



# Principles of Engineering

## Space Technology

### COMPUTER AIDED DESIGN (CAD)

### Briefing

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#### **CAD**

Whether it's called Computer Aided Design, Computer Assisted Drafting, or Computer Automated Drafting... CAD is the language engineers use to talk to industry. Nothing is made in industry without a drawing to work from. Gone are pencils, drawing boards, and tee-squares. They've been replaced by computers and specialized software that couples the skills of a drafter with the speed of a computer. The CAD system is comprised of three essential parts... the operator, the hardware, and the software.

#### **CAD Operator**

The key word represented by the acronym, "CAD" is Aided. The CAD system cannot create a drawing with the skills of a person. The knowledge and expertise of an engineer or drafter is essential to the successful creation of any drawing or design.

#### **PC Hardware**

The desktop computer is but one part of the CAD workstation. The hardware includes the computer for processing and disk storage; the keyboard, mouse, and tablet for coordinate and data input; and the monitor, printer, and plotter for design output. The CAD workstation is no ordinary PC. CAD software demands lots of processing power and working memory to perform its highly complex operations.

#### **CAD Software**

Software for Computer Aided Design is available from a variety of companies and ranges in price from hundreds to many thousands of dollars per seat. CAD software allows the operator to create lines, geometry, and primitives in both two and three dimensional space.

#### **The Power of CAD**

The most powerful feature of CAD software is the ease in which changes can be made to a design. It is no longer necessary to create a completely new drawing when a mistake is made or when a design needs to be modified. Drawing files are easy to edit making CAD an efficient way to draw. With the improvement in CAD software also come improved methods for design. Once considered electronic graph paper, CAD now allows a skilled operator to create 3-Dimensional models using objects like blocks, cylinders, cones, and spheres to electronically sculpt designs. CAD is truly a powerful design tool and a necessary skill for any engineer.