

CFD-DEM Installation- Tutorial

Installation Tutorial

The usage of CFDEM Coupling requires the following software. On the right side all commands and steps are listed in detail. The basic steps are:

1. UBUNTU 20.04
2. FFMEPG
3. LIGGGHTS® 3.8.0
4. OpenFoam 5.x

On <https://engineerdo.com> you can find a video tutorial for the installation.

If you have problems during the installation or you wish to get an online-training, please get in touch with us:

info@engineerdo.com

Hint:

It can be useful to install VLC additionally to be able to play nearly every codec of videos.

```
sudo snap install vlc
```

UBUNTU

Download Ubuntu 20.04 and install on USB Stick
Go to Bios → boot from usb
Install Ubuntu from stick

FFMEPG

```
sudo apt-get install ffmpeg
```

CFD-DEM

For the installation openFoam® needs to be downloaded, Liggghts® and the file of the coupling. After this the coupling needs to be compiled.

Coupling CFDEM®

```
sudo apt-get install git-core
cd $HOME
mkdir CFDEM
cd CFDEM
git clone git://github.com/CFDEMproject/CFDEMcoupling-PUBLIC.git
cd $HOME
mkdir LIGGGHTS
cd LIGGGHTS
git clone git://github.com/CFDEMproject/LIGGGHTS-PUBLIC.git
git clone git://github.com/CFDEMproject/LPP.git lpp
```

OpenFoam 5.x

```
cd $HOME
mkdir OpenFOAM
cd OpenFOAM
git clone git://github.com/OpenFOAM/OpenFOAM-5.x.git
git clone git://github.com/OpenFOAM/ThirdParty-5.x.git
cd OpenFOAM-5.x
```

Installation of essential programmes

```
sudo apt-get install build-essential flex bison cmake zlibg-dev libboost-system-dev
libboost-thread-dev libopenmpi-dev openmpi-bin gnuplot libreadline-dev libncurses-dev
libxt-dev libscotch-dev libptscotch-dev libvtk6-dev python-numpy paraview
```

Modification of the bashrc

Paste the blue code into the text-file

```
gedit ~/.bashrc
export WM_NCOMPPROCS=12
source $HOME/OpenFOAM/OpenFOAM-5.x/etc/bashrc
source ~/.bashrc
```

Compiling OpenFoam®

```
cd $WM_PROJECT_DIR
./Allwmake
```

Modification of the bashrc

Paste the blue code into the text-file

```
cd $HOME/CFDEM
mv CFDEMcoupling-PUBLIC CFDEMcoupling-PUBLIC-$WM_PROJECT_VERSION
gedit ~/.bashrc $HOME/CFDEM/CFDEMcoupling-PUBLIC-$WM_PROJECT_VERSION/src/lagrangian/cfdemParticle/etc/bashrc
#=====#
#- source cfdem env vars
export CFDEM_VERSION=PUBLIC
export CFDEM_PROJECT_DIR=$HOME/CFDEM/CFDEMcoupling-$CFDEM_VERSION-$WM_PROJECT_VERSION
export CFDEM_PROJECT_USER_DIR=$HOME/CFDEM/$LOGNAME-$CFDEM_VERSION-$WM_PROJECT_VERSION
export CFDEM_bashrc=$CFDEM_PROJECT_DIR/src/lagrangian/cfdemParticle/etc/bashrc
export CFDEM_LIGGGHTS_SRC_DIR=$HOME/LIGGGHTS/LIGGGHTS-PUBLIC/src
export CFDEM_LIGGGHTS_MAKEFILE_NAME=auto
export CFDEM_LPP_DIR=$HOME/LIGGGHTS/lpp/src
. $CFDEM_bashrc
#=====#
```

Compile CFDEM®

```
source ~/.bashrc
cfdemCompCFDEMall
```

Load example from engineerdo.com

```
https://www.engineerdo.com/2020/06/24/cfd-dem-tutorial-vacuum-excavator/
# in the new folder:
./runMe.sh
```

Source and additional information for the installation can be found in the official documentation:

https://www.cfdem.com/media/CFDEM/docu/CFDEMcoupling_Manual.html#installation