

# **“vtu2FEHM v.1.0”: documentation file**

## **1. Warranties and responsibilities**

“vtu2FEHM v.1.0” (RSE SpA) is a minor tool, which is released “as is” with no warranty. NEITHER RSE SPA, NOR ANY OF ITS REPRESENTATIVES (OR ANY AUTHOR) MAKE ANY WARRANTY, EXPRESS OR IMPLIED, OR ASSUMES ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, EFFECTIVENESS, INTEGRITY, AVAILABILITY, OR USEFULNESS OF THE SOFTWARE, ANY INFORMATION PERTAINING TO THE SOFTWARE, OR REPRESENTS THAT ITS USE WOULD NOT INFRINGE PRIVATELY OWNED RIGHTS. No support service (for the software installation, use, ...) is implied by or included in the software license. ”

## **2. Citation of “vtu2FEHM v.1.0”**

All the published and unpublished items/products/documents of every kind, somehow related to “vtu2FEHM v.1.0”, need the following citation: “vtu2FEHM v.1.0 (RSE SpA)”.

It is also mandatory to cite the use of “vtu2FEHM v.1.0 (RSE SpA)” in all the related publications, reports and dissemination tools and media, by means of the following citation:

“The minor tool “vtu2FEHM v.1.0” is realised by RSE SpA thanks to the funding “Fondo di Ricerca per il Sistema Elettrico” within the frame of a Program Agreement between RSE SpA and the Italian Ministry of Economic Development (Ministero dello Sviluppo Economico).”

## **3. Acknowledgments**

The minor tool “vtu2FEHM v.1.0” has been financed by the Research Fund for the Italian Electrical System (for “Ricerca di Sistema -RdS-”) under the Contract Agreement between ERSE and the Ministry of Economic Development-General Directorate for Energy and Mining Resources (for the of RdS period 2009-2011) stipulated on 29 July 2009 in compliance with the Decree of 19 March 2009.

## **4. Description and references**

“vtu2FEHM v.1.0” (RSE SpA) is a minor tool which reads an unstructured grid (“.vtu” file format) of a finite element mesh, converts it into a grid file (“.grid” file format) and produces an associated list of geological zones (portion of the “.dat” file), which represent input data for FEHM (freeware for underground flows).

One may notice that the mesh elements should be all of the same type (“element%kind”).

The tool carries out the following tasks:

- 1) decoding of the unstructured grid (“.vtu” file);
- 2) writing of the grid input file for FEHM (“.grid” file);
- 3) writing of the geological zone list (portion of the “.dat” file);
- 4) writing of the unstructured “.vtu” file as a final check.

With Copyright 2016 (RSE SpA), “vtu2FEHM v.1.0” was written by Andrea Amicarelli in 2011.

“vtu2FEHM v.1.0” is free software released under the GNU General Public License (Free Software Foundation).

## **5. Notes**

The “.vtu” input file is located in the same folder of the executable file of “vtu2FEHM v.1.0”.

The tool “vtu2FEHM v.1.0” was applied as a pre-processing tool in the activity described in Section 3.3 of the following document:

Guandalini R., G. Agate, S. Beretta, F. Cappelletti, A. Amicarelli, F. Colucci, M. Valagussa; 2012; “Modellazioni Numeriche di Serbatoi di Stoccaggio della CO2 sotto l’aspetto fluidodinamico e geochimico”; Project deliverable; Project “Studi sull’utilizzo pulito dei combustibili fossili e cattura e sequestro della CO2”, Prandoni V. (Principal Investigator); RSE record 12001257.