



Centro Stampa

ATTENZIONE QUESTI APPUNTI SONO OPERA DI STUDENTI , NON SONO STATI VISIONATI DAL DOCENTE. IL NOME DEL PROFESSORE, SERVE SOLO PER IDENTIFICARE IL CORSO.

N° 1524

**FONDAMENTAL OF MACHINE DESIGN -
DRAWING -
TEORIA ESERCIZI TEMI ESAME
2015-16**

DI GOSO GIANLUCA

FUNDAMENTAL OF MACHINE DESIGN - DRAWING

LESSON 1

29/09/2015

TEACHER: ROMANOU

DESIGN PROCESS

It follows 3 phases:

- ① STUDY CONCEPT, in which are taken KEY DECISION and are launched SYS. SPECIFICATIONS.
- ② PART MODEL, where we define a 3D model and the 2D EIGHT drawing.
- ③ ASSEMBLY CHECK

MANUFACTURING TECHNOLOGIES DRIVE CAD

The modern production processes drive to fast products 'cause of the changing of information required to create: for example a NC machine (numerical control) requires a software who gives it info about how to model the component, but also a ROBOT, an automatic welder, an automated STORAGE.

This is due to MARKET: time and money are the fundamental keys of production and of AGILE MANUFACTURING, that means lead time reduction and minimum stock. The success is done by PEOPLE'S SKILLS and KNOWLEDGE, also by EXPERIENCE.

MACHINE TOOLS

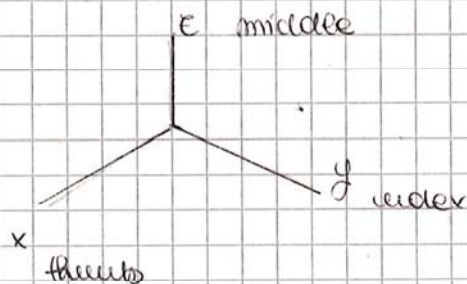
We do the distinction between:

- MILLING MACHINE: circular symmetric
- LATHE MACHINE: turning part

Market is divided into CUSTOMER MARKET and TECHNOLOGICAL MARKET: product is the result of the market requirements and possibilities given by processes and tools. The principal requirement is reducing time during product development.

REFERENCE

to represent a drawing is used a RIGHT HAND CARTESIAN orthogonal system



LESSON 2

1/10/2015

TEACHER: ROMANOU

PRP MODELING

There are several processes to arrive to a part model:

- ① PRODUCT DEFINITION
- ② PRODUCT SPECS
- ③ MANUFACTURING MACHINING
- ④ MANUF. ASSEMBLY

they make part of a PRODUCT AND PROCESS DEVELOPMENT (detailed scheme is on slide 2 of 10103 & FILE).

Production occurs on PROTOTYPING PROCESS, FOUNDRY PROCESS, TESTING PROCESS, PRODUCING IN RING, COMMERCIAL PROCESS...

There are also COURTS bind with:

- PROJECT
- TRAC
- ASSEMBLY

Product part is connected with a SPECIFICATION, that must be:

- CLEAR IN STATUS

- IMMEDIATELY COMPREHENSIVE BY PEOPLE FROM DIFFERENT ENVIRONMENT.
- INDEPENDENT IN LANGUAGE
- 3D and 2D ~~DRONE~~ DRAWN.

Remember that project travels all around the world, contained by continent; it's important in that way to have a DEDICATED LANGUAGE independent from NATURAL LANGUAGES (a Chinese project must be understandable in China but also in Italy and Germany).

Drawing has to be CORRECT and well done: without specs a technical drawing is uncom= plete and misunderstood.

SLOP FLOOR and FEATURE BASED CAD work on a similar path: from a loose shape we obtain a ROUGH BLOCK and then STARTED it with precise tools.

Process is made by: FOUNDRY → WORKSHOP

Raw materials get in the foundry, are modeled in AS-CASTED PART; then in the workshops there are various OPERATIONS (OP 10, OP 20, OP min: taken 10 by 10 because I can add others OPS between the programmed ones, in order to avoid failures) to get a AS-MACHINED PART.

Also important are the CASING and FORGING processes: as we already seen, 3D project process it's the ~~reverse~~ mirror image of REAL PROCESS.

REMODELING FUNCTION

They're several:

- ADD MATERIAL → SKETCH (EXTRUDED BASE, REVOLUTION BASE, SWEEP, LOFTED)
 - Replicate FEATURES (MIRROR, LINEAR / CIRCULAR PATTERN)
 - Rib
- CUT MATERIAL → SKETCH (EXTRUDED CUT, REV. CUT, SWEEP CUT, LOFTED CUT)
 - Replicate
 - Hole wizard
- REFINE MODEL →
 - Fillet
 - Chamfer
- ACTIONS ON MODELS →
 - Shell / Holes
 - Draft

EX

EXTRUDED BASE



REVOLUTION BASE



SWEEP BASE



LOFTED BASE

Obviously the sketching and modeling processes are the same seen in Engineering Drawing course using SOLIDWORKS™.

FOR AN EXAMPLE, VERY DETAILED, OF A SKETCH, WATCH ON H0103 SIDE SHOW FROM PG. 24

CUSTOMERS IMAGE ON PROCESS

the require: DIVERSITY OF PRODUCTS FRESHNESS and COMPLEXITY, but this requires a longer DEVELOPMENT TIME (with BLOCK UPS and SIMULATION) and also an HETEROGENEOUS ENVIRONMENT.

