CAD/CAM

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INTRODUCTION

- In this CIM technology CAD/CAM play an effective role.
- CAD/CAM system is ideally suited for designing and manufacturing mechanical components of free from complex 2-dimensional and 3-dimensional shapes.
- CAD/CAM technology plays an important role in functioning of robots. In CAD/CAM system the robot work data is prepared from CAD data from the first designing process.

WHAT IS CAD/CAM?

- Computer-aided design (CAD), Computer aided manufacturing (CAM) can be defined as the use of digital computer to assist the designer in the:
- Creation
- Development
- Modification
- Analysis
- Optimization of a design and manufacturing activity.

Why CAD/CAM?

- Computer Aided Design and Computer Aided Manufacture is the way things are made these days.
- Without this technology we wouldn't have the range and quality of products available or, at least, they wouldn't be available at a price most of us can afford.
- Hand-building and manual techniques still very much have their place and Design Education needs to treasure and foster these skills so that future generations will have the 'hands-on' skills to understand the man-made world and provide the next generation of engineers, designers and technicians.

Uses

- Computer-aided engineering (CAE) and Finite element analysis (FEA)
- Computer-aided manufacturing (CAM) including instructions to Computer Numerical Control (CNC) machines
- Photo realistic rendering
- Document management and revision control using Product Data Management (PDM).

Types

- 3D wireframe is basically an extension of 2D drafting (not often used today). Each line has to be manually inserted into the drawing.
- *3D "dumb" solids* are created in a way analogous to manipulations of real world objects (not often used today).

Types ....

- *3D parametric solid* modeling allows the operator to use what is referred to as "design intent". The objects and features created are modifiable.
- *Explicit Modelers or Direct 3D CAD Modelers* provide the ability to edit geometry without a history tree.

INTERACTIVE COMPUTER GRAPHICS (ICG)

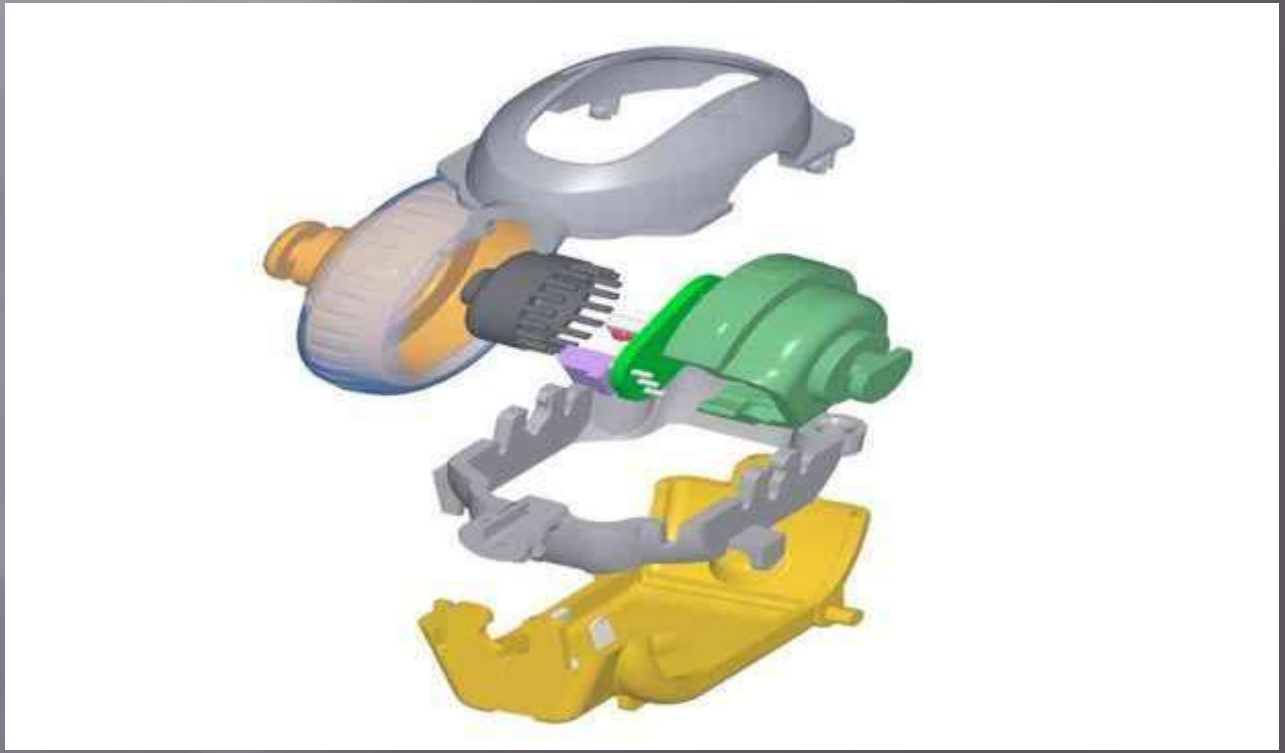
- ICG is an important part of CAD system. It is a user oriented system using computer to create, transform and display data in the form of pictures or symbols.

POTENTIAL APPLICATION AREAS OF CAD/CAM

- **Design and Design Analysis:** CAD system would be best suited for drawing offices where frequent modification are required on drawing and several parts repeat.
- It must be remembered that it very easy with computer to make modifications and very fast to draw part profile once it details are feed in computer.

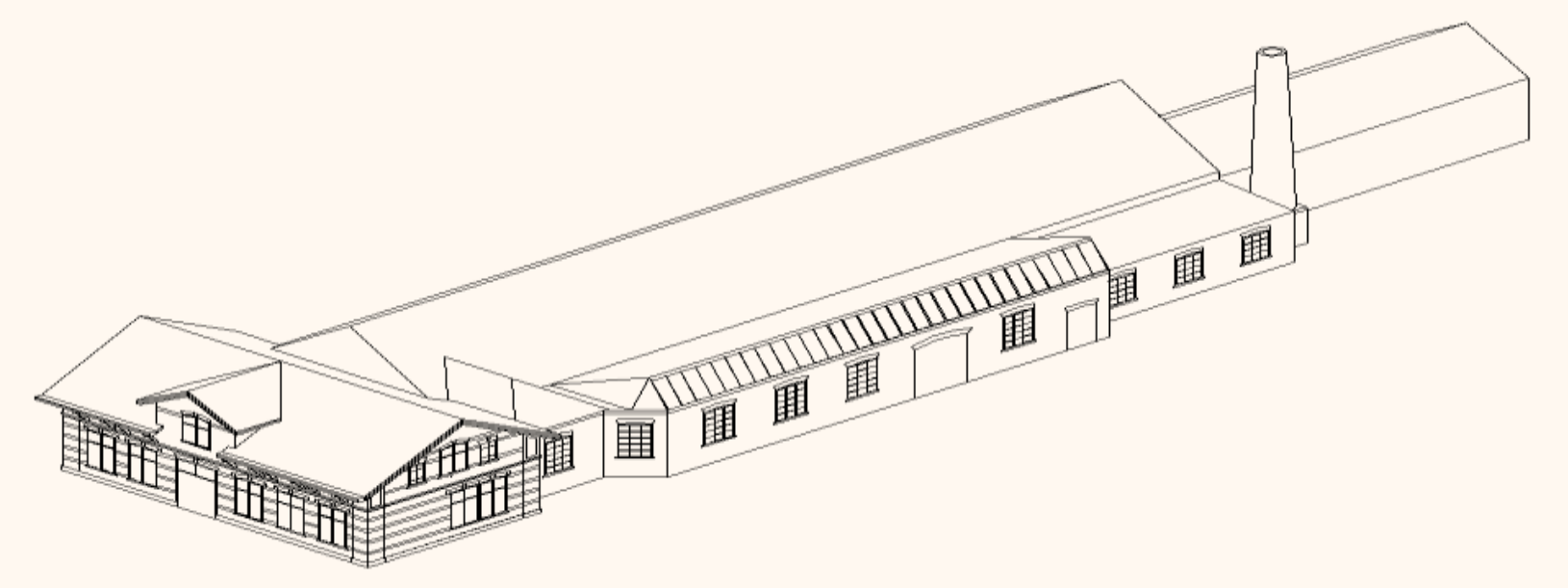
THESE ARE FEW DESIGN MODEL OF CAD/CAM

- **VIEW OF ENGINE**

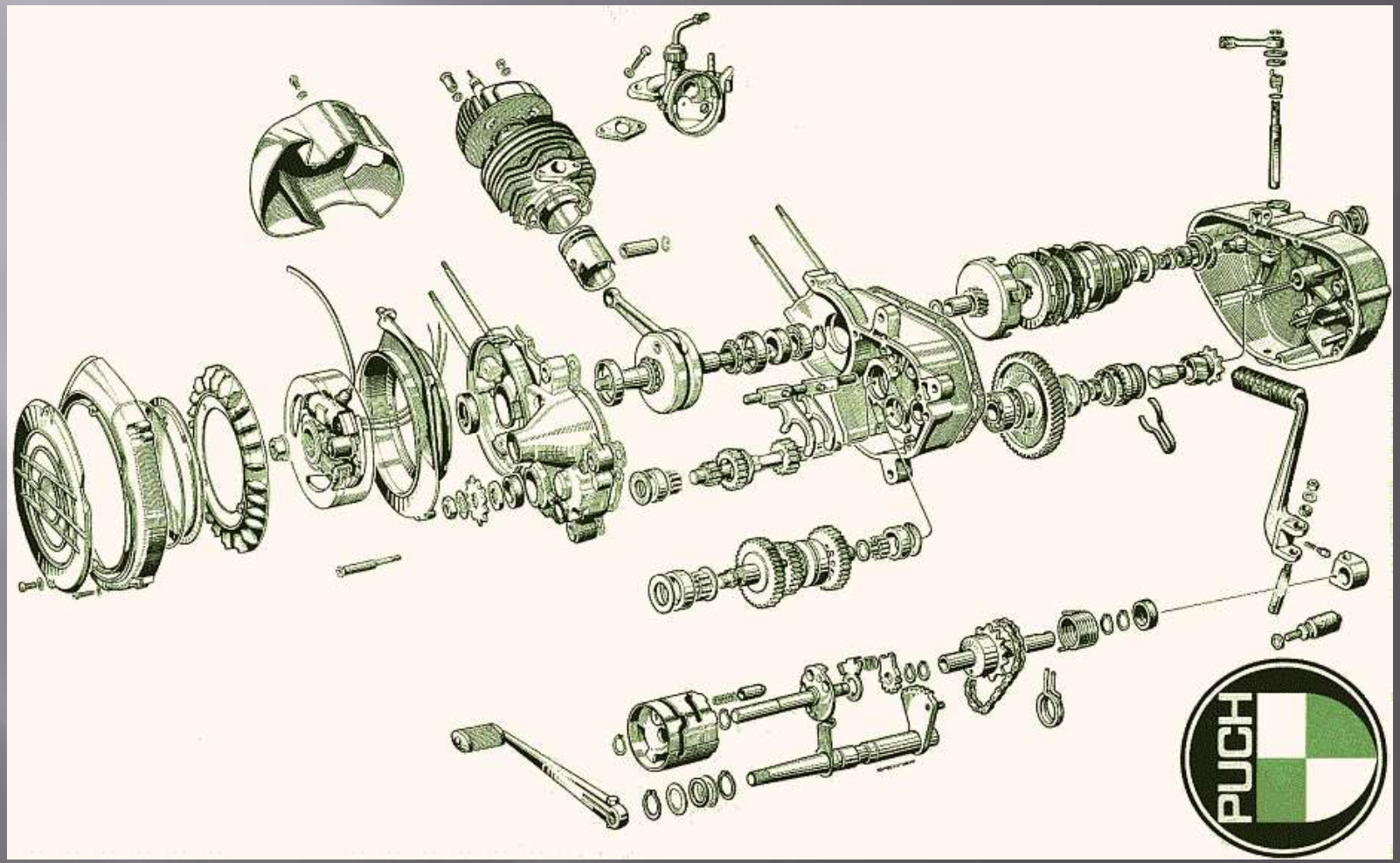


VIEW OF BRACKET

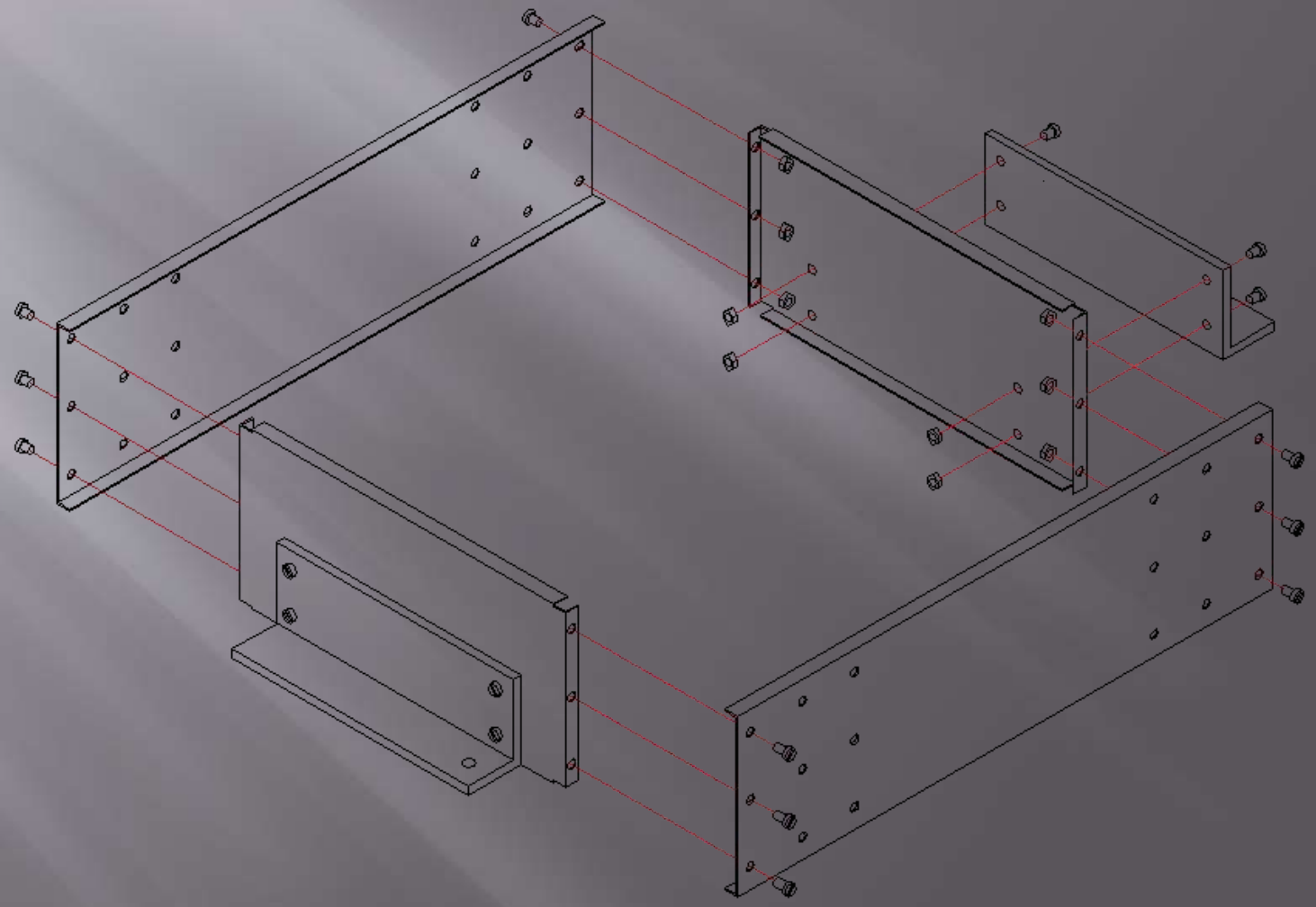
ISOMETRIC VIEW OF HOUSE



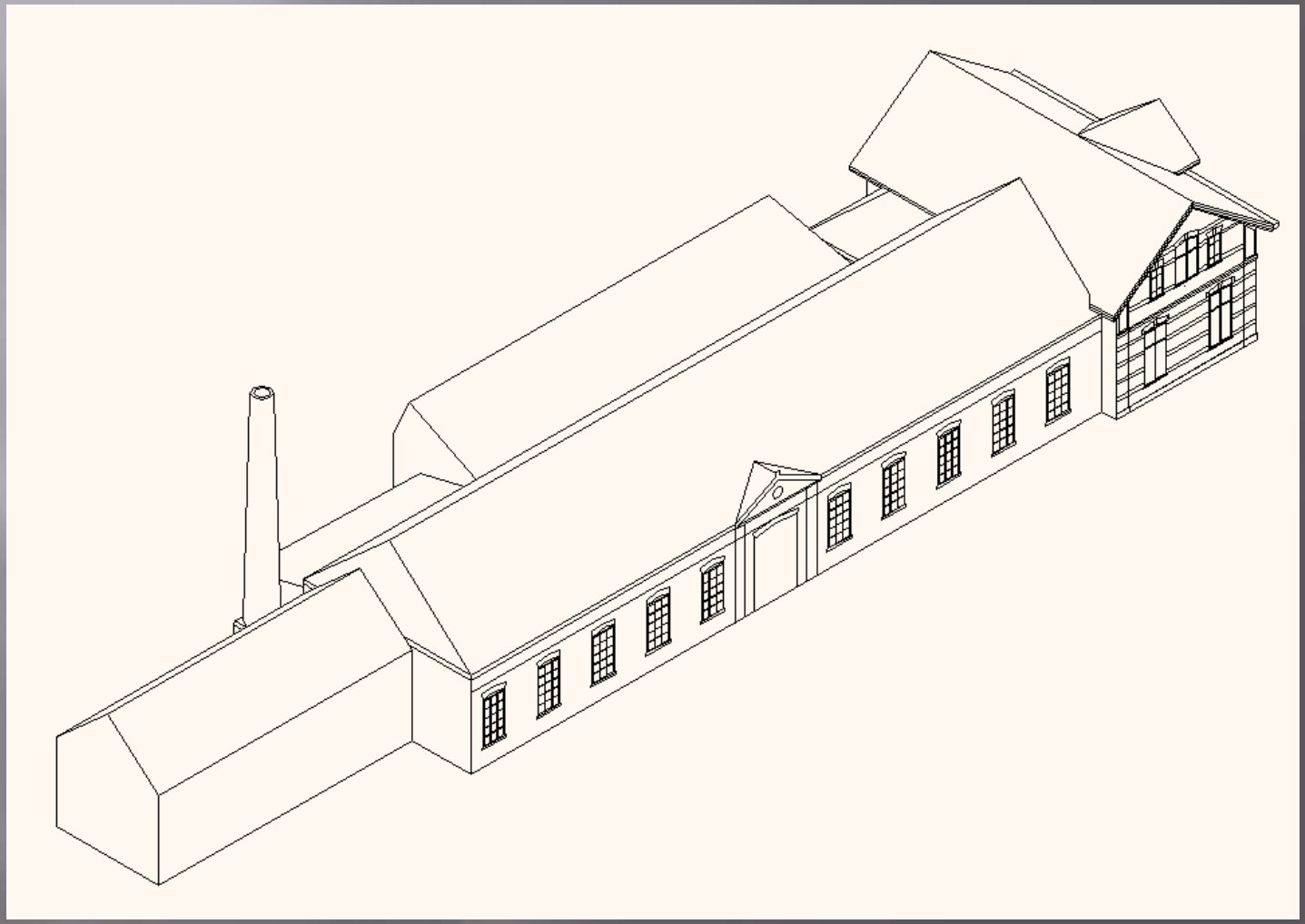
EXPLODED VIEW OF ENGINE



EXPLODED VIEW OF MOULD BOX



ISOMETRIC VIEW OF HOUSE



BENEFITS OF CAD/CAM

- Introduction of computer has resulted in a better and consistent quality product at reduced costs .
- CAD has enable creation of assemblies and parts in the computer, there analysis, optimization, stimulating the functionality, aesthetic requirements etc.
- It has resulted lead time in the design office.
- Easy referencing and material of earlier design, data and information.
- Dependence on design subcontractors is reduced.

Limitations of CAD- CAM

- There are two primary limitations to CAD CAM restorations. (Like Cerec and E4D)It is not yet possible to do multiple unit bridges and the esthetics is limited.
- The esthetics has improved dramatically from the early days as the quality of materials has improved. Multi shade material blocks can duplicate dentin and enamel shades.
- Never the less, CAD CAM is not suited for highly esthetic situations.

Conclusions

- Although the last seven years nothing revolutionary happened in the CAD tools ,the software's vendors support that in the short run many things will change the way of the mechanical design.

- The CAD in the future will be more easy to use and learn, and geared to enhance concept design and construction planning, will be functional and powerful enough to satisfy the needs of engineering design and integration of all disciplines, and corporate functions, sectors and levels.

References

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- www.wikipedia.com