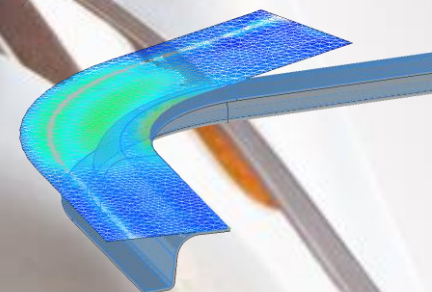
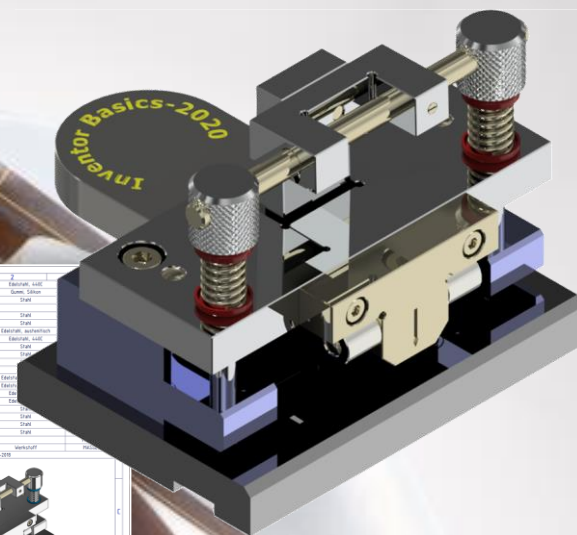
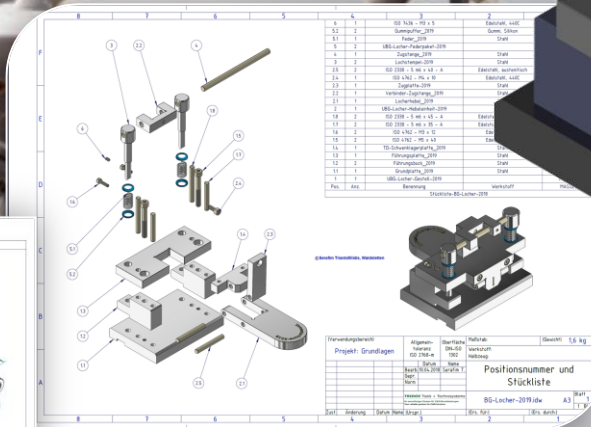
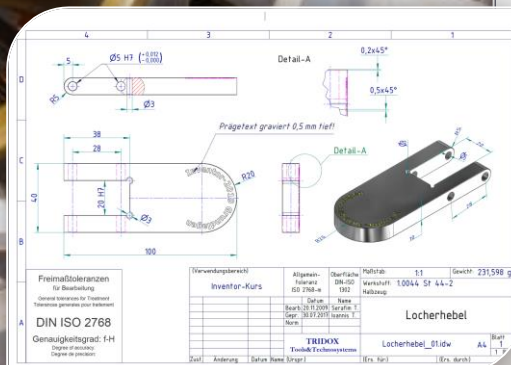
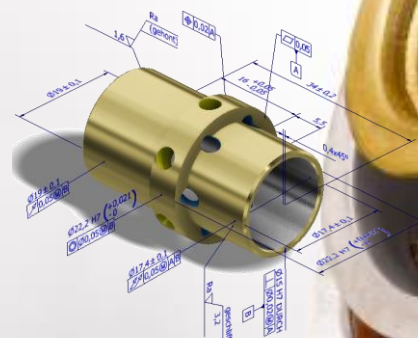


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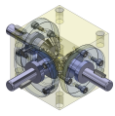
CAD-Basics

„simply beautiful“



Incl. CAD-Guidelines





1st Edition, October 2019

TRIDOX Tools&Technosystems

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We thank Autodesk very much for the supporting material, which we have implement in that Text-Book, as well in our PowerPoint presentations.

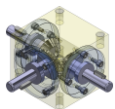
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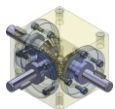




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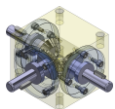
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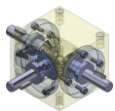
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1.1 Foreword by the author

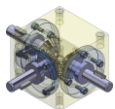
Due to existing reasons and the need to provide the students/participants with a **"simple and beautiful"** companion book for 3D-CAD Basic training with **Autodesk Inventor**, I decided to write this little **CAD - Textbook**.

The ingredients and recipes used are with great love and passion, for a simple and clear didactic methodology, as well as to meet the needs of a modern mechanical design.

The almost philosophically sounding title, CAD-Basic Training "simply beautiful" or "The Beauty of Simplicity" is intended to serve as a guide to the mental attitude of the trainees, in relation to the chosen pathways and methods of mechanical design.

Order and transparency in the creation of sketches, models / components and assemblies with the high demand for modification friendliness and standardization require today's designers not only disciplined work, but mental anticipation of future changes. In this context, I tried my best to incorporate my empirical knowledge.

- The goal is to facilitate the participants in the 3D design and later with this book to consolidate.
- To develop a series of practice-oriented design examples with the claim of "simple and beautiful" are supplied as CAD data in addition to the book.
- System requirements for Windows / Mac computers
- All relevant features and the required system settings to operate the Autodesk Inventor software according to the manufacturer are shown at the beginning.
- It is important for the user of the Autodesk Inventor to know and understand the system settings in the application options, as well as the filing system of the CAD data in the respective project folder structure.
- In this constellation, I have described in detail the system setting in the application options with the addition of footage.
- The topic of CAD data management is described explicitly using the example of a "single user project" without data management "Vault".



1.2 Modern 3D design „Digital Prototyping“

Digital Prototyping is an Anglo-American term used in the field of mechanical engineering; the term describes a procedure in the technical development. Digital Prototyping is designed to reduce development time of new products, reduce development costs and improve **product quality**. The basic idea of the method is to test the prototypes or test patterns necessary for functional testing of new developments less than physical prototypes, but rather to test them as **"virtual" or "digital prototypes"**, therefore as computer models.

The basis for digital prototyping is a 3D CAD model of the product. Based on this 3D model, mathematical methods such as multi-body simulation (kinematic and dynamic simulation), finite element method, visualization, installation and analysis can be used. Assembly simulation etc. different aspects of a product are examined, which would otherwise have to be checked in extensive series of experiments with physical models.

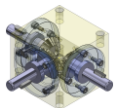
The advantages of digital prototyping include:

- Digital prototypes typically cost less than physical prototypes.
- Many design variants can easily be tested and optimized on the computer.
- Digital prototypes facilitate and enable collaborative development across departmental, corporate or geographic boundaries.
- The best specialists and partners worldwide can be integrated into a digital development network.
- Tests of prototypes can be performed faster on the computer than with physical models.
- The design changes that inevitably occur during the development process can be moved to an early stage of development, where they cost significantly less than later.

An important prerequisite of digital prototyping is the continuity of the **data through all phases** of product development, from conception through design to production and assembly. Thereby support systems for product data management.

The process of digital **prototyping is now standard** in the development of automobiles, aircraft and many consumer durables.

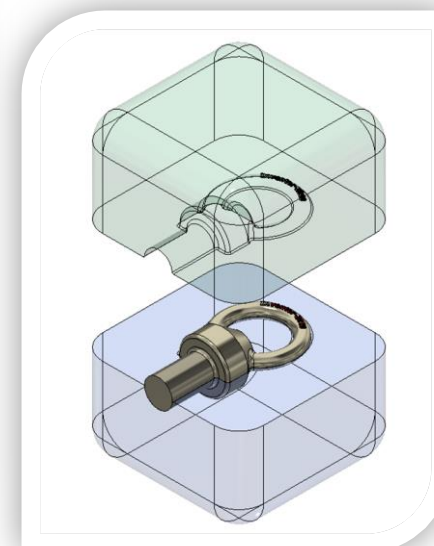
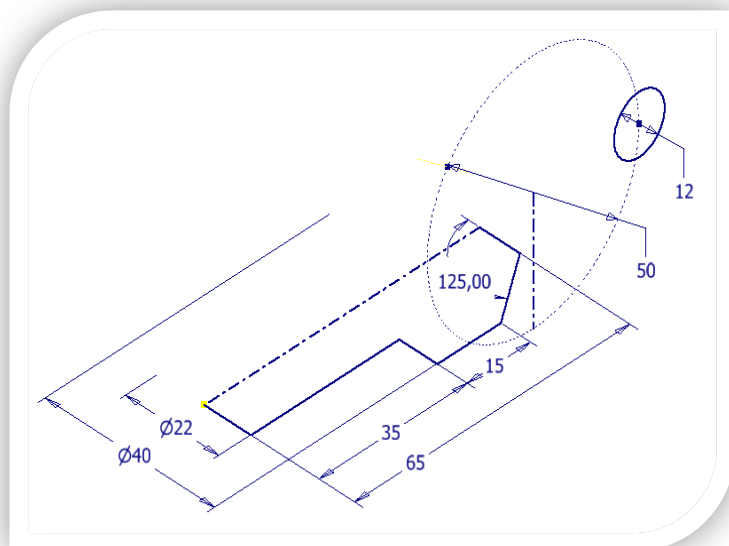
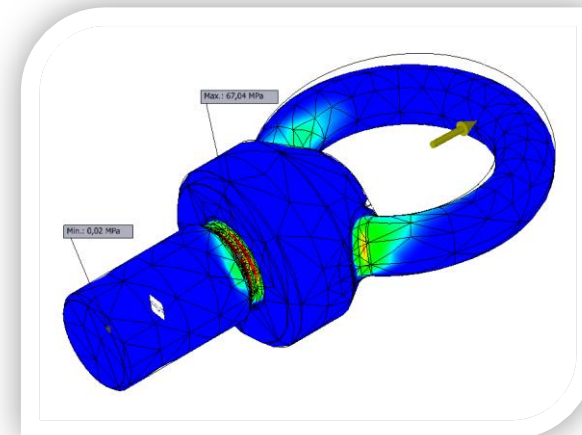
Mechanical engineering and medium-sized industry are increasingly using digital prototyping. One reason for this is the fact that the costs for 3D CAD systems and other solution components for the realization of digital prototyping have fallen steadily in recent years.

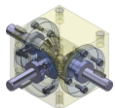


1.2 Modern 3D design „Digital Prototyping“

Digital Prototyping on the design example heavy-duty eye ST-2020

- Concept (Sketch)
- Design (3D-Model)
- Analysis (FEA/Dynamic simulation)
- Modification (3D-Model)
- Production (Physical parts/Tools)





2.1 Workspace and Project Directory

Set project search path:

Set Path for Enclosed File, Set Workspace, Workgroup, or Library to access the Project Editor, do one of the following steps:

- In Autodesk Inventor, select Manage Projects. Outside of Autodesk Inventor, click Start Programs Autodesk Inventor 2020 **"Project Editor"**.
- In the project editor, select the project to be edited in the upper area .

At the bottom, right-click a path category, and then choose an option:

- To set the path for an included file, right-click on Included File and select Edit.
- To set the path for a workspace, right-click Workspace and select Add Path.

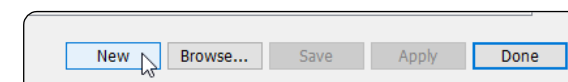
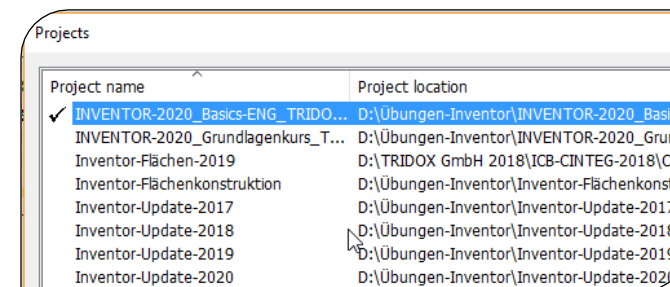
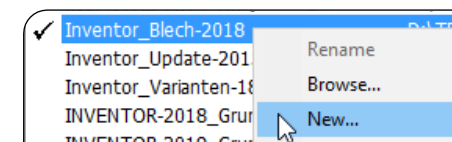
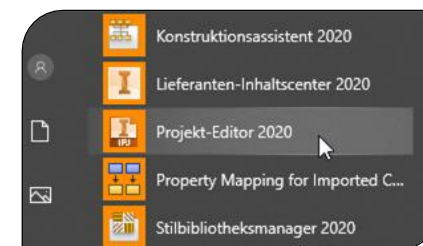
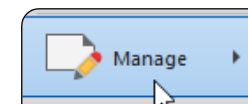
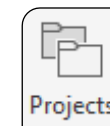
Note: In a single-user or distributed workspace project, you can copy and manipulate files in your workspace. You can use the Design Assistant to copy the files.

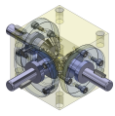
If you check them out of a workgroup location, they are automatically copied to your workspace.

In the file status browser, click a name with an icon to the left that indicates that the file can be checked out. Then click Check Out.

To set a workgroup search path or library location, right-click Workgroup Search Paths or Libraries.

Then click on an option, eg. B. Add paths from file (select .IPJ file) or Add paths from folder (Select folder).





2.1 Workspace and Project Directory

Setting Options for Projects

In the Project Editor (Manage file), double-click the name of the project to select it as the active project.

Under Use style library, specify how a style library is used by the project:

- Use style library = read / write. Uses the style library specified in the Style Library Folder Options. All designers can create and edit styles and save them in the writable style library. This will replace earlier style definitions.
- Use style library = read-only. Designers can not save new and changed styles in the style library or replace library definitions.

Under Commonly Used Subfolders, right-click to add a shortcut to a subfolder of the project that is often used to open and save files.

