Óbuda University

Bánki Donát Faculty of Mechanical and Safety Engineering

Institute of Material Science and Manufacturing Engineering

Explosive metalworking technologies

http://www.bgk.uni-obuda.hu/~aat/

The explosive metalworking technologies represent a new paradigm in the field of production of knowledge-based more components materials: Joining, furthermore plastic deformation of the materials can be carried out directly, by high speed, high energy shock waves. The explosive metalworking technologies are metal forming techniques that use the energy generated by an explosive detonation to form the workpiece.
Explosive cladding is the name of the technology serving for manufacturing two- or more layers plates and sheets by controlled explosive detonations. This technology is a solid state process in which controlled explosive detonations force two or more metals together at high pressures, resulting in high quality metallurgical bond between the colliding surfaces.
Explosive tube forming shaped parts can be manufactured of metallic tubes using the shock waves as tools.
Explosive compactions are techniques, where the compaction of the powders or granulates closed into a metal tube are carried out at a velocity higher than 10^2 m/s. The high compaction pressures and velocities offer the possibility of preparation of bulk metal, ceramic and composite parts with high density.

Infrastructure

- CSM Micro-Hardness tester
- Scanning Electron Microscope
- LD-DYNA software
- Microscope
- Explosive chamber

Related projects

- Project works
  - ***Cladding technology***
  - ***Hardening technology***
  - ***Pipe forming***
  - ***Powder compaction***
- Diploma works for B.Sc.
  - ***Cam shaft made by explosion forming***
  - ***Explosive metalworking in practice***
  - ***Explosive tube forming***
  - ***Parameter optimization of Hadfield steel Explosive hardening***
- Student Scientific Works and task (TDK)
  - ***Explosive tube forming***

Explosive cladding technology
Explosive hardening of austenitic stainless steel

Partners

- S-Metalltech Materials Research and Development Ltd, Budapest, Hungary
- Kecskemét College, Hungary
- National Public Service University, Military Science and Army Officer Training Faculty, Budapest, Hungary

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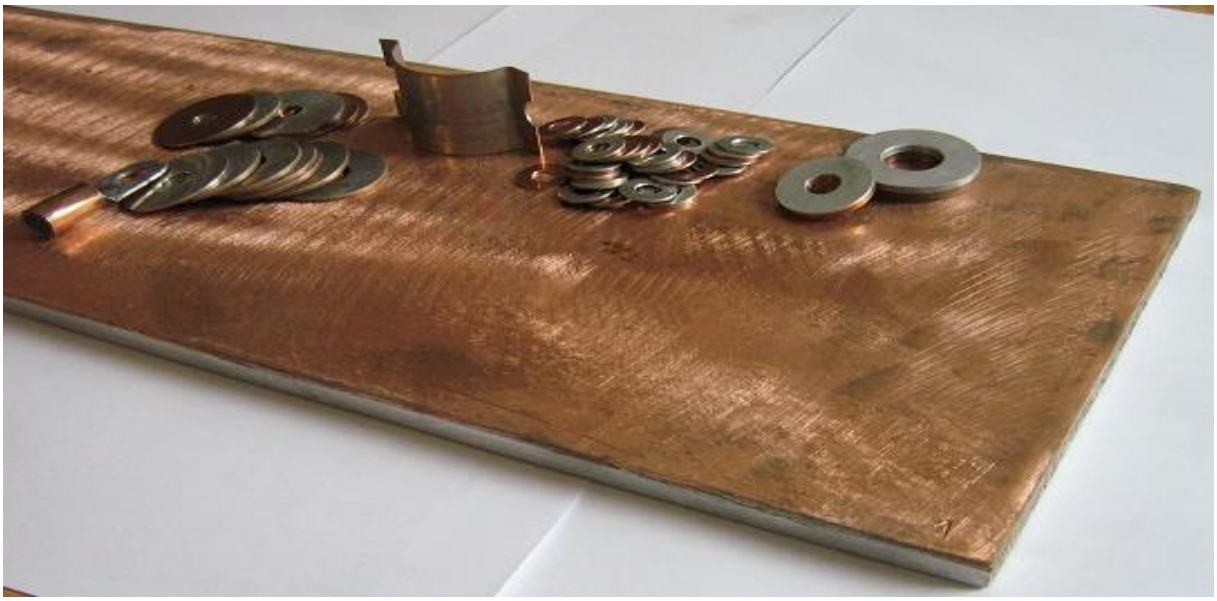

Explosive tube formings Practice

Explosive powder compactions
Practice