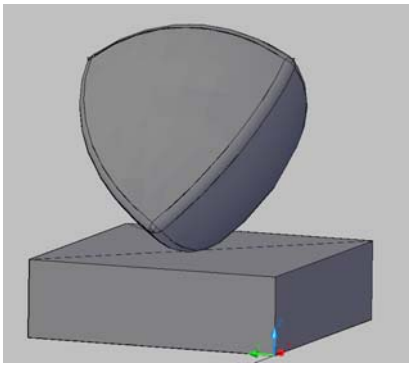
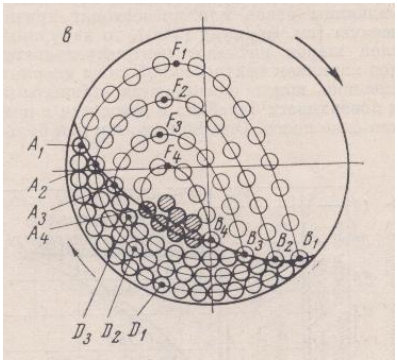
6-9 April EC Innovation - Geneva 2011.

Innovative developments, ideas, products and patents from many countries from all continents were presented. Two Bulgarian developments were presented by Prof. Dr. Dimitar Karastoyanov - head of department "Integrated Intelligent Technologies".

1. **Theoretical and experimental study of grinding bodies with a new form of ball mills**. In ball mills for grinding aggregates and ore the annual production volumes are millions of tons, and efficiency productivity improvement by 1-2% provides great savings and profits. The grinding bodies have spherical shape and the shape of spheroidal tetrahedron (a tetrahedron Röhrl) where the equilateral triangles of a tetrahedron protruding parts of the spheres and the edges are rounded. The size, shape and radius of the sphere and roundness prove that there is higher productivity and lower energy consumption to grinding bodies with a spherical shape. The team consists of scientists from IICT (department Integrated Intelligent Technologies) and scientists from the TU-Sofia and UMG-Sofia. **The investigation was awarded with gold medal.**





2. **Theoretical and experimental study of the effect of "combined impact"**. These are high-speed stamping press with a rocket engine. For this new type of industrial drive a management thrust of the moment to start and stop time of the rocket engine (possibly after the impact) is offered. Along with gravity combination and additional force (rocket motor) the better time, energy and economic parameters of the process and greater density of finished parts is proved. This makes them suitable for applications with high load (gearboxes for sports cars). The idea is applicable for stapling pilots (for bridges in non vertical cases) and packing of waste (high-density metal). The team consists of scientists from IICT (department of Integrated Intelligent Technologies) and scientists from the TU-Sofia and IMech-BAS. **The investigation was awarded with silver medal.**