On Software Development for Generating the Profile of the Cut for Tube Notching

Austin Marak, Kurt Jacobson, Eric Nzuki and Simin Nasseri

The intent of this project is to design a novel Tube Notch software to produce the trajectory of the cut for notching two tubes at a specific angle. A fool-proof MATLAB Graphical User Interface (GUI) was designed to read the critical input values for tube notching and generate the G-code and accurately scaled PDF templates. The tube notch software allows the user to enter the joint and torch parameters such as angle of fit, the outer diameters of the uncut and cut tubes, the wall thickness of the cut tube, surface speed, and pierce dwell for the plasma torch in either US or SI units. The available mathematical equations for tube notching are used in the software to calculate the notch profile and are modified to make accurate cuts. The software then previews and saves the G-code and the template.

The G-code that the Tube Notch software produces can be used by a Tracing Plasma Tubing Notcher (TPTN) or similar CNC machines.