

Sunfluidh installation procedure

The sunfluidh project is placed on the forge and is handled with the version control system [svn](#). In order to install sunfluidh on your computer, please, follow these steps :

- Ensure you get the required authorization to download the sunfluidh project with svn from the forge (contact AMIC for that)
- Define on your computer a directory to receipt the sunfluidh project (~ /SUNFLUIDH for instance)
- Go to the directory SUNFLUIDH
- run the next command (to get the “beta-test” release) :
svn co -username your_login https://forge.limsi.fr/svn/SUNFLUIDH_DVPMT_2/TRUNK
The last version of this sunfluidh project will be downloaded in the directory “~/SUNFLUIDH/TRUNK”
- run the next command (to get the current release) :
svn co -username your_login https://forge.limsi.fr/svn/SUNFLUIDH_PRD/TRUNK
The last version of this sunfluidh project will be downloaded in the directory “~/SUNFLUIDH/TRUNK”

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Environment of the project

In the directory “~/SUNFLUIDH/TRUNK”, you will find three directories :

- DOC : It contains all documents related to the numerical methods implemented in the code (in french at present)
- DATA : It contains different files :
 - Some tutorial data files in order to explore various possibilities of the code (input_xxxx.dat) where xxxx is meant to help you picking the one closest to your configuration. The file must be copied in your directory for testing purpose and renamed as “input3d.dat” in order to be recognized by sunfluidh.
 - different shell scripts in order to run the code in batch on various type of computers (local cluster, IDRIS computers). their names start with “script”. Beware, some tuning of the shell script may be necessary according to the computer you are using. For now, gfortran is the recommended compiler even so any f95 compliant compiler should work.
 - A directory ../DATA/REACTIVE_FLOWS/ that contains different special files (.inc) which could be included in the code during the compilation procedure. They are devoted to the specific reactive flow simulations if needed.
- SOURCES : This directory contains all the source files needed to compile the code. These sources files are compiled by means of the makefile file.

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Compilation procedure

In order to compile the code on your computer, please, follow these steps :

- Go to the directory “~/SUNFLUIDH/TRUNK/DATA/MAKEFILES_DIR” and copy the file “makefile” in

the directory “~/SUNFLUIDH/TRUNK/SOURCES”

- Open the file “makefile”, choose the compiler (pgi, ifort or gfortran) in regard to your system environment and define the relevant options of compilation (see “[How to configure the makefile](#)”)
- Run the command “make” :The source files are compiled and an executable file is created. Its name is defined in the makefile (“sunfluidh.x by default).

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How do start to work

Before starting to work with the code, find here some advices :

We suppose here your operating system is UNIX, LINUX or BSD and your shell is the BASH.

- Create a local working directory in your home directory (for instance “WORK”).
- Create your own data file for sunfluidh in your working directory. This data file must be named “input3d.dat” in order to be recognized by sunfluidh. You can be guided by the various examples of data files provided in the directory “~/SUNFLUIDH/TRUNK/DATA”.
- Place the executable file (sunfluidh.x) in your working directory and run it : ./sunfluidh.x
The command to run sunfluidh must be executed in the working directory. All the result files created by the code will also be stored in the working directory.

It is often better to create a specific local directory in order to store your executable files rather than moving them from the compilation directory to the working directory. This prevents against the harmful overgrowth of executable files while more and more working directories are created over the time. For that :

- Create a specific directory in your home directory in order to store your own executable files (for instance “~/BIN”)
- Move your executable files (here just sunfluidh.x) from the compilation directory to “BIN”.
- In order to executable files can be ran anywhere in your working space, you must inform your computer system where they are stored. In your local root directory (your home), open the system file named .profile (or .bashrc, or .bashrc_profile this depends on your operating system) and write the command line : export PATH=“your_home_directory_path”/BIN:\$PATH
“your_home_directory_path” is just a generic name to define the access to your home from the root directory of the sytem (use the UNIX/LINUX command “pwd” in your home directory to know it).

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