

# Electro-Chemical Etching & Deposition of a Super Alloy Using Tertiary Current Distribution Method

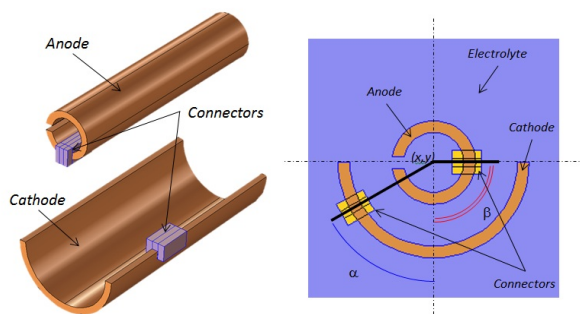
M. Yeoman<sup>1</sup>, R. Damodharan<sup>1</sup>

<sup>1</sup>Continuum Blue Ltd., Ystrad Mynach, UK

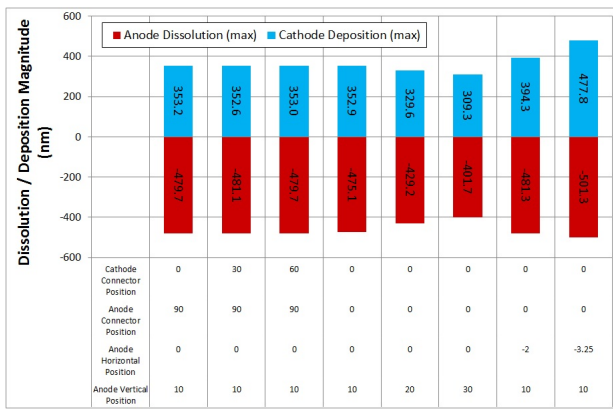
## Abstract

The application of super-alloys has grown up in numbers in the industries like aerospace, automotive, nuclear, thermal power plant & medical implants. The initial cost of prototyping and the selection of suitable manufacturing methods & test fixtures made by electrochemical machining (ECM) has proven to be expensive process especially where tolerances are extremely tight on the nanometer scale. In this study, we look at the development of a mathematical model to simulate Electrochemical Machining of a super-alloy by considering its major material constituents, using the tertiary current distribution. In addition to this, we look at a number of geometric & electrochemical parameters which help to optimized the electrochemical etching & deposition of material at the anode & cathode respectively.

## Figures used in the abstract



**Figure 1:** Model of Components & Variables Implemented in Study



**Figure 2:** Maximum Etching & Deposition of Material Thickness at the Anode & Cathode Based on variations in Electrochemical & Geometric Parameters