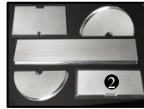
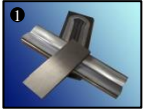
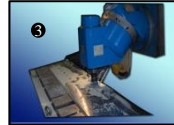


Gradel is a Luxembourgian company specialized in project development and production for the industry. It is a part of the Gradel Group, who employs 95 people with a turnover of 16 million € in 2015. The main department of Gradel are:

- Nuclear Industry with development of special machines, maintenance and services for Nuclear Power Plants
- Sheet Metal Precision with manufacturing of sipes for the Tire Mold Industry
- Sputtering Targets for the Glass Industry



- Design and manufacture of Material Ground Support for the Aerospace industry
- Development of Neutron Generators for industrial applications



Legends 1-5

- 1 Planar target tiles in various metals
- 2 NiCr(80-20) machining
- 3 Finished Rotatable Planar Targets
- 4 Continuous Casting Machine to cast Rotatable Targets up to 4 m.

Since more than 20 years, Gradel is providing sputtering targets, more particularly for the Glass industry.

With years, we have developed a specific know-how in target manufacturing, design and optimization.

Our last patented development is the continuous casting process to manufacture rotatable targets.

Together with the target manufacturing, we offer also services like magnetic field optimization and measurement, accessories manufacturing,...

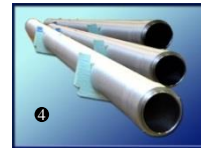
Thanks to our engineering office, we can design, manufacture and assemble specific machine dedicated to the Glass Industry.

→ Rotatable target production

- Low melting point continuous casted rotatable targets in Sn, Zn, ZnAl(2%), ZnSn alloys.

→ Planar target production

- NiCr 80-20 cronix quality and 99.8 % quality
- Ag 99,99% with special design to decrease silver weight
- Zinc, Tin, Zn-Al, Zn-Sn
- Titanium, Zirconium, specific oxides and alloys on demand



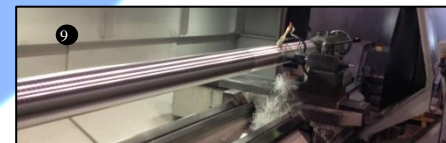
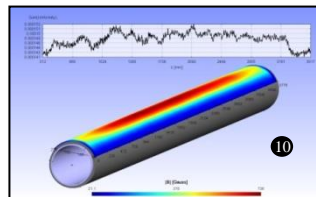
→ Engineering Services to optimize sputtering processes.

- Recharged spare parts for coaters



Legends 6-13

- 6 Sn and ZnAl(2%) metallography
- 7 Melted Sn bath
- 8 Rotatable targets machining
- 9 Magnetic map of a magnet bar and uniformity estimation
- 10 Shields for large area magnetron
- 11 End block cover
- 12 Used silver tile after Gradel optimization



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