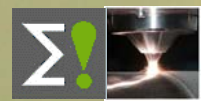




Laser Technologies Research Centre in Pilsen

-

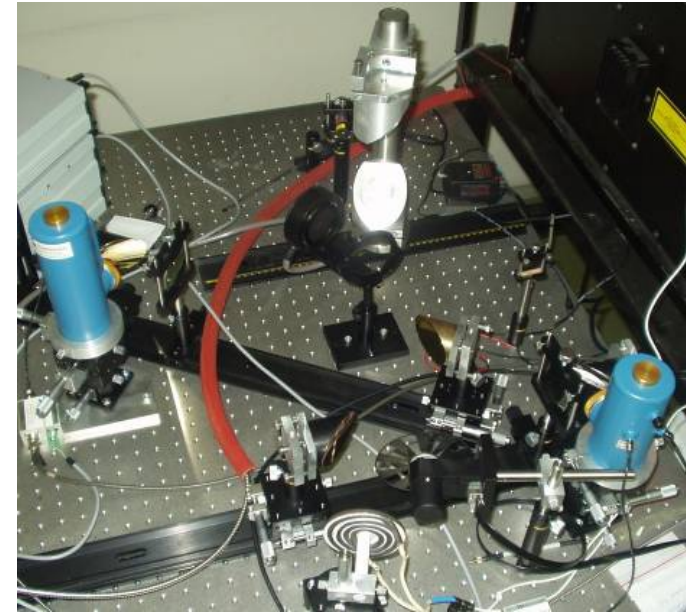
Your Czech partner in laser technologies
for material processing and analysis





Outline

- Incorporation
- Location
- Key competences
- Team
- CzeLasNet activities
- Projects being prepared
- Cooperation proposal





Incorporation

University of West Bohemia in Pilsen



ZÁPADOČESKÁ
UNIVERZITA
V PLZNI

- 7 Faculties – focus on education
- 2 Institutes
 - ➔ **New Technologies Research Center**



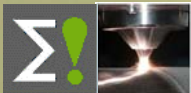
– focus on research and technology transfer

- 6 Departments – according to scientific branches
- 2 Centers – interdisciplinary, large projects
 - ➔ **Laser technologies Research Center**



LASER TECHNOLOGIES RESEARCH CENTRE
IN PILSEN

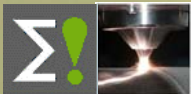
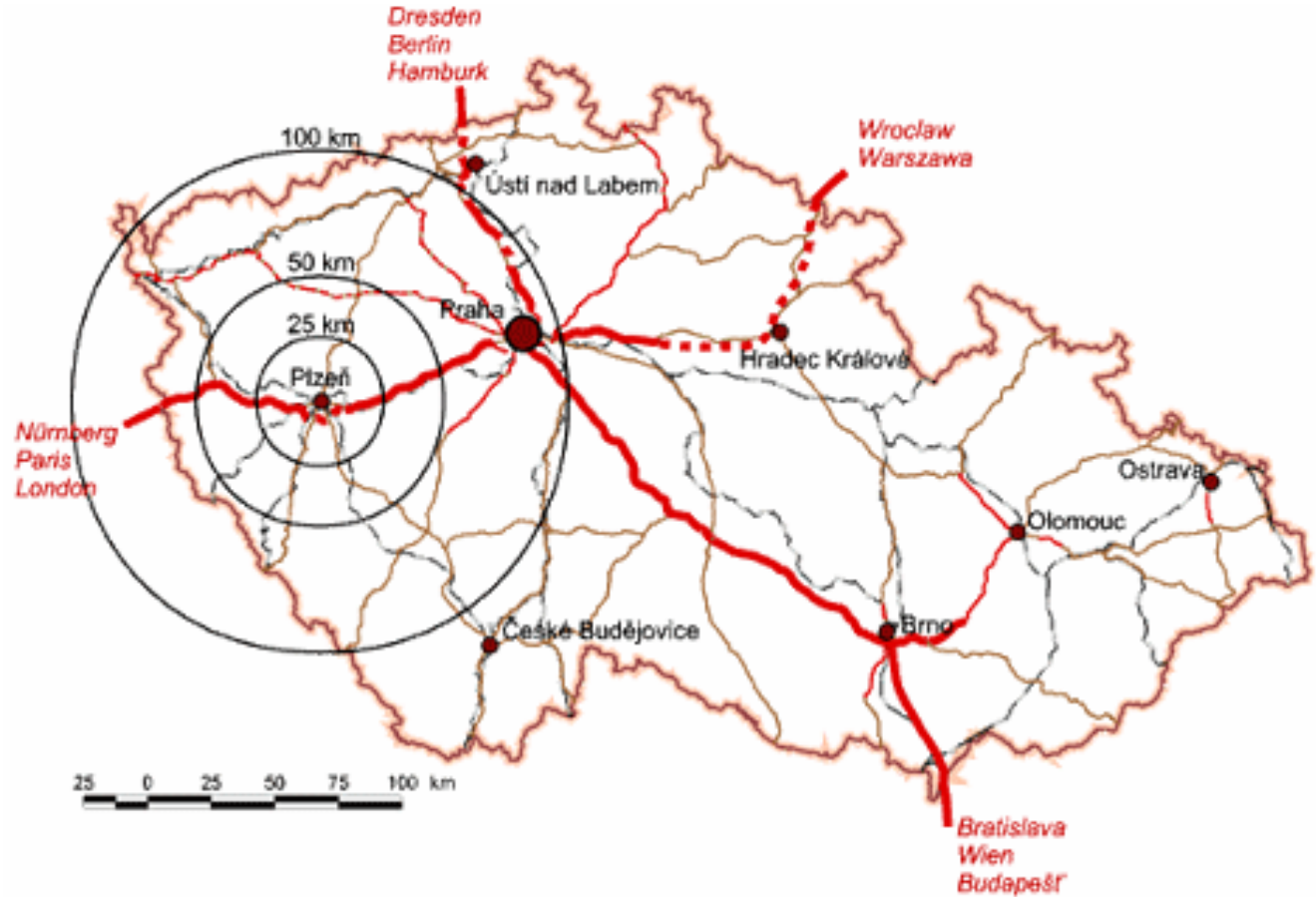
YOUR CZECH PARTNER
IN LASER TECHNOLOGIES
FOR MATERIAL PROCESSING AND ANALYSIS





Location

Pilsen
Czech Republic





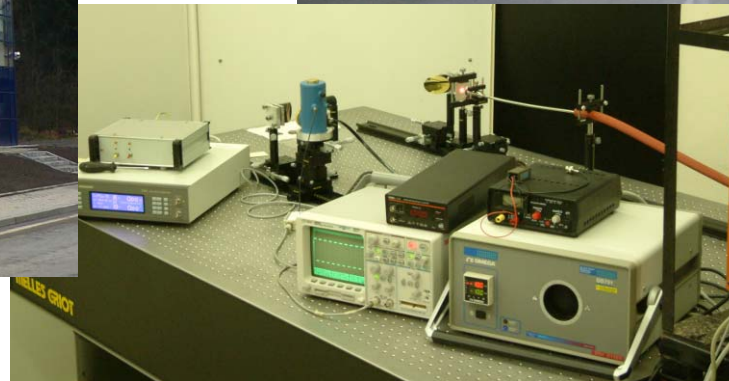
Location

in Science and Technology Park
between the university campus
and municipal industrial park complex

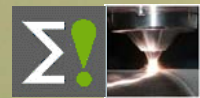


new building of laser center from 2008

laboratories for installation of
new laser systems



existing laser
laboratories of
UWB moved





Key Competences

1) industrial laser technologies for material processing

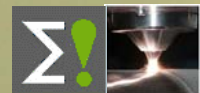
- our new branch – high power laser technologies
- research and applications according to the interest of industry and laser systems available

Currently

- development of new laser machine based on fiber laser for industrial marking
- robotized high power continuous laser (3 kW) for heat treatment, welding and coating is going to be installed in (September 2008)

main partner

LINTECH

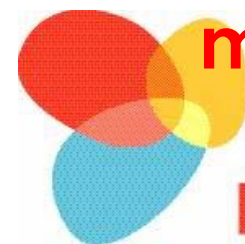




Key Competences

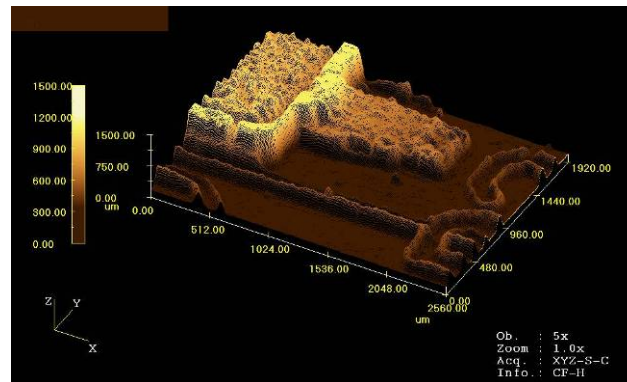
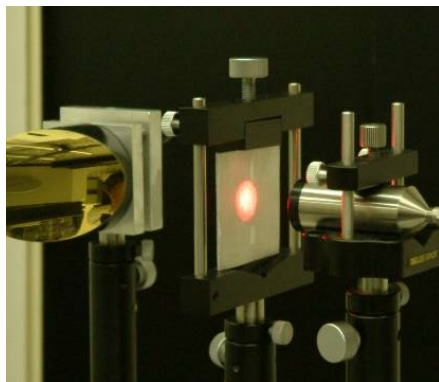
2) laser methods for material analyses

- methods utilizing low power lasers for analyses of material structure, chemical composition and measurement of thermal, optical and mechanical properties



main partner

MATEX PM

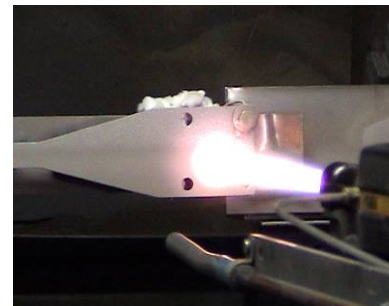
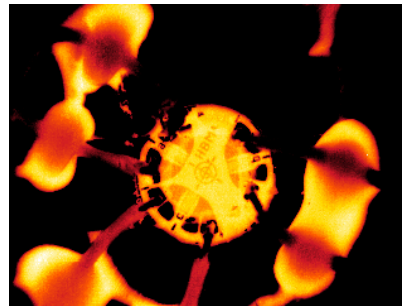
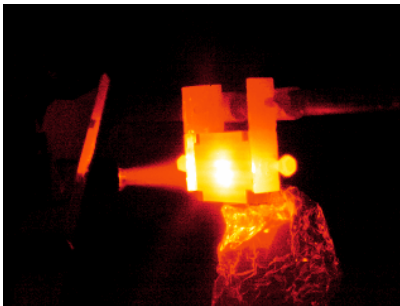




Key Competences

3) methods for measurement of thermo-mechanical processes

- developed for applications in technologies using intensive heat sources
- measurement of temperature fields, heat fluxes, heat transfer coefficients
- measurement of thermal strain and residual stresses



Team

1 professor, 1 docent, 5 PhD., 6 PhD. students





CzeLasNet activities

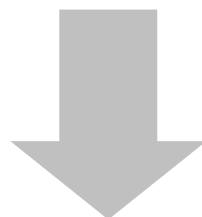
(i) transfer of Czech contact point

Laser Technologies Research Center established at the University of West Bohemia in Pilsen took over the EULASNET II activities from the MATEX PM company (former Czech participant).

Milan Honner remains the contact person.



MATEX PM



**VÝZKUMNÉ CENTRUM
LASEROVÝCH TECHNOLOGIÍ**



ZÁPADOČESKÁ
UNIVERZITA
V PLZNI





CzeLasNet activities

(ii) meeting "Industrial Utilization of Lasers" - November 14, 2007

The aim of the meeting was

- to bring together representatives of research institutes and industry
- and to introduce CZELASNET activities for industry in Czech Republic.



Partially successful, low number of participants from industry.



CzeLasNet activities

(iii) mapping of industry interests

– starts May 22, 2008

The aim of this activity is to collect information of the interest of Czech industrial companies in the branch of research and education on laser technologies.

Prepared www pages, printed information materials, presentations.

Targeted transfer to industry will follow.

LASEROVÉ TECHNOLOGIE



Laserové technologie se v posledních desetiletích ukázaly jako vysoce všestranné průmyslové nástroje pro moderní ekologické postupy výroby a jako klíčové technologie pro pokročilé zpracování materiálů.



- laserové značení, popisování, ...
- laserové obrábění, řezání, vrtání, navařování, ...
- laserové tepelné zpracování, povlakování, ...
- hybridní laserové obrábění, svařování, ...



<http://www.lintech.cz>

3/13



<http://www.nitc.zcu.cz>

Nabídka zprostředkování kontaktů



Jsme partnerem evropské sítě EULASNET.

Jejím posláním je usnadňovat interakce mezi průmyslovými a výzkumnými institucemi v EU se zaměřením na přenos výzkumných výsledků a technologií z vysokých škol do průmyslu pro jejich rychlé využití.

V návaznosti na tuto evropskou síť se tvoří národní síť CZE LASNET.

Díky těmto národním a mezinárodním vazbám můžeme nabídnout služby vyhledání partnerů pro řešení vašeho konkrétního požadavku inovace.



<http://www.lintech.cz>

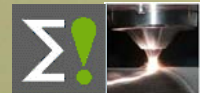
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<http://www.nitc.zcu.cz>

LASER TECHNOLOGIES RESEARCH CENTRE
IN PILSEN

YOUR CZECH PARTNER
IN LASER TECHNOLOGIES
FOR MATERIAL PROCESSING AND ANALYSIS





CzeLasNet activities

(iv) project focused on research infrastructure development

– call expected end 2008 / beginning 2009

Project in preparation phase.

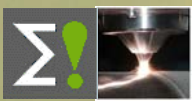
The aim of this project is to develop new laboratories for the research of laser technologies equipped with modern technological laser systems.

Financial support from the EU funds is expected.

ČESKÁ REPUBLIKA
MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY

Operační program
Výzkum a vývoj pro inovace

28. 3. 2008





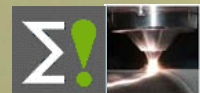
CzeLasNet activities

(v) project focused on education and transfer of knowledge to industry – call expected end 2008

Project in preparation phase.

The aim of this project is to strengthen university education on laser technologies and to create platform for transfer of knowledge into industry.

Financial support from the EU funds is expected.



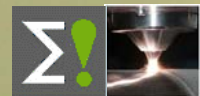
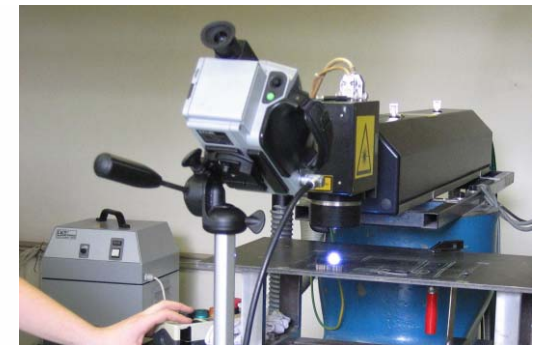
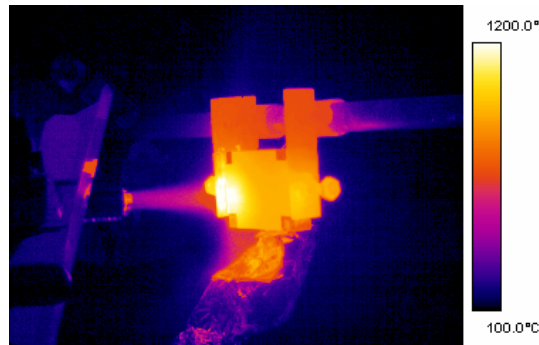
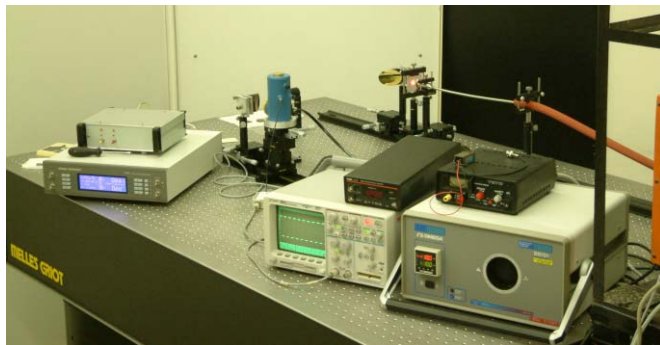


Offer for Cooperation

(i) Measurement of dynamic temperature fields

It can be used as a suitable tool to identify thermal processes in materials induced by laser heating.

We are a leading research laboratory in CR in the branch of non-contact dynamic temperature field measurement using IR camera systems and fast IR detectors. References include applications in the research of various industrial technological thermal processes and systems - SKODA Auto (CZE), AP RACING (GBR), Bombardier Transportation (FRA), Pilsen Steel (CZE) ...

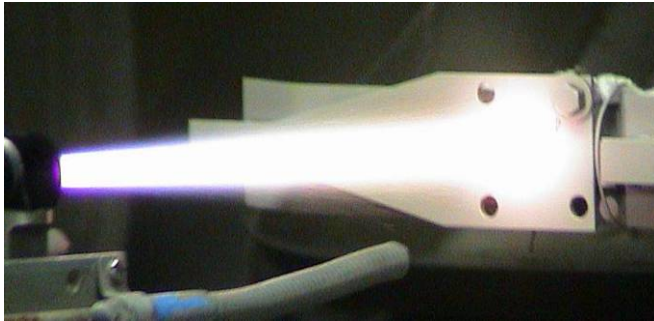


Offer for Cooperation

(ii) Experimental determination of heat fluxes

The methods can be used to identify real intensity of heat transfer from the source to the material surface.

We are dealing with development of procedures to evaluate heat fluxes and heat transfer coefficients using temperature measurement and computer modeling methods. References include various technologies as thermal spraying of coatings, heat treatment of forgings and workpieces, metal foundry, industrial furnaces, laser technologies, fire protection. References include SKODA Vyzkum (CZE), Pilsen Steel (CZE), Pilsner Urquell (CZE) ...



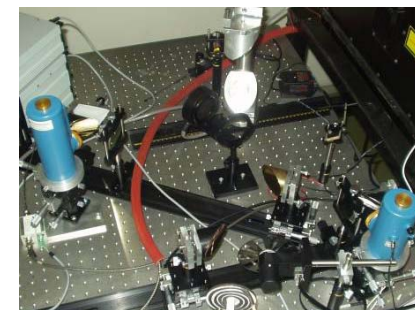
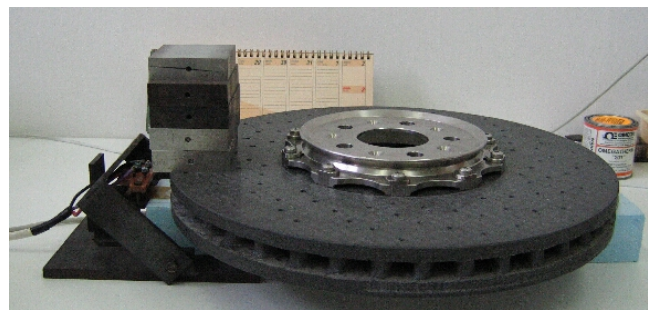


Offer for Cooperation

(iii) Measurement of thermal properties of materials

It can be used to identify thermal conductivity or diffusivity, interface thermal resistance, heat capacity.

We are a leading research laboratory in CR in the field of measurement of thermal properties of materials. Laser quasistatic thermography, pulsed photothermal radiometry and hot disc methods are ready to analyze coatings and multilayer materials even to identify interface thermal resistance. References include composite coatings produced by thermal spraying, composite materials of brake pads and discs, PVD thin films, nanomaterials - SKODA Auto (CZE), VW (GER), ELMARCO (CZE) ...



Offer for Cooperation

(iv) Measurement of optical properties of materials

The methods can be used to identify material properties to radiate heat (emissivity/absorptivity, reflectivity, transmissivity).

We are dealing with the measurement of optical properties of materials characterizing radiative heat transfer. Methods using FTIR spectrometer, IR camera, various means of sample heating, etc. are ready to measure spectral, temporal, spatial and angular dependences. References include SKODA Auto (CZE), BGSYSHT (CZE), LINTECH (CZE) ...

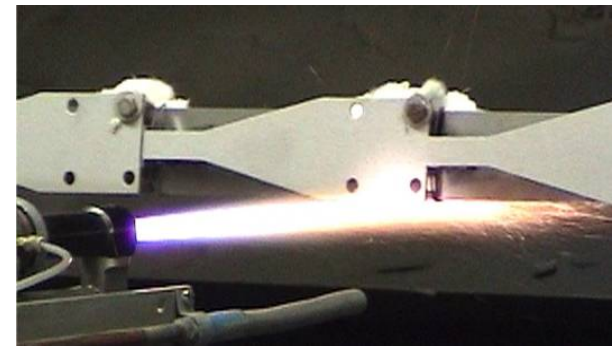
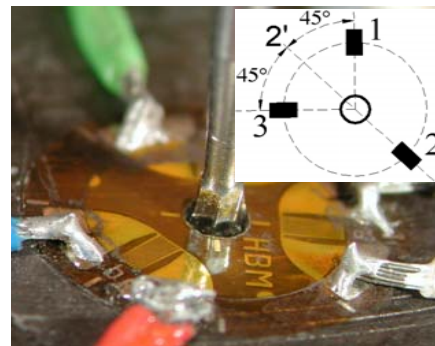


Offer for Cooperation

(v) Measurement of residual stresses

The methods can be used to identify residual stress depth profile in material surface as a result of its technological processing.

We are leading research laboratory in CR in the field of residual stress measurement. Hole-drilling strain gauge method extended by developed evaluation algorithms is ready to measure residual stress depth profile. References include coatings produced by thermal spraying, machining surfaces, castings - SKODA Auto (CZE), VW (GER), Hofmeister (CZE), ...





Contact

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Laser Technologies Research Center

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Dept. Thermomechanics of Technological processes

