# 3D numerical study of different magnet systems to reduce cross corner effect in rectangular magnetron sputtering

K. Lacis1, M. Sarma2, M. Mishels-Piesins1, V. Kozlovs1
1Sidrabe Inc., Riga, Latvia; 2University of Latvia, Riga, Latvia

## Abstract

The uneven erosion of sputtering target near the end section of rectangular magnetron, so called cross corner effect, is common problem in large area coating processes. The problem is mainly caused by weaker magnetic field near the end section of permanent magnet. This paper analyzes various modifications of magnets using numerical simulation. The comparisons are carried out for diamagnetic and ferromagnetic sputtering targets. For the study a specialized solver based on finite volume method is developed. The adding of a module for the Monte Carlo simulation of electron behavior in magnetic field is considered. The calculation results are compared with experimentally observed distribution of magnetic field.