

# Tochnog Professional - GMSH users manual

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# Contents

# 1 Conditions

All conditions from <http://www.tochnogprofessional.nl/disclaimer/conditions.pdf> apply.

## 2 Introduction

This manual discusses how to use the gmsh pre-post processor in combination with Tochnog. See <http://www.geuz.org/gmsh> for gmsh. The gmsh program is free to use. Tochnog maintains an interface with gmsh. The interface with the GID pre-post processor is better maintained however.

## 3 Generate mesh with the gmsh preprocessor

Save the gmsh mesh with **File - Save Mesh**. You can save the mesh in either gmsh format or as abaqus input file. The abaqus input file format allows for usage of gmsh physical entities, see below. The gmsh mesh file format does not allow you to use physical entities.

If you define in gmsh physical points, lines, surfaces and volumes they will be used as follows:

- they will be used to generate ranges **-ra ... -ra** which contain element or node numbers.
- they will be used to generate geometry lists **geometry\_list ...** which contain element or node numbers.
- they will be used to generate **element\_group** records.

## 4 Run calculation

Use **input\_gmsh** to read the elements and nodes generated by gmsh.

Use **control\_print\_gmsh** to generate plot files. By example, if the input file is named *problemname.dat* then the plot file is *problemname.msh*.

Also see **input\_gmsh** and **control\_print\_gmsh** in the users manual.

## 5 Plot results with gmsh postprocessor

In gmsh use **File - Open** to open the *problemname.msh* file. Here we list convenient options in gmsh to view tochnog plots:

- **alt-h** hide all data (afterwards choose yourself the specific data that you want to view)
- **alt-z** view model from positive z-direction
- **mouse button right** drag model

- **mouse button left** rotate model
- **mouse button wheel** zoom model
- **Tools - Options - Mesh - Visibility - label type - number** use numbers for node and element numbering
- **Tools - Options - Mesh - Visibility - node labels - off** switch node numbering off
- **Tools - Options - Mesh - Visibility - Surface labels - off** switch element numbering off
- **Tools - Options - Mesh - Visibility - Surface faces - off** switch element face coloring off
- **Tools - Options - Mesh - Surface edges - off** switch element edges off
- **Tools - Options - Mesh - Color - By Element Entity** set color of element groups
- **Tools - Options - Aspect - Arrow size** set length of vectors, eg of node `_materi_` velocity vectors
- **Tools - Visibility - Numeric - Elementary entities - Surface - 1 - Hide** don't show element group 1
- **Tools - Visibility - Numeric - Elementary entities - Surface - 7 - Show** show element group 7
- **File - Save Options as Default** save the options that you set before as default
- **node materi velocity - Options - Aspect - Glyph location - Vertex** do vector plots in nodes i.s.o. Barycenter
- **node materi velocity - Options - Aspect - Glyph location - Left-aligned** start vectors from node
- **node materi velocity - Plugins - MathEval - Run** contour plot velocity size