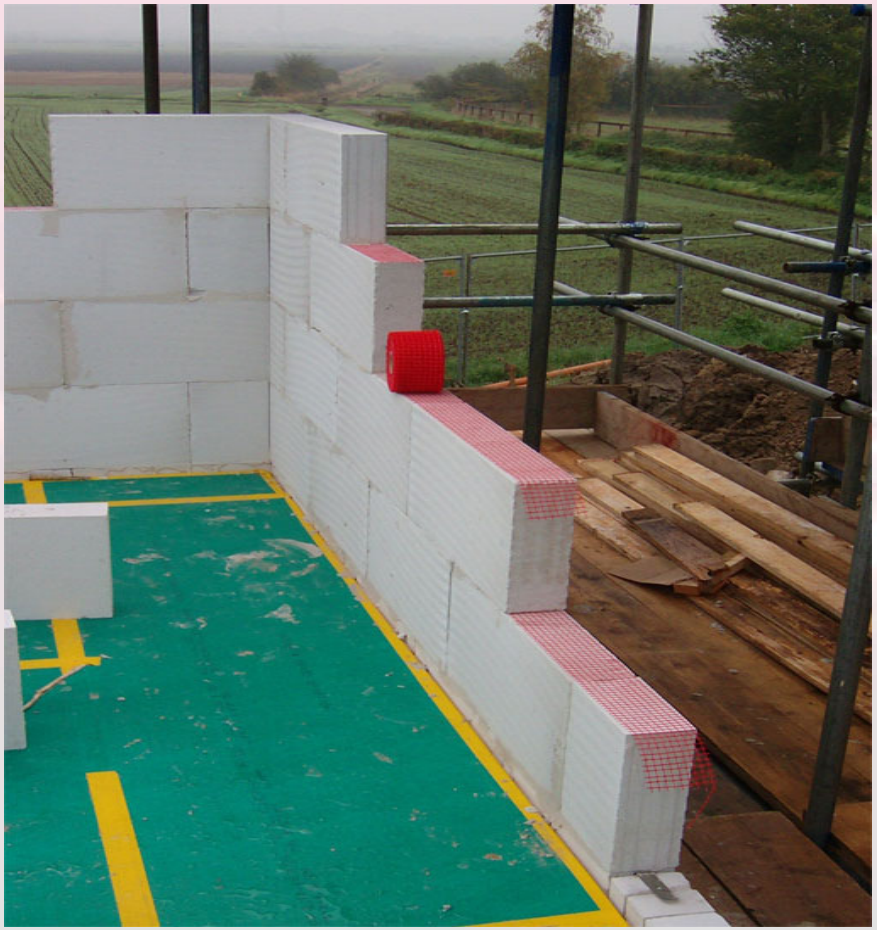
- This relates to site-based assembly methods and the use of traditional components in an innovative way. Examples of construction
- forms that are generally accepted as ‘modern methods of construction’ include:
- Tunnelform (cast-in-situ concrete using heated steel moulds), aircrete planks
- and thin joint blockwork. The next section describes other innovations in
- ‘traditional’ materials and techniques. These include the use of brick slips,
- insulating formwork and single-leaf masonry. These methods can be mixed
- with other forms of construction. The moulds are heated overnight to accelerate the cureof the concrete and allow the moulds to be removed and re-used on a
- 24-hour cycle.

- Reinforcement and service conduits can be placed within the
- moulds as necessary before pouring the concrete, and openings for stair
- wells and interconnecting doors can also be formed. The resulting structure
- is a series of open-ended bays (Figure 25) with concrete walls and ceilings.
- The open ends of the bays are closed with a different system, often a panel
- system, but could be anything including cavity masonry in a similar way to
- more conventional cross-wall construction. The bays can be sub-divided
- internally to make more than one room.




QUAD-LOCK
QUAD-LOCK

Brick Slips fixed to steel framed building

External wall insulation applied to a steel-framed building