

# CALCULATION TOOL FOR THE DESIGN OF POSITIVE DISPLACEMENT PUMP ROTORS

## Foreword

Gear positive displacement pumps are the most widely used in the fluid power field as constant flow rate power units. At the Politecnico di Torino, the first models in the Amesim environment were developed (1997) for the lumped parameter simulation of internal (gerotor) and external gear pumps. These models are based on custom libraries written in the C language. However, maintaining and updating the custom libraries to keep up with the evolution of the software environment is becoming unsustainable.

In this context, the thesis project involves transferring some modules from the original model running in Simcenter Amesim to the Matlab environment, also addressing the user interface aspect.

## Thesis description

Aim of the thesis is to create Matlab scripts with user friendly interfaces in substitution of the modules for drawing profiles of external gear pumps and the modules for the design of gerotor pumps and external gears. All mathematical formulation has been already developed and it is available in C language. In a previous activity, the script for the drawing of the gerotor gears has been already developed and can be used as reference.

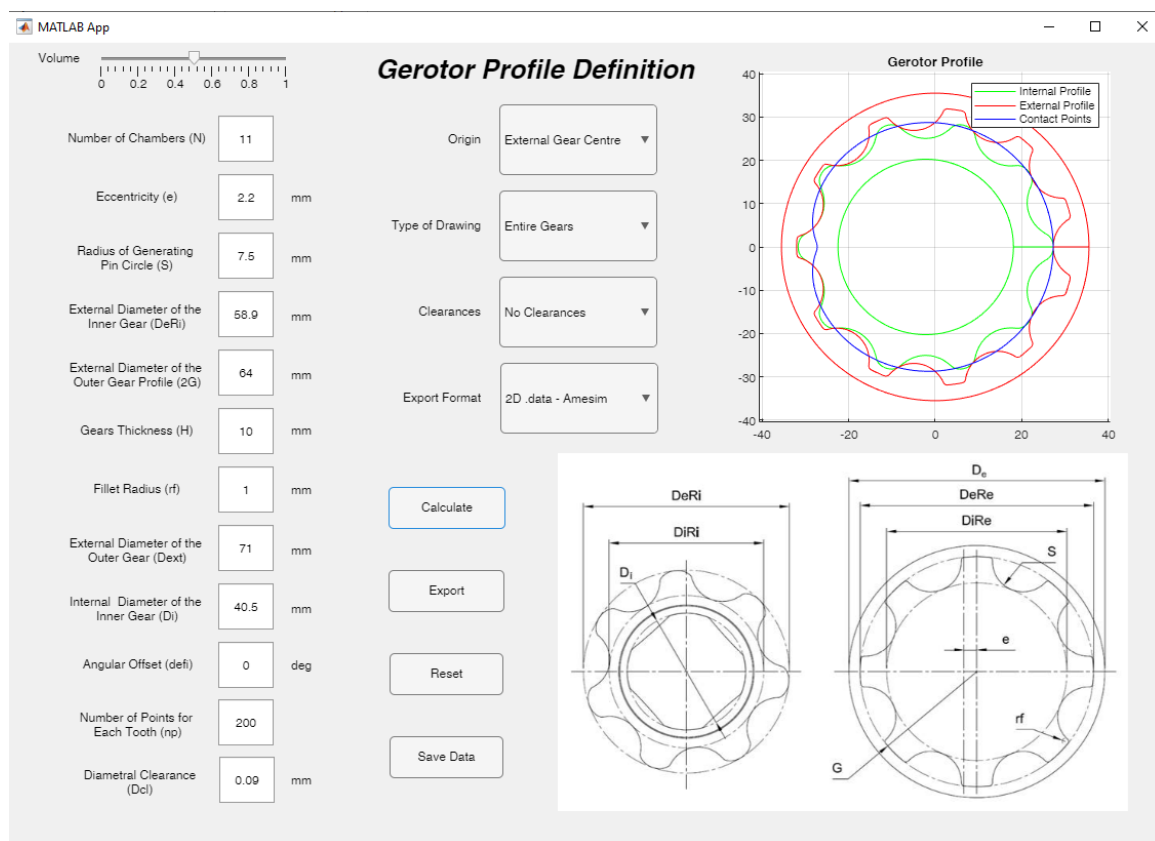


Fig. 1: available Matlab App for drawing the profiles of the gerotor gears

## Required skills:

- good knowledge of Matlab,
- basic knowledge of the working principle of positive displacement pumps,
- to be passionate about gears!

## Notes:

- the development of the App in Matlab can be done on your home computer,
- for running the original software in Amesim, a PC in the Fluid Power laboratory must be used (access granted).

## Language:

- Italian or English (however consider that some reference material is written in Italian)