TRUSS4

Truss Project Manager (TPM)

User Manual

v1.0

Obsah

1. Introduction

TPM is the Truss4 group program for the projects management and is a database extension of the existing Truss 2D, Truss Explorer and Truss 3D programs.

Characteristics:

A database program where only the user interface is installed in Windows operating system workstation and the database itself and running of the program are stored in a Cloud storage, or alternatively in another server storage specified by the user.

Main functions:

- **Data organization and its sharing to the authorized users**

Authorized users have access to the data with the possibility to share it via Internet connection at any time and from anywhere. In addition to the Truss4 tasks, it is also possible to save different data files and attachments etc. to the projects.

- **Data security and system stability**

The Cloud solution guarantees high level of data security and system stability.

- **User interface personalization**

All settings and display are saved under the user profile and are also applied when logging in from a different workstation.

- **Presentation of a 3D model**

Generating a 3D-model of the structure with the possibility of sharing (especially with the customers) and viewing in common web browsers without the necessity to install any other programs.

- **Project administration and management**

Immediate overview of the status of projects in progress with the possibility of filtering and sorting by deadlines, responsible persons, etc.

- **Parametric sorting, filtering, and searching**

In addition to creating new projects, it is also possible to import previously performed tasks into the database and clearly use number of relevant data from already completed tasks: for example, to search similar, previously performed tasks, or compare and evaluate various parameters.

- **Data continuity for other systems**

Individually, it is possible to provide the data processed and managed in the TPM program to other systems, such as production management systems, accounting, etc.

Data structure:

The main database contains a total of four tree-related (superior and subordinate) levels of data. From the highest to the lowest they represent "Customer" - "Project" - "Task" - "Truss". In addition to the main database, there are other databases, namely the list of the TPM program and further also separate user-editable and supplementary price list databases, especially those of nail plates and other materials, services, and other items.

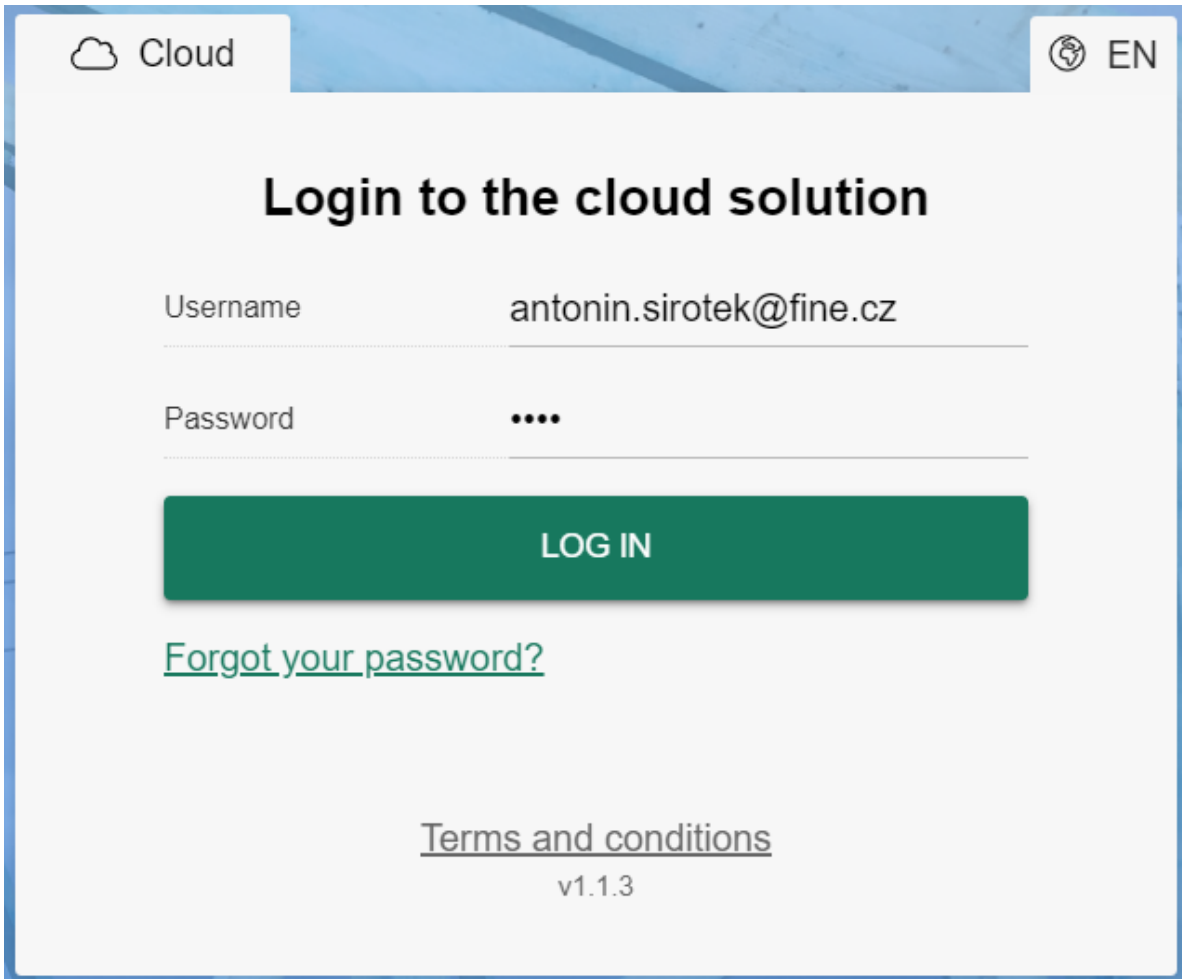**Truss** – Data completely transferred and synchronized with Truss 3D.

Task - Data from basic trusses and data transferred from Truss 3D extended by the type and the task status in TPM.

Project - Data from subordinate tasks supplemented with project details, customer, responsible person (user), delivery deadlines and attachments (documents, etc.) in TPM.

Customer - Customer details entered in the TPM.

2. Login

Login is done by entering a login name, i.e., an email address and a password that can be changed by the user.
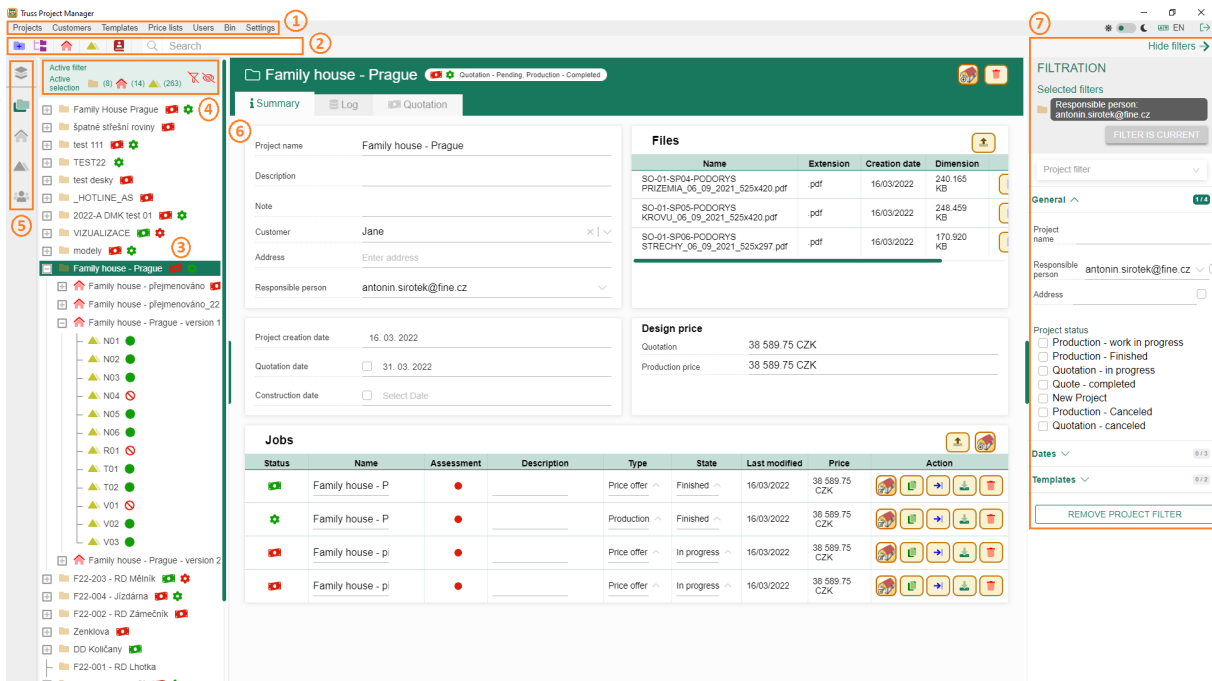
3. Controls

1 - standard menu - Allows control of all parts of the program.

2 - horizontal bar - Allows to create a new project, switch the main window to lists mode (customers, projects, tasks, trusses) and includes a search tool.

3 - control tree - Displays data and controls the display of details of the selected item (or more items) in the main window. Allows to select multiple items using Ctrl and Shift, and the context menu on the mouse right button allows other common actions such as copying, deleting, etc., but also user-limited display of projects (hiding selected or other projects).

4 - status of displayed data - Displays the status of the number of hidden items in the control tree and allows to cancel all selections and all filters.

5 - vertical bar - Switches the display mode of the control tree according to the selected highest level of data (customer, project, task, truss) and allows to collapse all items of the tree in bulk.

6 - main window - The main window has two modes, the detail, and the list. In detail mode, the selected item (or multiple items) details are displayed, further allows to edit values, and perform other actions. In list mode, lists of items and their values in columns are displayed. Lists can be sorted by user-selected columns and the defined sorting is applied not only to the list itself but also to the items of the control tree.

7 - filtering - The filtering tool allows to filter data (to restrict data display) according to various criteria clearly divided according to the data levels (Customer, Project, Task, Truss).

TRUSS4

4. Settings

Settings / System menu is to enter the path to the Truss 3D and Truss 2D programs (Truss 2D will be incorporated into the TPM in future development).

Settings / Organization menu is to enter the identification data of your own company.

In the menu Settings / About the program, you find a tool for online update of the TPM program and identification data of the TPM program including the currently installed version.

5. Add user

Other TPM users can be added by a default administrator by using "Users / Add user" in the main menu or with the icon "Add users" in the list of users.

The fields First Name, Last Name, **e-mail (must be unique within the TPM program because they serve as the user's login name)** and the default password are required and can later be changed by the user.

6. New project

A New project is entered in the "Projects / New project" menu or by the icon in the horizontal bar.
The project must have a unique project name, which is monitored by the TPM program and in case of the name duplicity of an existing project, it will prompt for modification (it will not allow saving the same project name).
The description, note and address can always be added to the project.
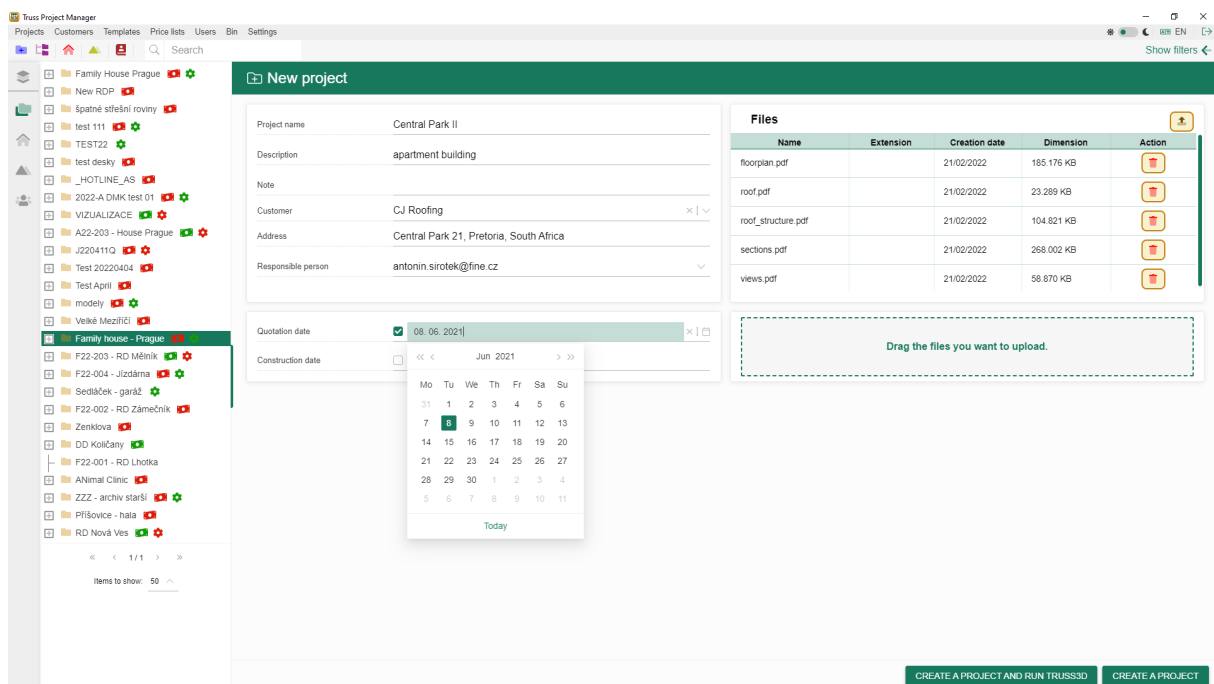It is possible to enter a project now or later and change an existing customer or create a new one.
By default, the user-creator is always set as the responsible person for the project, however this can be changed at any time (used mainly for filtering).
The project creation date can never be changed.
It is possible to enter and change the dates of the price offer submission and of the delivery of the construction to the project. Check marks for deadlines affect the status of the project and ticking the mark **ALWAYS** means the status "in progress".
Various attachment files can be inserted into the project, either by dragging the file into the window (Drag & Drop) or by uploading the file icon.
When creating a project, you can either just create a project or run Truss 3D directly when creating it.

7. Customer

A new Customer is entered in the "Customers / New customer" menu.

It is possible to use the connection to ARES according to the IN number when entering the Customer.

At least one of the Company or Surname data is mandatory, given that it must be unique, which is monitored by the TPM program and, in case of a match with an existing Customer, prompts for modification (will not allow the same customer to be saved).

It is possible to add the usual identification data to the Customer (IN number, address, etc.) including other contact persons.

For one-time Customers, one fictitious customer can be used, or the project can be left without a customer.

The Customer creation date can never be changed.

The Customer can exist without an assigned project or can have one or more projects assigned.

The Customer to whom the project is assigned cannot be deleted.

Editing values in detail is saved with the keyboard shortcut Ctrl + S or with the button "Save changes".

8. Project

Editing values in detail is saved with the keyboard shortcut Ctrl + S or with the button "Save changes". Various attachment files can be inserted into the project, either by dragging the file into the window (Drag & Drop) or by uploading the file icon. It is possible to use the icons to open, download, and remove individual attachment files.

During the work on the project, it is possible to change the responsible person in various phases (used mainly for filtering).

It is possible to enter and change the dates of submission of the price offer and delivery of the construction to the project. Check marks for deadlines affect the status of the project and ticking the mark **ALWAYS** means the status "in progress".

A project can have several states, which are governed both by check boxes for deadlines and the existence of subordinate tasks that have their own type and state.

The project statuses are: New project (no task), Price offer - work in progress / completed / cancelled, Production - work in progress / completed / cancelled.

A project can exist without a task, but usually contains one or more subordinate tasks.

During a standard work on a given project, tasks can be created directly in the TPM as new using the "Create new task in Truss 3D" icon or it is possible to import an existing task from its own storage (Truss 3D * .TR3 file) using the "Import task using Truss file" icon. In the TPM, it is also possible to duplicate an existing task within the given project using the "Duplicate Job" icon or to copy an existing task from another project by right-clicking on the task in the control tree by selecting "Copy Job / Paste Copied Job".

During a standard work, individual tasks (Truss 3D tasks) are started directly from the TPM by the "Edit task" icon.

The task can be downloaded from the TPM program (from the Cloud) to its own storage using the "Download" icon.

It is not possible to completely duplicate the whole project.

9. Task and a 3D-model

In the main window of the task detail in the "Summary" tab, the displayed data are transmitted and synchronized with the Truss 3D program, in particular the total amount of material, floor plan preview, geometry, and load information. The "Materials" tab contains detailed lists of nail plates and cut pieces that can be exported to * .XLSX tables.
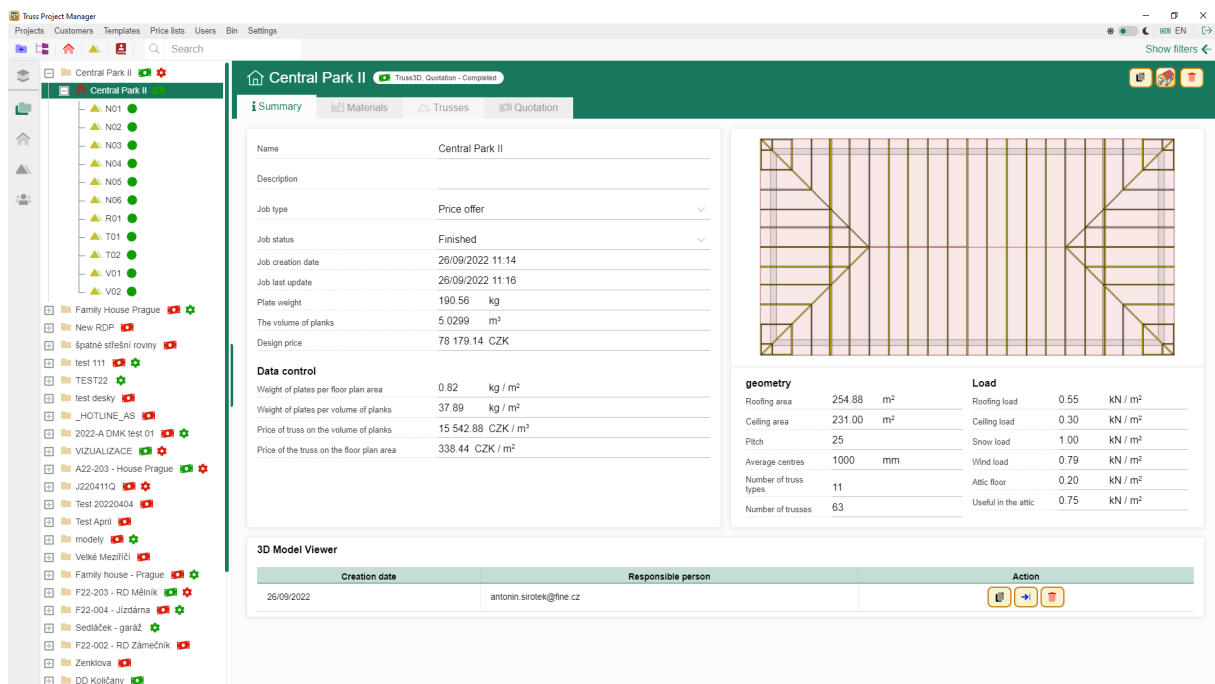
The user can change the task name in the detail of the task (it must remain unique within the project) and possibly add another description.

The type and status of the task are edited by the user. The task types are - Quotation / Production and the task states are Work in progress / Completed / Cancelled. The types and states of the task affect the state of the whole project.

Editing values in detail is saved with the keyboard shortcut Ctrl + S or with the button "Save changes". The task can be opened in Truss 3D or deleted.

In the detail of the task, the user can generate a 3D-model of the structure with the possibility of sharing (especially with customers) and viewing in common web browsers without the need to install any other programs.

For the generated 3D model, the user can use the icons to copy the URL address to the clipboard (and later send it to the customer), open the 3D model directly in a web browser or delete the generated model.

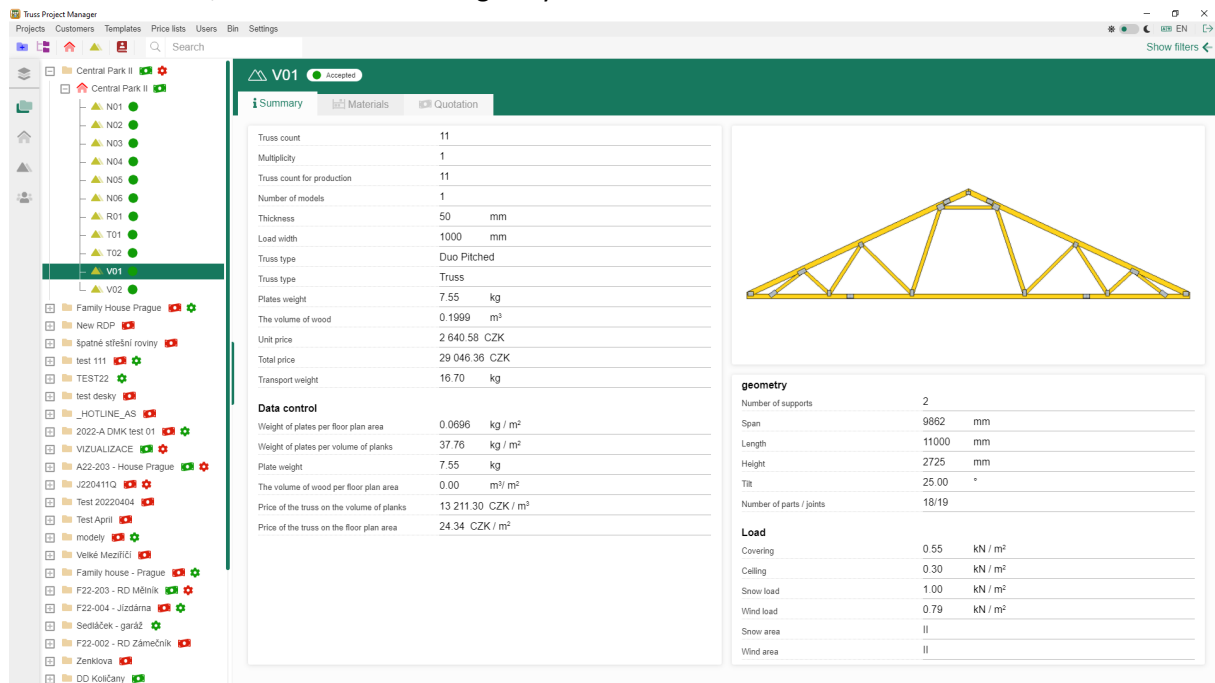

10. Truss

In the main windows of the truss detail, in the "Summary" tab, the data transmitted and synchronized with the Truss 3D program are displayed, esp. the total amount of material, truss preview, information on the numbers, type, geometry and load of the truss. The "Materials" tab contains detailed lists of joint plates and cut pieces.

The truss detail taken from Truss 3D is also displayed.

Possible truss assessment states are: Not assessed / Passed / Not met.

At the truss level, the user cannot change any values in the TPM.

Truss Project Manager
Projects
Customers
Templates
Price lists
Users
Bin
Settings
EN
Search
Show filters
Central Park II
Central Park II
N01
N02
N03
N04
N05
N06
R01
T01
T02
V01
V02
Family House Prague
New RDP
špatné střešní roviny
test 111
TEST22
test desky
_HOTLINE_AS
2022-A DMK test 01
VIZUALIZACE
A22-203 - House Prague
J220411Q
Test 20220404
Test April
modely
Velké Meziříčí
Family house - Prague
F22-203 - RD Mělník
F22-004 - Jízdárna
Sedláček - garáž
F22-002 - RD Zámečník
Zenklova
DD Količany
V01
Accepted
Summary
Materials
Quotation

Truss count	11	
Multiplicity	1	
Truss count for production	11	
Number of models	1	
Thickness	50	mm
Load width	1000	mm
Truss type	Duo Pitched	
Truss type	Truss	
Plates weight	7.55	kg
The volume of wood	0.1999	m^3
Unit price	2 640.58	CZK
Total price	29 046.36	CZK
Transport weight	16.70	kg

Data control

Weight of plates per floor plan area	0.0696	kg / m^2
Weight of plates per volume of planks	37.76	kg / m^2
Plate weight	7.55	kg
The volume of wood per floor plan area	0.00	m^3/ m^2
Price of the truss on the volume of planks	13 211.30	CZK / m^3
Price of the truss on the floor plan area	24.34	CZK / m^2

geometry

Number of supports	2	
Span	9862	mm
Length	11000	mm
Height	2725	mm
Tilt	25.00	°
Number of parts / joints	18/19	

Load

Covering	0.55	kN / m^2
Ceiling	0.30	kN / m^2
Snow load	1.00	kN / m^2
Wind load	0.79	kN / m^2
Snow area	II	
Wind area	II	

11. Lists and classification

Data of customers, projects, tasks, and trusses can be displayed in the main window in the form of a list (table) by using the icons in the horizontal bar or by using the items in the main standard menu.
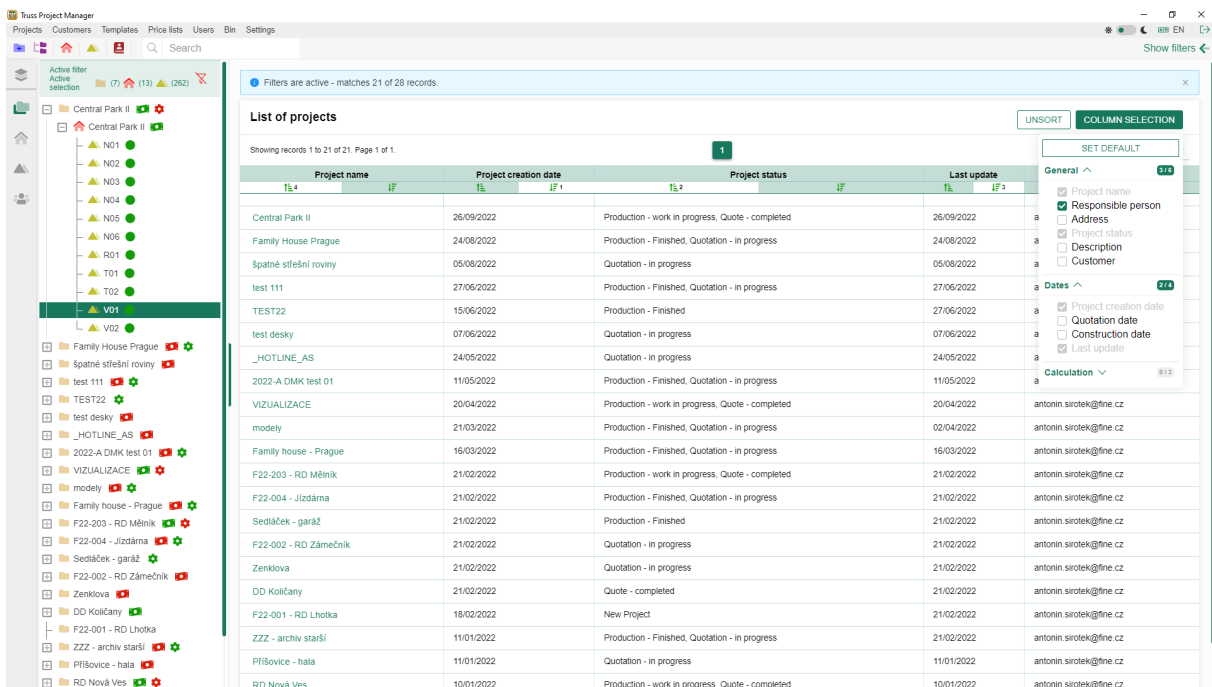
The user can change the displayed columns of the list and their order by using the options under the "Select columns" button. The order of the columns is given by the order in which the individual columns are turned on.

The order of list items (table rows) can be sorted by values in columns ascending and descending, including by multiple criteria. The order of the sorting criteria is governed by the order in which the sorting of the individual columns is switched on. The order of the criteria is indicated by a number.

The user-selected sorting of the list is applied not only to the given list but also to the items of the given level in the control tree.

Sorting in the list (and thus in the tree) can be cancelled in bulk with the "Cancel sorting" icon.

The default settings of the column display and sorting can be restored with the "Select columns / Set default" icon.

12. Filtration

The Filter tool can be displayed by clicking on the "Show filters" button.
Individual filter variables are divided according to data levels (Customer / Project / Task / Truss) and further into clear subcategories.
The user can (even in several successive steps) add additional filters, modify, or even remove already applied filters.
All filters of a given level (Customer / Project / Job / Truss) can be deleted in bulk by using the "Delete filter ..." button.
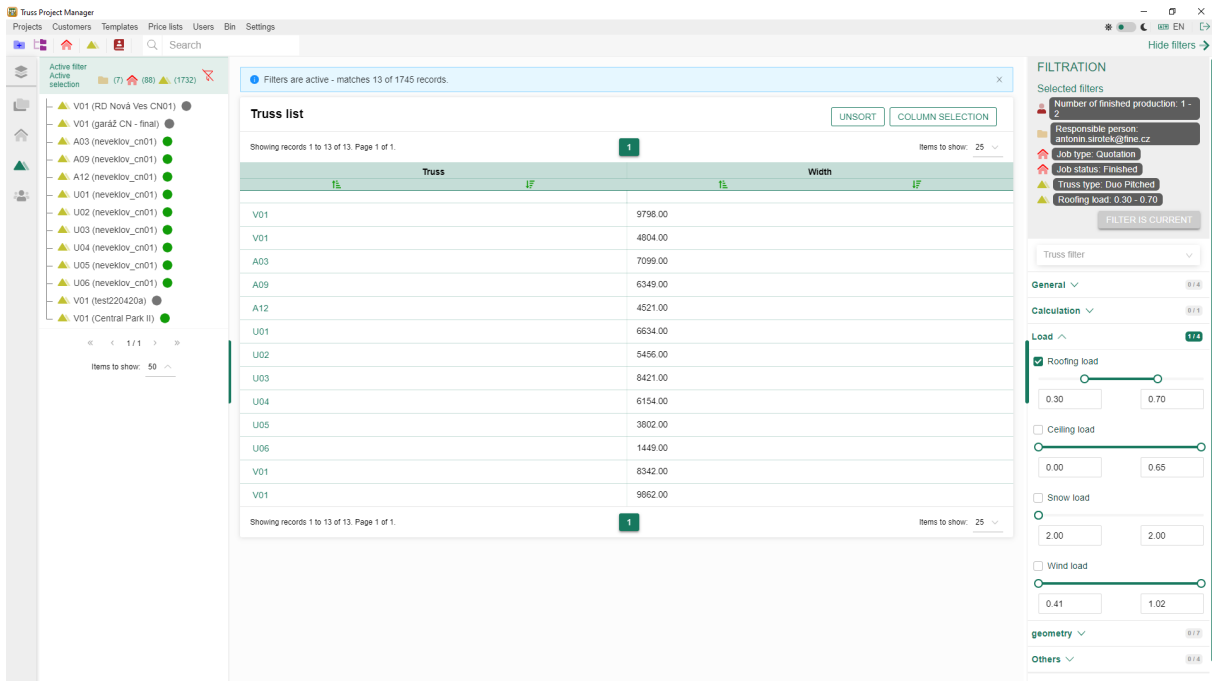
All filters can be completely cancelled in bulk with the "crossed-out funnel" button above the control tree.
In the area above the control tree, there is an area showing the status of the displayed data, where a number of hidden projects, tasks and trusses are listed and the use of filters or hiding projects is displayed.
The use of filters, including selected values, is listed in the line below the list header.

13. Hiding - limited display of selected projects

Aside from filtering based on criteria, **only at the project level** it is possible to limit the display only by user selection.

Project items can be selected in the control tree (Windows selection) by clicking on the items in the combination with the Ctrl or Shift keys.

After selecting an item, right-click on the item and select "Hide Selected" or "Hide Others."

You can select Hiding repeatedly too.

In the area above the control tree, there is an area showing the current status of the displayed data, including the number of hidden projects, tasks and trusses are listed and the use of filters or hiding is displayed.

Hiding can be cancelled with the "crossed out eye" button above the control tree.
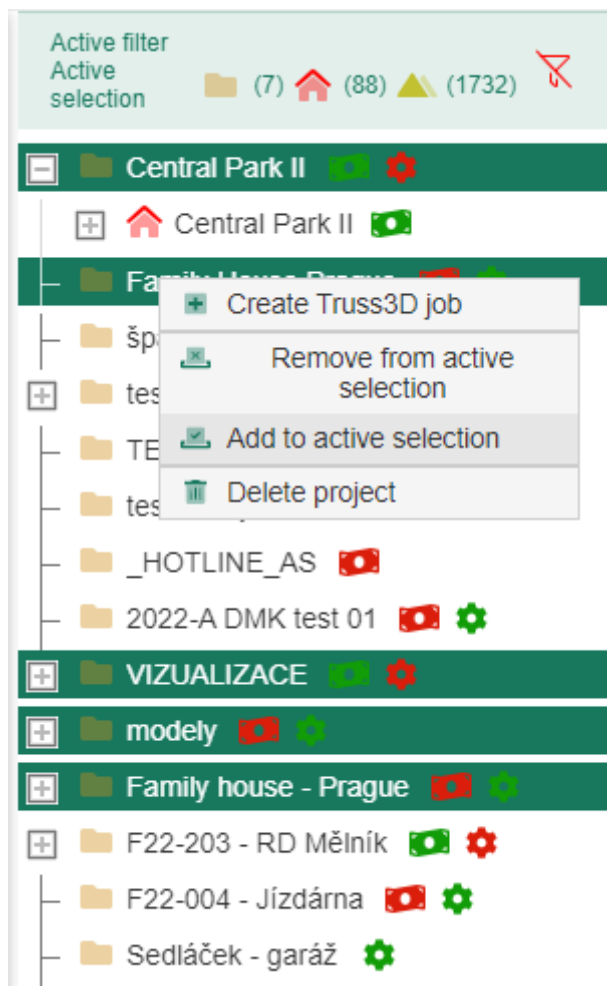
14. Search

The Search tool is in the horizontal bar.

When entering a text string into a text box, a list of project, task, and customer items that contain, the specified character string in the name is displayed concurrently.

The Search is not case sensitive, diacritics are not considered.

By clicking on an item in the list, the detail of the item is displayed in the main window.
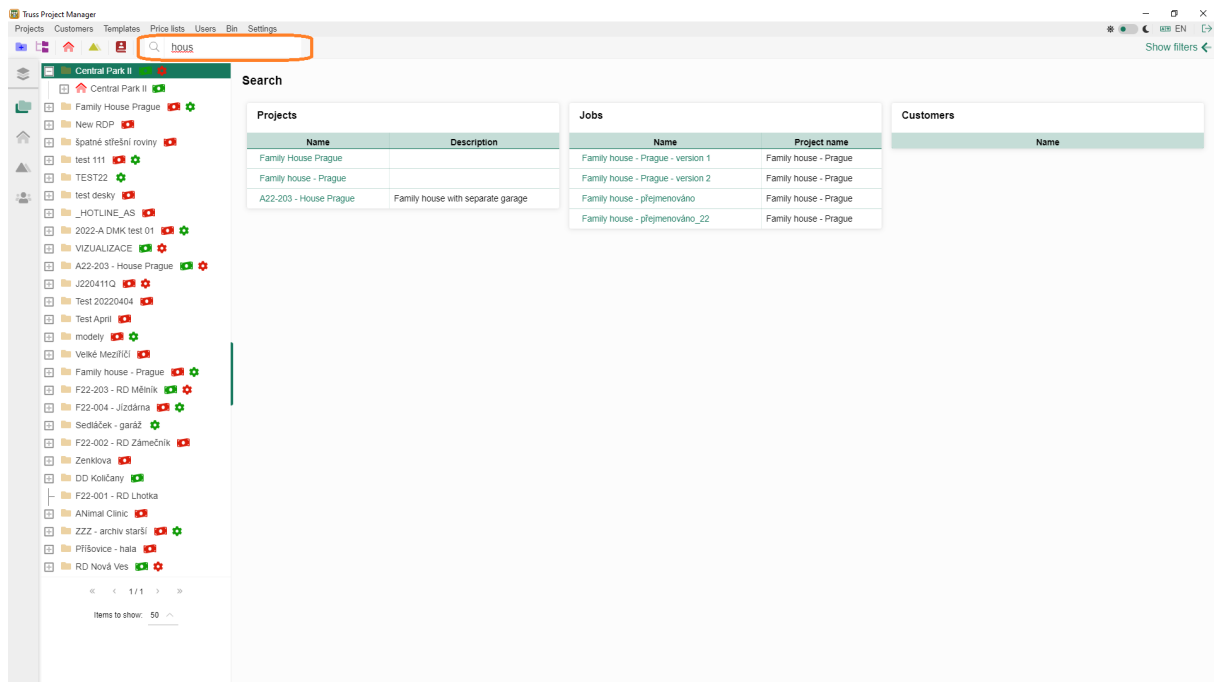
15. "Copy Job" and "Duplicate Job" Actions

The mouse right button for the job in the tree allows to "Copy job" to the clipboard and when followed by the right button allows for the project "Paste the copied job" from the clipboard to the project.

The "Duplicate Job" is another option that creates a duplicate job in the same project in one step.
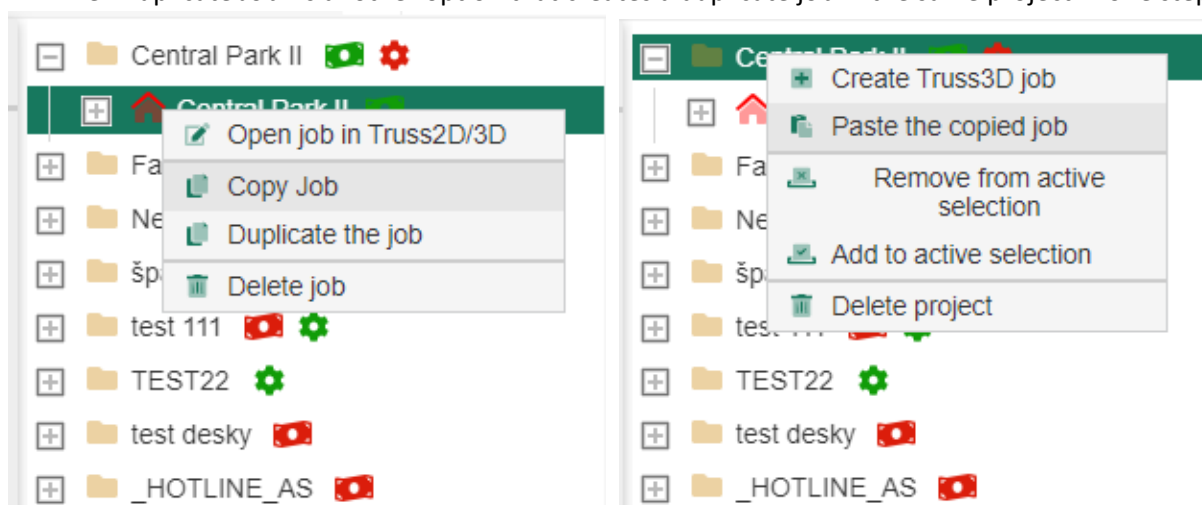
16. Backup

The "Backup" tool is available in the main standard menu under "Settings".

After running the "Back up files" command, the data from the cloud storage will be copied to the newly created "Backup" directory in the user-selected location "Settings/System/Change directory for saving Turss files" (usually on the computer's hard drive).

Truss4 files and attachment files are stored in a directory structure corresponding to the year the project was founded and the corresponding division of projects.
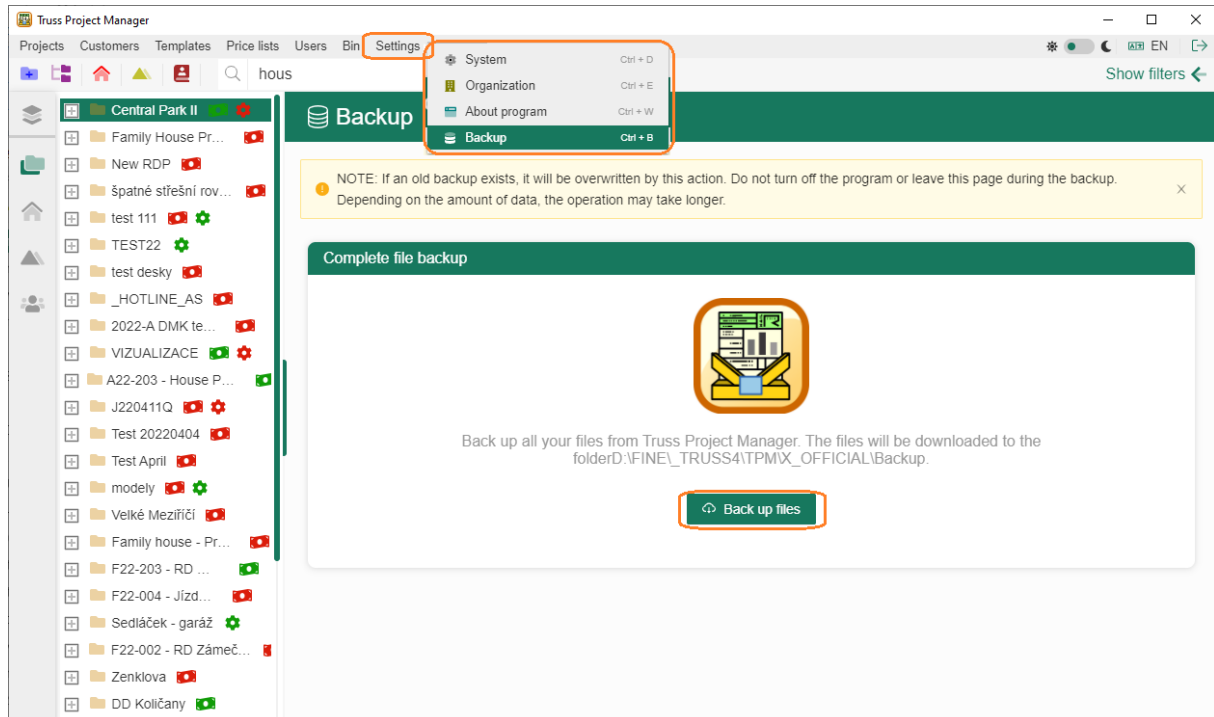
17. Cloud solution, hybrid solution and solution for common servers

The Truss Project Manager program is optimized for a Cloud solution, but another solution may be available, primarily for users operating their own in-house data networks.

Cloud solution
The cloud version is built to be secure and data efficient. Only the Truss Project Manager user interface is installed on the user's workstation, through which the user logs into the system and the real work with the data takes place on a secure Cloud storage provided by Amazon - Amazon Web Services.
An internet connection is required for the Cloud solution. In case of instability or failure of the Internet connection, the currently edited Truss jobs are always downloaded from the database and are temporarily stored on the user's workstation and are continuously automatically synchronized with the database. By default, truss jobs and other attachment files can be exported (user-downloaded files from the database to the workstation) and imported (user-existing files can be uploaded to the database from the workstation).

The Cloud solution is built on a modern infrastructure and provides the following benefits:
• user does not have to provide and manage their own infrastructure (servers, etc.)
• security and stability provided by Amazon - Amazon Web Services
• allows multiple authorized users to work simultaneously allowing real-time data sharing

It is not a monolithic application, instead it uses the so-called *microservice architecture*. The program itself does not run on a standard server computer but is stored in a so-called *container*. The advantage of this solution is the continuous stable function of the program without susceptibility to the state of the server itself, when, if necessary, the entire container is duplicated and replaced without delay. User data is stored in the MySQL database on Amazon's servers - Amazon Web Services, which provides, in addition to hosting the database, other related services, ensuring security and stability and availability from anywhere in the world.

Hybrid solutions
In case that the user is not interested in using the available Cloud infrastructure, it is possible to run the TPM program on user´s own infrastructure, however, to ensure the stability and security it is necessary to provide the following services:
    - optional reverse proxy / load balancer, which is responsible for security, protection against attacks and server load balancing (it is possible to use nginx for example),
    - optionally container orchestrator, used for container management (Kubernetes can be used),
    - container for running the TPM application (the tested environment is Linux Docker),
    - database server (application uses MySQL version 5.7),
    - data storage server (use AWS S3, possible to simulate),
    - email account for the users and passwords management (any account that can be connected via SMTP server)
If you are interested in using the "3D - Model Viewer" application, also the following is required:
    - a container for running the Model Viewer application (the tested environment is Linux Docker),
    - hosting for the Model Viewer application (S3 hosting is tested, it is possible to use almost any service on which the web can be hosted),
    - Optionally purchase a domain for the HTTPS support

Solutions for common servers
It is also possible to host the TPM program outside of the container solution on common servers, but in this case, problems may occur due to different environments and this procedure is not recommended.