High power Adaptable Laser beams for materials prOcessing

The next generation of materials processing lasers will have adaptable beams to optimise efficiency. HALO is a project supported by the EC through its Seventh Framework Programme (FP7) to develop such lasers for the “Factory of the Future.” HALO will improve the efficiency, adaptability and sustainability of manufacturing laser systems and develop their integration into business processes.

HALO topics include:

- Adaptable beam profiles
  - Gaussian
  - Top hat
  - Ring modes
- Modelling of laser cutting processes
  - Beam & pulse propagation
  - Absorption
  - Ablation
- Novel cutting processes
  - Brittle materials
  - Sheet metal cutting
  - Liquid jet cutting.

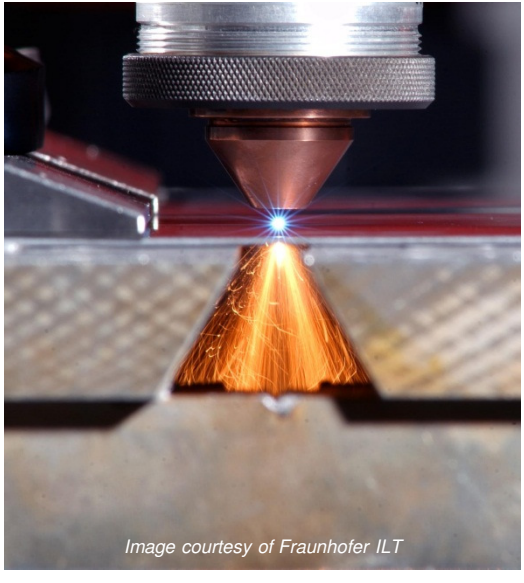

Image courtesy of Fraunhofer ILT

HALO is supported by the European Commission’s Seventh Framework Programme

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- Adaptable beam profiles
  - Beam shape has strong influence on cutting process
  - Novel laser designs with intrinsic adaptability
  - Extra-cavity beam converters
  - Acousto-optic components
  - Optical isolators
  - Fused fibre components.

- Modelling of laser cutting
  - Meta-modelling is the mathematical representation of complex multi-dimensional real-life processes
  - Links many parameters & criteria quickly and efficiently
  - Provides direct comparison with experimental data.

- Novel cutting processes
  - Brittle materials
    - Reduced roughness
    - Improved bend strength
  - Sheet metal cutting
    - Improved edge quality
    - Shorter dross length
  - Liquid jet cutting
    - Reduced heat damage
    - Less contamination.

Image courtesy of Gooch & Housego (Torquay)

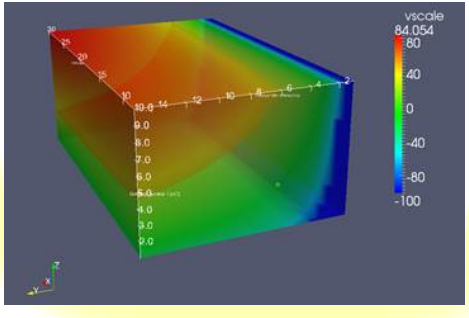

Image courtesy of Fraunhofer ILT

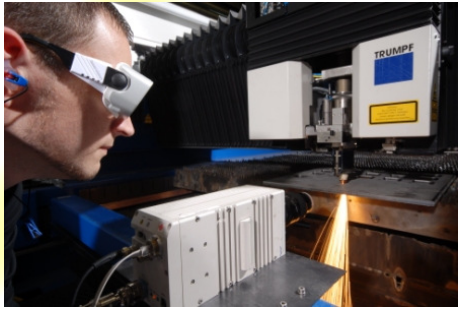

Image courtesy of Fraunhofer ILT

SYNOVA

VIVID COMPONENTS

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TRUMPF

Gooch & Housego

Laser Expertise Ltd.

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