



PL9901454

## LABORATORY OF HIGH TEMPERATURE PROCESSES (LHTP)

The activity of the laboratory is concentrated on the problems of modern power generation and environment protection. It is designed for research works on the technology required for an advanced coal fuelled gas turbine power system, the coal slurry combustion technology, testing and developing of slagging coal combustors, testing of pulverized coal burner with electric arc plasmatrons, elaboration of liquid wastes disposal process by burning with simultaneous removal of environmental pollutants. The main activities of laboratory are dedicated to environment friendly technologies of electricity production from coal, reduction of sulfur and nitrogen oxides in fumes and developing technologies of waste disposal.

The basic components of LHTP facility are:

- main slagging combustor 4MW(th),
- slag tank,
- vitiated air heater,
- secondary combustor,
- coal feeding system,

- coal-water slurry system,
- MHD generator,
- electromagnet, scrubber, turbo-compressor, electric arc plasmatron,
- liquid oxygen storage,
- research installation for elaboration of liquid and solid waste disposal process by burning with simultaneous removal of environmental pollutants,
- research installation for investigations of pulverized coal burner with electric arc plasmatron.

The main goal of the laboratory in 1997 was to obtain a long-term and stable operation of the installation for quick pyrolysis of coal dust suspension. Many modifications were introduced to the plasmatron construction. Finally, the three experiments have been carried out, each of four hours duration. The laboratory was closed due to financial reasons at the end of June 1997.



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## CYFRONET COMPUTING CENTRE

Convex computer system C-3220 is the basic Computer of CYFRONET.

C-3220 is a 100 Mflops computer system with:

- Two 64-bits scalar-vector processors (40  $\mu$ s cycle), 64 MB operating memory (800 MB virtual) and 64-bits data bus (200 MB/s).
- Three Sabre ST83220 disk stations, each has the 2.71 GB capacity and 4.67 MB/s transmission speed.
- Two MTD-204 magnetic tape stations with double speed (50ips/100ips), 1600 bpi and 6250 bpi density and 625 KB/s transmission speed.
- One DDS DAT tape drive specifically designed as 5.25-inch, characterized by high capacity and high performance - 1.3 GB (60 meter tape) or 2.0 GB (90 meter tape) of storage with a transfer rate of 183 kilobytes/second.
- Two high performance, VME Ethernet connections.
- One 600 lpm printer/plotter.

A list of software available at the CYFRONET Computer Centre:

1. Operational system: ConvexOS (UNIX type), an extension of 4.2 and 4.3 BSD, compatible

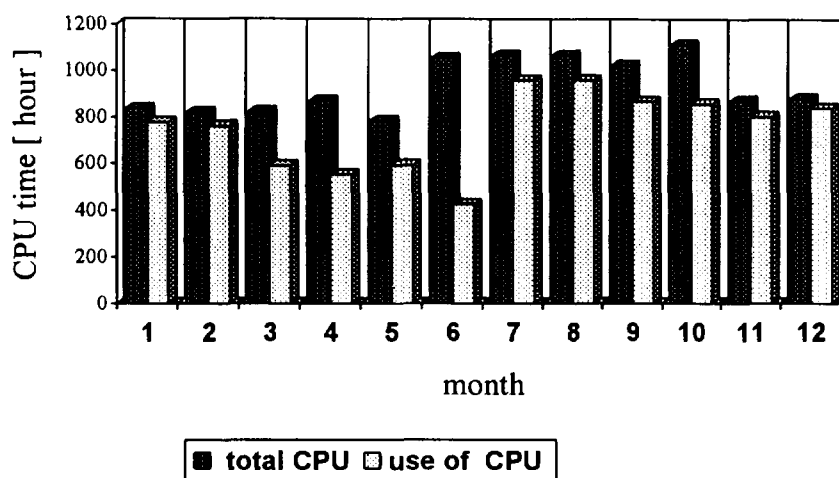
with IEEE Posix P1003.11 standard, working under the Bourne- and C-shell.

2. Compiler: Assembler, CONVEX FORTRAN 77 (ANSI X3.9-1978), CONVEX C (ANSIX3.159 1989) - both with automatic vectorization and parallelization. The extensions are compatible with VAX/VMS, CRAY and SUN products.
3. Utilities: CXdeb, Convex Consultant, CXpa and the COVUE programs package with COVUenet, COVUEbinary, COVUEshell, COVUElib, COVUEedit, COVUEbatch for VAX users.
4. Libraries: CERN-Lib, VECLIB, SCILIB, LSQPACK, MathAdvantage.
5. Communication Software: TCP/IP and with applications Telnet, FTP, NFS, CXBatch, CXwindows, EIA-RS-232.
6. Graphics: OSF Motif under X-windows.

Operation and services

C-3220 computer system is operating 5 days/week, 24-hours each day. The total production CPU time from 1997.01.01 to 1997.12.31 is 11206 hours. User CPU time is equal to 8984 hours what gives 80% of CPU

efficiency. Use of CPU time in 1997 year is shown in figure below.



Distribution of CPU time is given in the table below:

1.	Maria Curie-Skłodowska University - Lublin	36.9%
2.	Institute of Atomic Energy - Świerk	14.0%
3.	Institute of Nuclear Studies - Świerk	4.7%
4.	Research Reactor Centre	22.9%
5.	other	1.5%

## REGIONAL LABORATORY OF NEUTRONOGRAPHY (RLN)

### RESEARCH PURPOSE:

Investigation of structures and internal dynamics of materials and devices, using horizontal neutron beams of the 20 MW nuclear reactor MARIA and neutron spectrometers installed there.

### SCIENTIFIC STAFF:

Prof. **Andrzej Czachor** - head of the RLN,  
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**Konrad Blinowski**, Ph.D.,  
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Assoc. Prof. **Edward Maliszewski**,  
**Krzysztof Maletka**, M.Sc.,  
Assoc. Prof. **Kazimierz Mikke**,  
**Jacek Milczarek**, M.Sc.,  
Prof. **Andrzej Murasik**.

### TECHNICAL STAFF:

**Zdzisław Jurkowski**,  
**Jan Żołądek**.

### PROJECT SELECTION BOARD

Consists of the representatives of institutes and universities involved in doing research using neutron scattering. Chairman - Prof. Ludwik Dobrzyński from the Soltan Institute of Nuclear

Studies, Świerk. The Board selects and qualifies the research projects to be performed on the neutron spectrometers. The proposals should be sent to Prof. **Andrzej Czachor**.

### AVAILABLE INSTRUMENTS AT HORIZONTAL CHANNELS (H 3-7) AND CONTACT PERSONS

**H3** - double axis diffractometer to study crystalline or magnetic structures. It also enables one to do spectrometric measurements, i.e. the energy analysis of inelastically scattered neutrons.  
Contact:

**Krzysztof Maletka** M.Sc., tel. 48-22-779-9324

**H4** - small angle spectrometer. Monoenergetic neutron beam is obtained by the Bragg reflection from ideal Ge single crystal. The halfwidth at half maximum of the neutron beam intensity distribution is 45". The angular distribution of transmitted intensity may be measured in steps of 0.5". This instrument is suitable to determine the size of magnetic domains, atomic clusters, or other micro-objects which cause neutron scattering.  
Contact:

**Jacek J. Milczarek** M.Sc., tel. 48-22-779-8801



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