

## 13.1 What is Contained in a Design Case File

A design case is composed of the following elements:

- Components
- Mixtures
- Unit Procedures
- Operations
- Equipment
- Streams
- Sections
- Branches
- Connectivity
- Visual Objects

All of the above elements are saved together, in one file: the design case file. By convention, all design case files have the same extension:

for EnviroPro Designer: '.epf'

for SuperPro Designer : '.spf'

Since the license agreement allows you to install the program on more than one computers, saving all the design case related information in one file makes it very easy to move your work from one machine to another. So, for example, if you created a design case in one installation of the program, and later you decide to continue working with it at another installation, all you have to copy is the design case file alone. Of course, you must make sure that you have the same version of the program installed on both machines and that you always plug your security key at the parallel port of the computer that you are currently using.



### Tip

If you have been using EnviroPro Designer and later you decide to upgrade to SuperPro Designer, you will be glad to know that the files are upwards compatible; i.e., a EnviroPro file will be read by SuperPro Designer. Obviously the reverse is not possible since SuperPro Designer contains unit operation models not available in EPD.

The design case file also contains several other pieces of information that you have specified as you were building up your design case. For example, it contains all the preference settings (either the defaults or your own choices). These settings reflect your own preferences on how to draw the icons of process steps, how to draw the streams in your process, and how to fill-in the interior space of solid visual objects. Other preferences contained in the design case file set the font and color for all labels and comments, the size of your flowsheet as set from the **File / Drawing Size...** menu option as well as the text editor that is being used to display your reports. A design case file contains also all the economic parameters that pertain to flowsheet sections and the entire flowsheet (i.e., those economic parameters that are not associated with any given process step). Such parameters are:

- the section-level capital cost parameters (factors for piping, instrumentation, insulation, engineering, construction, etc.) used to estimate the total purchase cost

of each section. Note that you may have different sets of such parameters for different sections of your process.

- the section-level operating cost factors (for equipment and labor rates, laboratory/QC/QA, electricity unit cost, etc.) used to estimate the operating cost of each section. Again, you may have defined different sets of operating cost factors for each section of your process.
- the flowsheet-level economic evaluation parameters (depreciation method, NPV-interests, DFC outlay description, startup cost, royalties, working capital, production capacity planning, etc.). Those factors can only be defined once and they pertain to the flowsheet as a whole.

What is not contained in your design case file is the set of default values used by the program to initialize the parameters for each process step when it is first included in your process description. These settings are currently set once before shipping the program to you and currently cannot be changed by the user. In section 13.4 we will explain a work-around to the current limitation. Future versions will allow you to modify the default values for each unit operation and save them in a user-defined file that can be later used in conjunction with any new design case.

## 13.2 Design Case Description

The program maintains a list of attributes associated with each design case file that can be very useful, especially in multi-disciplinary design environment, where several individuals could be involved. The features currently maintained include:

<b>Company Name:</b>	It is meant to keep the name of the company for which the design case is being carried out.
<b>Project Name:</b>	The name of the project that this design case belongs to.
<b>Plant Name:</b>	The name of the plant that eventually will host the process described in the design case file.
<b>Revision:</b>	As several iterations typically occur before a final design is approved, this entry provides a space for the designer to mark each distinct revision.
<b>Drawn-By:</b>	The name of person who drew the process flowsheet.
<b>Developed-By:</b>	The name of the engineer that designed the process.
<b>Approved-By:</b>	The name of the project manager that approved the process.
<b>Approval Date:</b>	The date that this design case was approved.
<b>Created:</b>	The date the design case file was originally created.
<b>Last Modified:</b>	The date that the design case file was last saved.
<b>Comments:</b>	An entry where the user can place any number of comments on the design case whose description is contained in the file.

All of the above entries can be accessed and modified from the dialog that appears when the you select the **Edit / Flowsheet Options / Design Case Description....** entry from the main menu or the context menu of the flowsheet itself.

## 13.3 Saving and Copying the Design Case File

Since all the information related with a design case is contained in a single file, keeping a safe copy of a design case file is very important. Keeping backup copies of files on diskettes is also a good idea. To copy all the information contained in a design case, all you have to do is copy a single file, the design case file. You should also develop the habit of saving any incremental changes you have made to the design case you are working on fairly often. In fact, an even better suggestion is to keep several versions of your design case file, as it progresses from its inception stage to completion, under different file names. There are several compelling reasons for that. First, it allows you to review the evolutionary steps taken during the design of a process, and possibly revisit them later and entertain new options at any given phase of the design. Furthermore, it protects you against the possibility of a corrupted design case file that could render all your work unreadable by the program. We have made every effort to eliminate all those unfortunate conditions that may corrupt a design case file or lead a program to a crash, but as it is inevitably the case, there will always be some bugs that escape our testing. Some other times these situations might arise due to interactions with other programs running at that time on your machine, so it is impossible to predict. The best protection against such situations is to always be conservative and save several versions of your design case file. Later in this chapter, we will propose a file system that allows you to keep all these versions organized within a project or across several projects.

### Automatic Multiple Version Archiving

The program, in an attempt to protect you against losing your current design case file, automatically creates a set of backups every time you save (**File/Save** option from the main menu) any changes made in a design case file and overwrite the previous version that already existed on the disk. The program will always maintain three versions for every design case file :

- Current (latest) Version: *filename.ext* e.g. myfile.bpf, or myfile.epf, or myfile.spf
- Previous Version: *filename.~pf*
- Oldest Version: *filename.~~f*

Every time you save a design case file all three files are updated: the oldest version is deleted, the previous version is renamed as *filename.~~f*, the existing version is renamed as *filename.~pf* and finally the version you have just completed is saved under the *filename.ext* you have provided.

## 13.4 Starting up A New Design Case with Customized Default Settings

The current version of the software uses a **single set of costing and economic evaluation factors** derived from data that primarily apply to relatively large chemical and biochemical plants. The default factors may be substantially off for small plants that produce high value products or for very large bio/chemical plants that produce commodity products. To store your own factors for different types of plants, you might

consider creating **Seed (Template) Design Cases** and use them as starting points whenever you wish to analyze a new process that resembles one of the template design cases. Future versions of Pro-Designer will support generation of settings file for storing default values of multipliers and settings. To make sure that you can keep all these files around in an organized manner, you may consider following the paradigm proposed in the next section (see section 13.5).

Currently the program does not allow the user to define his/her own set of default values for each instance of a unit operation. Instead, the defaults set when the program was shipped are always used. If you wish to have your own defaults for newly defined process steps, instead of creating them from the **UnitOps** menu, you may want to do the following: Setup a **Master Design Case** file which contains one instance (process step) for each type of unit operation. Initialize each step according to the standards in your organization. Save the file and keep it available for all potential users of the program. Every time you start a new design case, make sure you have the Master Design Case file also open at the same time. You can do that since all members of the “Pro-Designer” series feature Multi-Document Interface (MDI), which allows you to have more than one files open at the same time. Having the Master Design Case file open, instead of inserting a new process step by selecting the unit operation name from the **UnitOps** menu, use the program’s copy and paste ability to copy the desired step from the Master Design Case file into your design case file. That way, the pasted step will be initialized with your defaults rather than the defaults set when the program was shipped.

## 13.5 Organizing Design Case Files

As you probably need to have more than one alternative designs per project, and for each design, several revisions, this all adds up to many files. In order to keep all these files in an organized manner the scheme shown in Fig 13.1 is proposed.

First of all, you need to keep all your files under a master subdirectory that bears the name of the “Pro-Designer” software you are using and the version number. This is very important in case you later upgrade to a newer version or to SuperPro Designer, you need to keep the files separate. Under the master directory is a good place to keep your Master Design Case file (if you need to have one - see section 13.3). As you start a new project, you should create a new directory with a name bearing the name of the project. Chances are that you are going to be working on several projects and you definitely need to keep the files for each project separate. As you focus on a specific project (e.g. Project-X), use that directory as the container of a Seed Design Case file. As you will probably have to deal with more than one alternative designs for each project (named “Plant-X1”, “Plant-X2”, etc. in the figure above), it is suggested that you create a separate subdirectory for each. You can start each alternative design by copying the entire seed design case file into the corresponding subdirectory. Typically, the seed design case will be void of any process steps or streams. Proceed by gradually adding the processing elements that compose your suggested configuration, making sure you save the design under several names (labeled “Revision-1”, “Revision-2”, etc. in the figure above) before you have added all the steps in your final revision. It is a

good practice to keep ample comments as you progress from one revision to another documenting some of your decisions. Use the “Comments” field of the Flowsheet Attributes dialog, as the storage area for all such explanations.

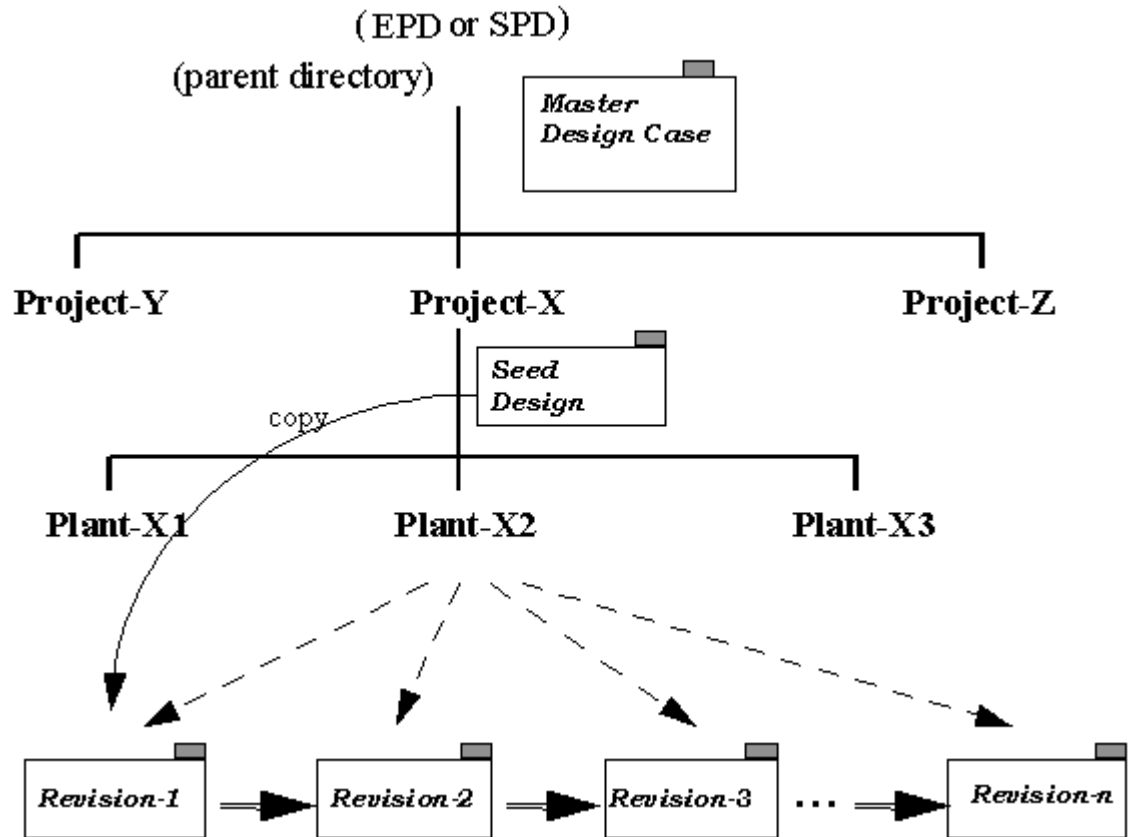


Figure 13.1: Organizing files when working with the “Pro-Designer” software.

**NOTE:** The above organization scheme should be considered as merely a suggestion and by no means a requirement in order for any of the “Pro-Designer” software to function properly.

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