CATHARE

CATHARE 2 V2.5_3mod2.1 CODE AND GUITHARE V1.8 : INSTALLATION MANUAL

CSSI

DIRECTION DE L'ÉNERGIE NUCLÉAIRE
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DÉPARTEMENT DE MODÉLISATION DES SYSTÈMES ET STRUCTURES
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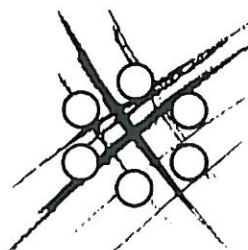
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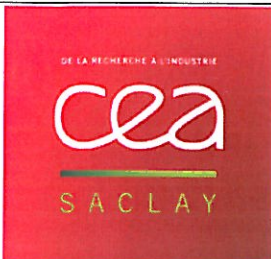
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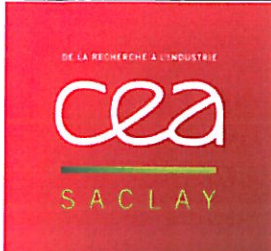
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REFERENCES INTERNES CEA			
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DISN	**Programme simulation**	**SITHY**	**A-SITHY-06-01-02-**
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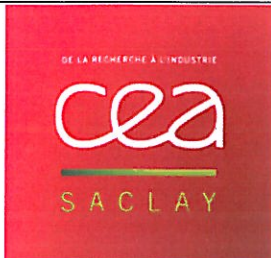
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CATHARE V2.5_3, GUITHARE, INSTALLATION

RESUME / CONCLUSIONS

Ce document décrit la procédure d'installation de CATHARE 2 V2.5_3 sur stations de travail et sur ordinateurs personnels sous LINUX ou Windows. Une liste décrit le contenu du colis de livraison, puis une méthode standard est proposée pour préparer les librairies ; quelques tests simples sont fournis pour vérifier que l'installation réalisée est correcte. Le document décrit aussi la procédure d'installation de GUITHARE V1.8 sur stations de travail LINUX et Windows 2000-XP.

ABSTRACT :
This document describes the installation procedure of CATHARE 2 V2.5_3 on workstations and on personal computers under LINUX or Windows operating systems. It lists the content of the delivery package, it proposes a standard way to prepare code libraries; several simple tests are provided in order to check that the resulting installation is correct. This document describes the installation procedure of GUITHARE V1.8 on LINUX workstations and on personal computers under Windows XP and 2000 operating systems.

DIFFUSION

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CATHARE VERSIONS

In the CATHARE development methodology, the term "**modn.1**" (with $n > 1$) corresponds to the release level of the **CATHARE** V2.5_3 delivery.

- **mod2.1** is the first delivery of the **CATHARE** V2.5_3 version,

- the release level **modn.1** such as $n > 2$ are the followings (updated) versions.

The modification identifier $n > 2$ is important for tracing precisely the level of updates present in the V2.5_3 version. The **CATHARE** maintenance team will deliver "updated" versions of **CATHARE** 2. The updates package ($n > 2$) is a complete version with fixed-up subroutines. So the organization of the CD-ROM and the installation process are the same as the first official release mod2.1.

The naming of the versions is :

- **CATHARE** 2 V2.5_3mod2.1 for the first release,

- **CATHARE** 2 V2.5_3mod3.1 for the updated version with updates from 1 to n_1,

- **CATHARE** 2 V2.5_3mod4.1 for the updated version with updates from 1 to n_2 (with $n_2 > n_1$);

- ... and so on.

The **modn.1** labelling is managed by the **CATHARE** maintenance team. It completely identifies the installed updated version and the level of updates. Hence, the update level is determined and dated in the **QLABEL.f** file by the FORMAT statement (QLABEL). QLABEL is initially set at 2.1 for first delivery.

Each time an updated package is supplied, the new update level is noticed in the **updates.log** file which replaces the previous one. The structure of an updated version has the same organization than the first official release. In the directory "readme", you will find the updated documentation.

The intallation of an updated version is identical to the first release version. An updated version requires the same disk space and capacities as the first release. For a new updated version, it is mandatory to build new executables for pre-processing, post-processing as well as new libraries for thermal-hydraulic runs.

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CATHARE AND GUITHARE PACKAGE

2.1   Package content

1. This installation manual.

2. The CD-ROM including a full set of programs :

    (a) the **CATHARE** pre-processing and thermal-hydraulic kernel,

    (b) the source,

    (c) examples of input data decks,

    (d) examples of listing files resulting from computation of the input data decks,

    (e) examples of procedures,

3. the **CATHARE** post-processing :

    (a) the source,

    (b) examples of input data decks,

    (c) examples of files resulting from post-processing: the 'evolutions' files,

    (d) examples of procedures,

4. the user documents : [1, 2, 3, 4] and this document.

2.2   List of files in the CATHARE package

V2.5_3	
modn.1	: Stands for the nth delivery with $n = 2$ for the first version and $n > 2$ for the followings (updated) versions
V2.5_3	
modn.1 readme	: Directory containing user documents, the list of the updates included in the current release of **CATHARE**, an installation receipt form and a maintenance request form
	continued on next page

V2.5_3				
	modn.1	sources		: root directory for the FORTRAN sources of **CATHARE** 2
V2.5_3				
	modn.1	sources	reader or _reader_main	: directory containing the sources of the pre-processing part
V2.5_3				
	modn.1	sources	postpro or _postpro_main	: directory containing the sources of the post-processing part
V2.5_3				
	modn.1	sources	cathar or _cathar_main	: Thermal-hydraulic kernel main program DICO File containing the dictionary of keywords
V2.5_3				
	modn.1	sources	cm_*	: Directory containing the dependant machine files
V2.5_3				
	modn.1	sources	......	: all other underlying directories containing the FORTRAN sources for **CATHARE** 2 V2.5_3 thermal-hydraulic kernel
V2.5_3				
	modn.1	testcases		Directories containing examples of : 1. input data decks for computation, 2. input data decks for graphic uses, 3. listings of calculation, 4. evolutions generated by the corresponding runs, 5. FORTRAN masks if needed.
V2.5_3				
	modn.1	lib		: Empty directory for the future **CATHARE** archive library, gathering of all includes, reader and postprocessor executables (generated by the installation procedure), for LINUX computer
V2.5_3				
	modn.1	visual_cathare		: Directory containing Makefiles files and environment files, objects, libraries and executables files (generated by the installation procedure) for COMPAQ or INTEL VISUAL Fortran compiler on PC-WINDOWS computer
				continued on next page

V2.5_3			
	modn.1	unix- procedur	: Directory containing installation, compilation, link and computation procedures on LINUX operating system
V2.5_3			
	modn.1	PC- procedurw	: Directory containing installation, compilation with VISUAL INTEL FORTRAN and WATCOM compilers, link and computation procedures on WINDOWS computers. Procedures for MS-DOS WINDOWS (use of CATHARE) and for CATHARE (run solver command) for interfacing with GUITHARE

Table 2.2.1: CD-ROM contents and list of files

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CATHARE INSTALLATION ON LINUX AND WINDOWS PLATFORMS

3.1 Before you proceed

3.1.1 What media is needed?

1. The **CATHARE** 2 code source is stored through a large subdirectory tree in which more than 7000 files are hierarchically organized representing system objects, data structures and functional algorithms.

2. This manual describes the installation of **CATHARE** 2 from a CD-ROM. In the delivered CD-ROM, the **CATHARE** 2 version is organized through the same hierarchy of subdirectories as for LINUX systems.

3. If your PC-WINDOWS is connected to your mainframe or LINUX workstation through a network, you may download the whole **CATHARE** source from your mainframe then follow PC installation procedure below.

3.1.2 System requirements

- 2 Gigabytes of memory are required at least (Default size of reader allocated memory),

- 1 Gigabytes of free space on a hard disk is needed for source, binary and executables files,

- 150 Mb are required for copying entire package content on disk space.

3.1.3 Language requirements

- For LINUX, a compiler supporting FORTRAN ANSI-77 language and basic functions of the FORTRAN ANSI-90 language.

- for PC-WINDOWS : During the preparation of release, a large set of delivery tests has been run on PC computers with COMPAQ VISUAL Fortran 6.6 compiler under WINDOWS. Therefore, the **CATHARE** team can guarantee a high level of confidence in the code calculations performed in this environment. However, **CATHARE** programming relies mainly on FORTRAN-ANSI 77 norm (with limited extensions) and it should run correctly with any compiler supporting this standard.

3.2   Intallation of CATHARE

The installation of the code is described in §4.1 for LINUX and §5.1 for WINDOWS. In theses sections are shown the way to define path and environment variables and the solution to redefine some dimensioning parameters, for renaming user materials and the implemetation of include files for simulator use :

3.2.1   Redefinition of some dimensioning parameters

CATHARE pre-processing uses dimensioning values to limit memory allocation (e.g.: maximum number of radial meshes in a wall). They are described the following fortran include files: READIM.H and LAWDEC.H (these source files include useful comments for the user willing to configure a version suited to its applications).

Specific studies may need some parameters values modification and this has to be done before libraries compiling.

3.2.2   Renaming user materials : YYYYYYnn

In the standard version, the user's materials have the default names "YYYYYYnn" ($nn = 1$ to 50). But **CATHARE** can also refer to user's materials through their "real names".

This should be done by replacing the default names (character strings "YYYYYYii" ($ii = 01$ to nn with $01 \leq nn \leq 50$) with the user's customized ones in the files "7̃sources/cathar/DICO" and "7̃sources/tools /com-tools/WMATER.f".

Then, you must check that thermal properties calculated for the material of index INDMAT in FWMAYY.f file correspond to the material name defined at the same index in the block data (file WMATER.f).

WARNING : if you change the names of materials "YYYYYYii" with $ii = 01$ to nn, then input data decks using these materials names could no longer be used. The names "YYYYYYii" must be replaced by the new names.

3.2.3   Include for simulator use

SIMU.H contains the variables used by the INIT vector. The different tables dimension which can be seen from the simulator respects the less than 99999's criterion. These tables are stored this way :

Include FAST.H **CATHARE**	Include SIMU.H- INIT vector	TYPE
COMMON /FAST/A	COMMON /ASAUVE/ from AS1 to AS28	DOUBLE PRECISION
COMMON /FAST/IA and /PFAST/IP	COMMON /ISAUVE/ from IAS1 to IAS4	INTEGER
COMMON /CFAST/CAR	COMMON /CSAUVE/ from CARS1 to CARS4	CHARACTER*
COMMON /SFAST/STRCAT	COMMON /CTISIM/ TISIMU	CHARACTER*80

In order to activate the simulation way of running **CATHARE** , the user must change the MAXATELIER parameter value from 1 to 90000 in the include SIMU.H.

3.3   Compilation of CATHARE

The compiler and the compilations options used for the compilation of the **CATHARE** 2 code are given : for LINUX, respectively in sections 4.1.1 and 4.1.2 and for WINDOWS in sections 5.1.1 and 5.1.2.

After this installation step, **we strongly advise you to run** all the test cases among those of "testcases" directories and compare these results with delivered evolution files.

Please, do not forget to fill up and send us back the installation receipt form **$V2.5_3/readme/install-form.txt** so that we are able to regularly send you the list of updates available for the **CATHARE** V2.5_3 version. This will keep you informed of all the bugs discovered in **CATHARE** and of all the patches available with associated recommendations.

3.4   Running CATHARE

The way tu run **CATHARE** (the pre-processing of the input data dek, running the thermal-hydraulic calculation and the post-processing) is described in section §4.2 for LINUX and §5.2 for WINDOWS.

3.4.1   Modification of the CATHARE sources

To take into account temporary pre-processing, **CATHARE** and post-processing patches sent by **CATHARE** maintenance team, or to allow a larger number of elements (SOURCE, AXIAL, etc...) than the standard pre-processing, you may need to compile a scaled "reader.exe" to fit your own needs. This is done using the notion of "mask files" for LINUX (see §4.2.5) and modifying the appropriate pre-processing subroutines or includes files in the sources for WINDOWS (see §5.2.5).

3.4.2   Sizing the memory space allowed in cathar.exe

CATHARE kernel does not use dynamic memory allocation. A pseudo-dynamic allocation is performed at link time through the files **"FAST.H"** and **"FASTSIZE.f"**.

The memory space for double precision, integer and character*8 variables is specified in the include "FAST.H", via the parameters LONGA, LONGIA and LONGCA. A default memory space has been chosen to fit the usual requirements for reactor calculations; by default these dimensions are : $LONGA = 11000000$, $LONGIA = 1500000$ and $LONGCA = 1300000$.

But **CATHARE** 2 has the ability of changing the default to different sizes, chosen via keywords that the user has to add at the top of the input data deck. These keywords are :

FASTSIZE DOUBLE xxxxxx INTEGER yyyyyy CHAR8 zzzzzz ;

Example of input data deck option (for small reactor calculations PWR900SBL)

FASTSIZE DOUBLE 15000000 INTEGER 900000 CHAR8 900000 ;

Corresponding sizes in created FAST.H
PARAMETER (LONGA = 15000000)
PARAMETER (LONGIA = 900000)
PARAMETER (LONGCA = 900000)

"FAST.H" file is created when the reading procedure is executed. This is an "include file" that must be compiled and linked with local FORTRAN files and especially with **"FASTSIZE.f"**. This is done automatically by the executable cathare procedure.

WARNING : This size is not saved in the kernel restart file (**"C2.RESTART"**) and must be repeated in input deck for following restart calculations.

This option must be also used when the utility CREATE.f aborts **CATHARE** internal memory allocation because it needs more space than there is left as shown in example below:

N.B. : Memory space for character*80 variables is specified via the parameter LONGSTR. The user doesn't need to change its value. LONGSTR is fixed to 20000.

    ****

      CATHARE 2-V2.5_3KERNEL

      LIBRARY RELEASE NUMBER :
    @(#)_QLABEL.f_#_V2.5_3_#_1.4_10/06/08

    ****

    BEGINNING OF RESTORE FOR   FIXED PART NLABEL =   0
    SAVING WAS DONE WITH RELEASE : @(#)_QLABEL.f_#_V2.5_3_#_1.4_10/06/08

    TITLE IS : VERTICAL CANON EXPERIMENT - TUBULAR GEOMETRY - TEST 22

    NO MEMORY SPACE LEFT FOR CHARACTER
    NEED 4000 : 1996 LEFT
    @(#) CREATE.f #_V2.5_3_# 1.1 09/30/08
    @(#) REGISTH.f #_V2.5_3_# 1.1 09/30/08
    @(#) HATH.f #_V2.5_3_# 1.1 09/30/08
    @(#) HATIDENI.f #_V2.5_3_# 1.1 09/30/08
    @(#) HATCRINI.f #_V2.5_3_# 1.1 09/30/08
    @(#) RESTOR.f #_V2.5_3_# 1.1 09/30/08

     FATAL ERROR : 3570 WITH OBJECT : RESTORE   NUMBER :   0

    FATAL ERROR DETECTED IN PILOT
    @(#) CATHAR.f #_v25dev_# 6.1 09/30/08
    ABNORMAL END OF CATHAR RUN
    CALCULATION DONE WITH REVISION ?

      *** GAME OVER ***

3.4.3 Files used by CATHARE

Please refer to reference [4].

3.4.4 Important remarks

1. Each **CATHARE** computation has its own "PILOT.f" and "cathar.exe".

2. **CATHARE** uses C2.RESTART (storage file during calculation) to restart a calculation.

   CAUTION : DO NOT forget to rename it after a calculation; any subsequent calculation will overwrite it.

3. After the post-processing, the file FORT07 is created: it contains the 'evolutions' (formatted results) extracted from result file (FORT21) according to directives in the graphic input data deck.

4. For the graphic visualization of these evolutions, you should use your own graphic software. A description of FORT07 data organization is given in reference [2].

4

CATHARE INSTALLATION ON LINUX PLATFORMS

4.1   Intallation of CATHARE

If you are on a single machine (single user environment), we recommend you to create a directory <your_user_home> **CATHARE** 2.

If you are on a local network with several users of **CATHARE** , we recommend you to create a login named **CATHARE** 2 for version management (home directory = .../**CATHARE** 2) with the appropriate LINUX access permissions for the group of **CATHARE** users.

For cryognic application in the frame of the COMETE project, please refer also to §4.4.

For parallel calculations, please refer also to §4.3.

1. **First step** of installation is to copy the entire subdirectory tree V2.5_3 contained in the CD-Rom under the « **CATHARE** 2 » directory defined before. Associated user documents stored in V2.5_3/mod2.1/readme can also be downloaded on your disk for easy on-line access.

2. **Second step** is to define the environment variable « V2.5_3 » by :

   (a) **setenv V2.5_3...../CATHARE 2/V2.5_3/mod2.1** in C-Shell,

   (b) **export V2.5_3= ...../CATHARE 2/V2.5_3/mod2.1** in K- or Bourne-Shell.

3. **Third step**. Optional step to change **some dimensioning parameters**, **renaming user materials** and **include for simulator use** (see §3.2),

4. **Fourth step** is to generate the code binary archive libraries and the pre-processing and post-processing executables. This is done by running the procedure :

"makelib.unix"

.

"makelib.unix" script will ask you for the type of computer you are using and for the standard (sequential) or parallel (OMP) mode computation (refer to §4.3).

The version must be installed in standard mode computation first for the building of pre-processing and post-processing executables. These two executable modules run only in sequential mode, only the calculation kernel can run in parallel mode. This is done by launching the following commands :

(a) **chmod 755 $V2.5_3/unix-procedur/*.unix**

(b) **$V2.5_3/unix-procedur/makelib.unix** (or : ksh **$V2.5_3/unix-procedur/makelib.unix**)

(c) **chmod 555 $V2.5_3/unix-procedur/*.unix**

4.1.1 Compilation options for the sequential mode computation

As **CATHARE** may be installed on different workstations, makelib.unix will prompt for the type of computer being used (HP, HP11, CRAY, SGI, DEC, SUN, RS6000, LINUX77, LINUX-ABSOFT, GFORTRAN, MYCOMPUTER).

Depending of this type, one of the following 10 predefined compilation cards will be used :

Workstation	Type	Compilation card
HP (10.xx operating system) HP11 (11.xx operating system)	HP 9000	f77 -c +O2 +U77 -I $V2.5_3/lib *.f f90 -c +O2 +U77 -I $V2.5_3/lib *.f
SGI	Origin 2000	f77 -c -O2 -Wf, -I $V2.5_3/lib *.f
DEC (or COMPAQ)	Compaq Tru64 V5.1	f77 -c -O4 -automatic -i8 -r8 -I $V2.5_3/lib *.f
SUN	Sun4u Sparc	f77 -c -O2 -I $V2.5_3/lib *.f
RS6000	RS6000-43P	xlf -c -O2 -qmaxmem=-1 -qspillsize=3000 -I $V2.5_3/lib *.f
LINUX O.S.(G77)	CRAY-XD1	g77 -c -O2 -fautomatic -fno-init-local-zero -I $V2.5_3/lib *.f
LINUX O.S. (ABSOFT)	CRAY-XD1	f90 -c -O2 -i8 -N113 -I $V2.5_3/lib *.f
LINUX O.S (GFORTRAN)	DELL	gfortran -c -O2 -fpic -I. -I $V2.5_3/lib *.f
DELL PowerEdge R610/INTEL XEON 5570	Lahey-Fujitsu LF 64-Pro8.1	lf95 -c –in -O3
MYCOMPUTER	-	fill up makelib.unix with the appropriate compilation card

Table 4.1.1: Compilers and compilation options for the sequential mode computation and LINUX systems

MYCOMPUTER should be used whenever your computer does not match pre-defined compilation options.

REMARK : For lib2 compilation (pre processing), array subscript FORTRAN range error checking option is added (-C option for HP, SUN, DEC, SGI, RS6000, -fbounds-check option for LINUX G77 compiler and -Rb for LINUX ABSOFT compiler).

WARNING : DEC or COMPAQ compile options -i8 and -r8 are specific to installation for real-time simulator applications. Other users may suppress these options.

4.1.2 General compilation of CATHARE

The following operations will be performed :

1. gathering of all the include files of **$V2.5_3/sources/includes/*** and **$V2.5_3/sources/*/includes/*** in **$V2.5_3/lib**,

2. compilation of the FORTRAN source files of **$V2.5_3/sources** directory by directory. (see the result file of compilation **$V2.5_3/lib/listcomp**),

3. creation of the V2.5_3 archive libraries **$V2.5_3/lib/lib1.a** (**CATHARE** kernel part), **lib2.a** (pre-processing part) and **lib3.a** (post-processing part),

4. compilation and linking of the pre-processing program (using V2.5_3 archive library) : **$V2.5_3/lib/reader.exe** using the main program : **$V2.5_3/sources/reader/main/READER.f**

   The subdirectories used by the pre-processing are :

   (a) $V2.5_3/sources/reader,
   (b) $V2.5_3/sources/tools/comtools,
   (c) $V2.5_3/sources/tools/math,
   (d) $V2.5_3/sources/cm_machine
   (e) $V2.5_3/sources/cm_omp,
   (f) $V2.5_3/sources/label,
   (g) $V2.5_3/sources/reader/includes,
   (h) $V2.5_3/sources/includes.

5. compilation and linking of the post-processing program (using V2.5_3 archive library) : **$V2.5_3/lib/postpro.exe** using the main program : **$V2.5_3/sources/postpro/main/POSTPRO.f**.

   The subdirectories used by the post-processing are :

   (a) $V2.5_3/sources/postpro,
   (b) $V2.5_3/sources/label,
   (c) $V2.5_3/sources/reader/readtool,
   (d) $V2.5_3/sources/tools/comtools,
   (e) $V2.5_3/sources/cm_machine,
   (f) $V2.5_3/sources/includes,
   (g) $V2.5_3/sources/postpro/includes,

4.2 Running CATHARE

We advise you to create your working directory separated from **CATHARE** sources to avoid any file mishandling.

Due to the structure of **CATHARE** 2 , a first procedure (**vers.unix**) installs the necessary environment to run **CATHARE** , then, three (3) procedures are necessary to perform the complete calculation :

1. the input deck for the run must first be pre-processed via **read.unix**,

2. the thermal-hydraulic computation may then be achieved via **cathar.unix**, or via **cathar_omp.unix** for parallel computing with OMP (refer to §4.3),

3. the post-processing of results will be performed afterwards by **postpro.unix**.

4.2.1 Preliminary installation in a user directory

Make sure you have defined the proper environment variable V2.5_3 (refer to §4.1). For a first computation in any of your local working directories, execute in this directory :

$V2.5_3/unix-procedur/vers.unix (or : ksh $V2.5_3/unix-procedur/vers.unix)

This procedure creates the following symbolic links, used by **CATHARE** 2 :

1. **_version** is a symbolic link to $V2.5_3,

2. **DICO** is a symbolic link to _version/sources/cathar/DICO,

3. **CATHAR.f** is a symbolic link to _version/sources/cathar/CATHAR.f,

4. **read.unix** is a symbolic link to _version/unix-procedur/read.unix,

5. **cathar.unix** is a symbolic link to _version/unix-procedur/cathar.unix,

6. **cathar_omp.unix** is a symbolic link to _version/unix-procedur/cathar_omp.unix,

7. **postpro.unix** is a symbolic link to _version/unix-procedur/postpro.unix,

8. **FASTSIZE.f** is a symbolic link to _version/sources/tools/comtools/FASTSIZE.f

From now on, you may access **$V2.5_3/unix-procedur/read.unix** by executing the local command **read.unix** and the same for the other commands.

NB : **"vers.unix"** allows you to give « reader » or « postpro » as argument so that you are able to generate a local pre-processing executable or a local post-processing executable with masks (refer to the treatment of masks §4.2.5).

4.2.2 Pre-processing CATHARE input data deck

Let us call "mytest-case.dat" your **CATHARE** input deck.

Type in the command :

read.unix mytest-case.dat (or : ksh read.unix mytest-case.dat)

This procedure executes **reader.exe** :

1. **reader.exe** reads **DICO** input file,

2. from "mytest-case.dat" command block, it generates a fortran subroutine **PILOT.f**,

3. from "mytest-case.dat" data block, it generates a start-up file **C2.INIT**,

4. file **FAST.H** is created with chosen memory space for **CATHARE** computation (refer to §3.4.2).

If you want to create and use a local **reader.exe** instead of the standard one, you must add the second argument « mask » in the read.unix procedure use. This is needed when using reader masks (refer to the treatment of masks §4.2.5).

On LINUX O.S. using the G77 compiler, in file PILOT.f, the real numbers appear in simple precision (E+yy), so the procedure read.unix converts these numbers into double precision (D+yy).

4.2.3 Performing CATHARE thermal-hydraulic computation

Let us call "mytest-case.list" your **CATHARE** output listing.

Type in the command :

cathar.unix > mytest-case.list (or : ksh cathar.unix > mytest-case.list)

If MYCOMPUTER compilation option is desired, you should put your own compilation card in cathar.unix as the list of prepared compilation cards is not exhaustive.

"cathar.unix" then performs the compilation of the FORTRAN files *.f of the current directory (i.e. CATHAR.f, FASTSIZE.f, PILOT.f and the masks you may have) and links **CATHARE** 2 executable : **cathar.exe** (using the **CATHARE** archive library).

Then **"cathar.exe"** can run, using C2.INIT as input file. The generated files are :

1. file "mytest-case.list" (logical UNIT 6) : listing of **CATHARE** 2 calculations. (if "mytest-case.list" is omitted, listing is displayed on screen),

2. **FORT21** binary file containing the variables stored via RESULT directive. It can later be used for graphics,

3. **C2.RESTART** binary file containing the variables saved via SAVE directive: it is the **CATHARE** restart file and it allows long transient calculations to be splitted in several shorter runs.

4.2.4 Post-processing result file FORT21

Post-processing uses a graphic input data deck ('mytest-caseg.dat' for instance), and the binary file **FORT21** generated by the kernel calculation.

Issue the command :

> **postpro.unix mytest-caseg.dat (or : ksh postpro.unix mytest-caseg.dat)**

This procedure executes the post-processing : **"postpro.exe"**. **"postpro.exe"** reads the file **DICO** and generates the ASCII evolution file **FORT07** from the result file **FORT21** on the basis of user selected variables [2].

If you want to create and use a local **postpro.exe** instead of the standard one, you must add the second argument « mask » in postpro.unix procedure use. This is needed when using post-processing masks (refer to the treatment of masks §4.2.5.3).

4.2.5   Treatment of mask files

4.2.5.1   Mask files for the pre-processing part

As the MAIN program for the pre-processing (READER.f) conflicts with that of cathar (CATHAR.f), you have to create a new directory named "reader" under the current working directory.

1. Copy all the desired masks into the created "reader" directory.

2. Execute the following command from the current working directory :

> **$V2.5_3/unix-procedur/vers.unix reader (or : ksh $V2.5_3/unix-procedur/vers.unix reader)**

3. Execute the command to generate and execute the local reader/reader.exe with your masks :

> **read.unix mytest-case.dat mask (or : ksh read.unix mytest-case.dat mask)**

PILOT.f, **C2.INIT** and **FAST.H** files are automatically updated in the current working directory.

4.2.5.2   Mask files for CATHARE (thermal-hydraulic computation part)

In order to take into account temporary kernel patches sent by **CATHARE** maintenance team, or to include personal developments (UTIL files for example), you may need to run **CATHARE** with masks.

As soon as FORTRAN files are present in the directory where cathar.unix is run, these are taken into account, assuming them to be masks. These are linked in your local application in place of existing **CATHARE** library existing entry points.

4.2.5.3   Mask files for the post-processing part

To take into account temporary post-processing patches sent by **CATHARE** maintenance team, you may need to compile a scaled postpro.exe with masks to fit your own needs.

As the MAIN program for the post-processing (**POSTPRO.f**) conflicts with that of **CATHARE** (**CATHAR.f**), you have to create a new directory named "postpro" under the current working directory.

1. Copy all the desired masks into the created "postpro" directory.

2. Execute the following command from the current working directory :

> **$V2.5_3/unix-procedur/vers.unix postpro (or : ksh $V2.5_3/unix-procedur/vers.unix postpro)**

3. Execute the command to generate and execute the local "postpro/postpro.exe" with your masks :

> **postpro.unix mytest-caseg.dat mask (or : ksh postpro.unix mytest-caseg.dat mask)**

FORT07 file is automatically generated in the current working directory.

4.2.6   Sizing the memory space allowed in cathar.exe

See section §3.4.2

4.3   Installation of CATHARE for parallel computing

Since V1.5 version release (may 1999), the code now provides parallel calculation options for shared memory multiprocessor architectures. They are based upon Open MP (OMP) compilation directives added to the source in the includes (FORTRAN commons) and some strategic points such as the loop around the dispatching of the different actions performed on hydraulic elements. The following briefly describes the few steps needed to run **CATHARE** in parallel.

4.3.1   Recompiling of the code with OMP directives and libraries (Step 1)

To activate this feature, special archive libraries have to be built using the appropriate compilation options. Installations on CATHARE team using the Fortran 90 compiler :

Workstation	Type	Compilation card
DEC (or COMPAQ)	NODBG	f90 -c -omp -O4 -automatic -i8 -r8 -I $V2.5_3/lib *.f
DEC (or COMPAQ)	DBG	f90 -c -omp -g -O0 -automatic -i8 -r8 I $V2.5_3/lib *.f
HP/HP11		f90 -c +Oopenmp +O2 -I $V2.5_3/lib *.f Remark : the source files in the directory $V2.5_3/sources/cm_omp are compiled with +O3 option.
		continued on next page

Workstation	Type	Compilation card
DELL PowerEdge R610/INTEL XEON 5570		Lahey-Fujitsu LF 64-Pro8.1 lf95 -c –in –openmp -O3

Table 4.3.1: Compilers and compilation options for the parallel mode computation and LINUX systems

The delivered procedure **$V2.5_3/unix-procedur/makelib.unix** can be customized through the compilation card to meet local specific site needs before recompiling the library.

The executables for the reader and post-processor are not concerned with parallel computing and remain unchanged : the version must be installed in standard mode computation first for the build of reader post-processor executables.

Assuming V2.5_3 environment variable has been defined as in §4.1, the parallel libraries can be compiled.

- For DEC computer parallel libraries without debug (library "libomp.a") may be built using the command :

> **(echo 'DEC';echo 'OMP';echo 'NODBG')|$V2.5_3/unix-procedur/makelib.unix**

Parallel libraries with debug (library "dbg.libomp.a") may be built using the command :

> **(echo 'DEC';echo 'OMP';echo 'DBG')| $V2.5_3/unix-procedur/makelib.unix**

- For HP computer parallel libraries (library "libomp.a") may be built using the command :

> **(echo 'HP';echo 'OMP')| $V2.5_3/unix-procedur/makelib.unix**

- For Lahey-Fujitsu compiler the parallel libraries may be built using the command :

> **(echo 'LF95';echo 'OMP')| $V2.5_3/unix-procedur/makelib.unix**

WARNING : in this installation, result files (FORT21) are in 64 bit-precision.

4.3.2 Modifying the input deck (Step 2)

Then, before the RESTORE directive, the "OPTION PARALLEL ….." is required in the input deck to take advantage of the parallelized subroutines. To make comparison on the results file FORT21 between a sequential and parallel run, the "OPTION NCPUSAV 2", written before the RESTORE directive prevents **CATHARE** from saving the value of elapsed time in this file so that binary comparison of result files (using "cmp" LINUX command) is made possible.

To have further information about the PARALLEL and NCPUSAV options, please check the CATHARE 2 V2.5_3 mod2.1 code : Dictionary of operators and directives[1] where they are fully documented.

4.3.3   Running the code (Step 3)

Running the code can be done in any of your local working directories. As in §4.2.1 execute:

> **$V2.5_3/unix-procedur/vers.unix (or : ksh $V2.5_3/unix-procedur/vers.unix)**

Preprocessing **CATHARE** input deck works the same way as in sequential (refer to §5.2.2).

To perform a parallel **CATHARE** computation, specifications must be provided for :

1. linking user files with the OMP library you compiled at step 1,

2. running the executable on the desired number of processors; the number of processors must be set by the second argument of the below procedure or before calling this procedure by the defined environment variable OMP_NUM_THREADS.

These two points are handled on COMPAQ or HP using the command :

> **cathar_omp.unix mytest-case.list (nbproc) (or : ksh cathar_omp.unix mytest-case.list (nbproc))**

where "mytest-case.list" is the **CATHARE** output listing and "nbproc" is the desired number of processors. If "nbproc" argument doesn't exist, it must be defined by the environment variable OMP_NUM_THREADS before by the user.

The procedure compiles the local sources (CATHAR.f, PILOT.f, FASTSIZE.f, and the masks you may have) with the right options, links it with the library named libomp.a and performs the computation. Compilation cards can be customized in this script with Fortran 90 and OMP extensions to suit any parallel computer.

N.B. : For DEC computer parallel libraries with debug (library "dbg.libomp.a") may be used using the command :

> **cathar_omp.unix mytest-case.list nbproc DBG (or : ksh cathar_omp.unix mytest-case.list nbproc DBG)**

At run-time, parallel processing based on OMP multi-thread facilities is triggered with various modes according to the OPTION PARALLEL directive as described in [1].

Postprocessing result file FORT21 works the same way as in sequential (refer to §5.2.4).

4.3.4   Additional files opened by CATHARE related to OMP parallel computing

All the following files are formatted. They contain performance measurements if PERF ON is used [1].

File	Fortran logical Unit number	Input/Output	Use	Opened in Subroutine
PERF	110	Output	Times globally measured on **CATHARE** internal algorithmic steps.	PRINSTRU
MAILLAGE	120	Output	For each element, repartition of the time spent for these steps	PRINSTRU

Table 4.3.2: Additional files opened by CATHARE related to OMP parallel computing

4.4 Installation of CATHARE for cryogenic application

The installation procedure of **CATHARE** for the cryogenic application (COMETE project) is closely similar to the standard procedure. It is only required to define 2 environment variables :

- "v25" which replaces C2 defined supra in §4.1, because of the practice to extract work versions which are not labelized [1].

- "comete_cosim" : must be defined (to any value, for example oui or yes) in case of cosimulation (compilation or calculation). Otherwise, compilation and calculation are done in a **CATHARE** stand-alone configuration. In the case of cosimulation, this variable has to be initialized before executing makelib.unix and vers.unix.

Furthermore, in case of compilation for cosimulation, **makelib.unix** asks for the names of MPI and rgsy includes, for example :

/home/comete/mpich2/mpich2-1.0.3/G77/include/mpif.h and **/home/comete/rgsy/V99/svpara.inc**.

In the case of a double-configuration installation (with and without cosimulation), **makelib.unix** must be executed twice: first without **comete_cosim**, then with **comete_cosim**. The second time, **makelib.unix** generates a **lib1_cosim.a** library, which is different from the standard **lib1.a** : it includes the interface routines for cosimulation. The two others **lib2.a** and **lib3.a** (for reader and postprocessing) are unchanged.

4.4.1 Coupling with wall module THERMAL

For calculations with THERMAL, two other variables have to be defined :

- **"comete_inc"**, which specifies the include directories which are used to compile. For example :

  - -I/home/comete/mpich2/mpich2-1.0.3/G77/include
  - -I/home/comete/rgsy/V99.

- **"comete_lib"**, which specifies the libraries to link with. For example :

---

[1] NB: for the same reason, the root directory on the CD will not appear as V2.5_3, but as work.<date and label>.

– -L/home/comete/rgsy/lib/ -lrgsy

– -L/home/comete/mpich2/mpich2-1.0.3/G77/lib -lmpich.

comete_inc and **comete_lib** are only used by cathar.unix tool in the cosimulation case.

4.4.2 Coupling with thermodynamical properties module BL2D

In the case of coupling with thermodynamical properties module BL2D, user has to define **bl2d_lib** environment variable, which is the name of the directory in which is the **bl2d.a** library. This variable is only used by **cathar.unix**.

Besides, the path to the BL2D mesh files must be specified in the routine PRECAT.f (**bl2d_home** variable), which can be either modified once for all in the arborescence (**$v25/sources/hat/main/PRECAT.f**), or possibly placed as a mask in each working directory.

It is also necessary to verify that the include file H2CURVE.H, which is placed in :

$v25/sources/couplage/comete/ca_bl2d/includes

is compatible with the current version of BL2D. This file needs to be included in the **CATHARE** arborescence because it is used by several **CATHARE** routines which call BL2D subroutines.

5

CATHARE INSTALLATION ON WINDOWS PLATFORMS

5.1 Installation of CATHARE

You must copy the entire subdirectory tree V2.5_3 contained in the CD-Rom on your hard disk in a subdirectory named for example : **D:\users\CATHARE 2**.

The code source is located under V2.5_3\mod2.1 directory.

Three compilers (and procedures package) are available in the "PC-procedurw" directory. Users have to initialize the "COMPILF" variable in the "INITCOMPILER.BAT" procedure for the chosen compiler. The default value is COMPILF=COMPAQ :

1. the COMPAQ VISUAL FORTRAN, COMPILF=COMPAQ,

2. the INTEL VISUAL FORTRAN, COMPILF=COMPAQ,

3. the OPEN WATCOM FORTRAN, COMPILF=WATCOM,

The procedures described below use the COMPAQ VISUAL FORTRAN compiler. These procedures are called : **installw.bat**, **readw.bat**, **catharw.bat**, **postw.bat** and **cleanw.bat** and are placed into **PC-procedurw** directory.

We shall assume that the installation directory on your hard disk for the sources of **CATHARE** initial release is :

D:\users\CATHARE 2\V2.5_3\modn.1

All paths mentioned hereafter are relative to this installation directory.

The "**D:\users\CATHARE 2**" location is given as an example; this **CATHARE** root location can be tailored to suit your actual organization. In this case, in the following text "**D:\users\CATHARE 2**" must be replaced by actual path.

Before compiling libraries, the user may change **some dimensioning parameters**, **renaming user materials** and **include for simulator use** (see §3.2),

WARNING : With standard size installation, at "reader.exe" link time, VISUAL Fortran produces a message indicating : "LNK4084: total image size 289701888 exceeds max (268435456); image may not run".

This can be seen as a problem internal to VISUAL Fortran allocation. To avoid this, we recommend to change pre-processing dimensioning parameters; for example NRWAMA parameter (READIM.H include file) can be set to 20 or less instead of 25 before installation (NRWAMA is the maximum number of temperature nodes of wall radial meshing; NRWAMA=13 is the right choice for SCAR applications).

5.1.1 Compilation options

Compilation of libraries is based on Makefiles (*.mak), they are placed into all subdirectories in **visual_cathare** directory. The first level of the tree structure is the same as in the sources directory. The compilation command is "df.exe" for COMPAQ compiler (default value) and "ifort.exe" for INTEL compiler.

Makefiles are used by the procedure **installw.bat** to make two different types of libraries: **"release"** and **"debug"** (see §5.1.2). The file "my_options.mak" in the directory "visual_cathare" contains the compilation options (for COMPAQ and INTEL compilers).

1. **Release options** are :

/compile_only /fpp /define:cm_pcvf /nologo /warn:nofileopt /module:"Release/" /object:"Release/"

---

2. **Debug options** are :

/check:bounds /compile_only /dbglibs /debug:full /fpp /define:cm_pcvf /nologo /traceback /warn:argument_checking /warn:nofileopt /module:"Debug/" /object:"Debug/" /pdbfile:"Debug/DF60.PDB"

---

3. For the pre-processing **_reader_main.exe** only **debug options** are used.

4. For post-processing **_postpro_main.exe** only **debug options** are used.

5. For the calculation kernel **_cathar_main.exe debug and release options** are used.

5.1.2 General Compilation of CATHARE 2

In this step, a **source_ref** backup copy is made, then, "*.obj" files, archive libraries and executables will be generated from Fortran files under visual_cathare directory

To do so, after opening a MS-DOS window, move to **PC-procedurw** directory in this window and issue the following command to perform these operations : **installw**

Then the following operations will be performed :

1. compilation of the FORTRAN source files of sources directory by directory,

2. "*.obj" and archive libraries files are created into sub-directories of visual_cathare directory. The Release directories contain optimizing compilation of the source files and Debug directories contain debugging compilation of the source files.

3. compilation and linking of the pre-processing program (using the archive libraries) : **_reader_main.exe** in **visual_cathare _reader_main** debug directory and using the main program **sources_reader_main\READER.f**,

   The subdirectories used by the pre-processing are :

   (a) sources\reader,

   (b) sources\tools\comtools,

   (c) sources\tools\math,

   (d) sources\cm_machine,

   (e) sources\label,

   (f) sources\reader\includes,

   (g) sources\includes.

4. compilation and linking of the post-processing program (using the archive libraries) : **_postpro_main.exe** in **visual_cathare _pospro_main** Debug directory and using the main program **sources_postpro_main\POSTPRO.f**

   The subdirectories used by the post-processing are :

   (a) sources\postpro,

   (b) sources\tools\comtools,

   (c) sources\cm_machine,

   (d) sources\includes,

   (e) sources\label,

   (f) sources\postpro\includes,

   (g) sources\reader\readtool.

A sub-directory reports under **PC-procedurw** contain report files about these operations.

5.2   Running CATHARE

We advise you to create your working directory separate from **CATHARE** sources to avoid any file mishandling.

Due to the structure of **CATHARE** 2 , three main steps are necessary to perform the complete calculation :

1. the input deck for the run must first be pre-processed via the procedure **readw.bat**,

2. the thermal-hydraulic computation may then be achieved via the procedure **catharw.bat**,

3. the post-processing of results will be performed afterwards by the procedure **postw.bat**.

5.2.1 Preliminary initialization

If not already initialized by the user, these three (3) procedures will prompt you for the initialization of the variable path V2.5_3:

- with the absolute path of V2.5_3 version (for example) :

<div style="text-align:center; border:1px solid">

set pathv25_3= D:\users\CATHARE 2\V2.5_3\mod2.1

</div>

- or with the relative path of V2.5_3 version to reach mod2.1 directory. . . . stands for appropriate relative path from user current working directory :

<div style="text-align:center; border:1px solid">

set pathv25_3=…..\V2.5_3\mod2.1. …

</div>

Important Notice : Absolute or relative path written in variable path V2.5_3must absolutely not contain quotation mark(s) as ' "' or blank character(s) for the good use of the compiler.

5.2.2 Pre-processing CATHARE input data deck

To run a first computation, you must before pre-process your input data deck. For example for work directory (if not exist it is created by the compiling **CATHARE** procedure installw), execute the command :

<div style="text-align:center; border:1px solid">

..\PC-procedurw\readw mytest-case.dat

</div>

"mytest-case.dat" is the name of your input data deck (examples of input data decks are given in the "test-cases" directory).

This procedure executes **"_reader_main.exe"** which is under visual_cathare directory : **_reader_main.exe** reads DICO input file.

Five files are generated :

1. a FORTRAN subroutine **PILOT.f** from "mytest-case.dat" command block,

2. a startup file **C2.INIT** from "mytest-case.dat" data block,

3. a file **FAST.H** is created with chosen memory space for **CATHARE** computation (refer to §3.4.2),

4. **C2.LIST** is the result of pre-processing work,

5. **C2.INIT.FORM** : formatted file corresponding to **C2.INIT** (OPTION SAVE FORMAT of Block Data).

5.2.3 Performing CATHARE thermal-hydraulic computation

For a first computation, issue the command in the working directory :

..\PC-procedurw\catharw

"catharw" then performs the compilation of the FORTRAN files *.f of the current directory (i.e. CATHAR.f, FASTSIZE.f, PILOT.f and the masks you may have) appended in ALLMASKS.f file and links **CATHARE** 2 executable : **_cathar_main.exe** is created into the current working directory (using libraries in optimizing Fortran compilation by default)

Then **CATHARE** starts the thermal-hydraulic computation using the **C2.INIT** file, and it creates the files :

1. **C2.LIST**, which is the listing of **CATHARE** 2 calculations (moved to **C2.LST** at the end of the calculation),

2. **FORT21**, which contains variables stored via the RESULT directive (unformatted file),

3. **C2.RESTART** binary file, which contains variables saved via SAVE directive: it is the **CATHARE** restart file and it allows long transient calculations to be splitted in several shorter runs.

5.2.4 Post-processing result file FORT21

Post-processing uses a graphic input data deck and the binary file **FORT21**. Issue the command :

..\PC-procedurw\postw mytest-caseg.dat

"mytest-caseg.dat" is the name of your post-processing data deck. (Examples of post-processing data decks are given in "testcases" directories)

This procedure executes the post-processing: **"_postpro_main.exe"** which is under visual_cathare directory.

Post-processing reads the file **DICO** and generates the ASCII evolution file **FORT07** from the result file **FORT21** on the basis of user selected variables [2].**C2.LIST** is the listing of post-processing work and it will overwrite the pre-processing listing.

5.2.5 Modification of the CATHARE sources

5.2.5.1 Modification for the pre-processing part

You must directly modify the appropriate pre-processing subroutines or includes files in the sources directory following the recommandations provided by the maintenance team. (To retrieve standard files later, you can use the standard version of **CATHARE** V2.5_3that is archived always in sources_ref directory).

Then, move to **PC-procedurw** directory and issue the following command to clean all "*.obj" and "*.lib files" in "reader" directories of visual_cathare directory :

> **cleanw reader**

Then execute the following command to compile "*.obj" and "*.lib" files in "reader" directories and generate a **_reader_main.exe** in visual_cathare directory with your masks :

> **installw**

Then you can execute again **readw** procedur in working directory (refer §5.2.2)

5.2.5.2   Mask files for CATHARE (thermal-hydraulic computation part)

On in case of Fortran subroutines, and in order to take into account temporary kernel patches sent by **CATHARE** maintenance team, or to include personal developments (UTIL files for example), you may need to run **CATHARE** with Fortran masks.

As soon as FORTRAN files are present in the working directory where **catharw** is run, these are taken into account, assuming them to be masks for the libraries. These are linked in your local application in place of existing **CATHARE** libraries entry points.

5.2.5.3   Mask files for the post-processing part

To take into account temporary post-processing patches sent by **CATHARE** maintenance team, you may need to compile a scaled **_postpro_main.exe** with masks to fit your own needs.

To do so, you must directly modify your own files (fortran subroutines or includes files) in sources directory following the recommandations provided by the maintenance team. (To retrieve standard files later, you can use the standard version of **CATHARE** 2 V2.5_3that is archived always in sources_ref directory).

Then move to **PC-procedurw** directory and issue the following command to clean all "*.obj" and "*.lib" files in "postpro" directories of visual_cathare directory :

> **cleanw postpro**

Then execute the following command to compile "*.obj" and "*.lib" files in "postpro" directories and generate a **_postpro_main.exe** in visual_cathare, directory with your masks :

> **installw**

Then you can execute again **postw** procedur in working directory (refer §5.2.4)

5.2.6   Sizing the memory space allowed in the cathar-main.exe

See section §3.4.2.

6

GUITHARE INSTALLATION

The purpose of this document is to describe how GUITHARE can be installed on different WINDOWS and LINUX platforms.

6.1   Supported platforms

GUITHARE V1.8 is available in binaries form :

- for five LINUX platforms :

    1. Mandriva 2008, 2009 and 2010 (M2008 in the text),
    2. Debian Sarge 2.6 (Debian in the text) and Debian Squeeze (Debian_64 in the text),
    3. Red Hat 5.5 and 9 (RH in the text),
    4. Calibre 5 and 7,
    5. Suse Enterprise 9.2 (SUSE in the text)

- for WINDOWS 2000/Vista/XP version 32 bits (win in the text) .

6.2   Installation guidelines

GUITHARE may work either with or without installed **CATHARE** 2 V2.5, V2.5_1, V2.5_2, V2.5_3 or **CATHARE** 3 V1.0 solvers (pre-processor, thermal hydraulic kernel and post-processor).

In case of absence of the solvers the **GUITHARE** pre and post-processing functionalities will be fully available however users will not be able to run calculations from the GUI and post-processing is only possible by importing of already pre-calculated **FORT21** files.

In order to connect **GUITHARE** to the **CATHARE** solvers, the **CATHARE** and a FORTRAN compiler shall be preinstalled and correctly configured on the machine according to the **CATHARE** installation guide.

6.2.1 Installation for LINUX

1. Unpack the tar.gz files from the CD-ROM in your computer (where "i" is the sub-number and "yyyym-mdd" is the delivery date of the GUITHARE V1.8 version :

    (a) the GUITHARE_V1.8.i_M2008_yyyymmdd.tar (for Mandriva),

    (b) the GUITHARE_V1.8.i_Debian_SUSE_RH_yyyymmdd.tar.gz (for other 32-bit LINUX platforms),

    (c) the GUITHARE_V1.8.i_Debian_64_yyyymmdd.tar.gz for Debian Squeeze 64-bit.

2. Modify the v25, v25_1, v25_2 and v25_3 environment variables in **<GUITHARE_target_dir>/env.csh** procedure file in order to reflect the actual location of **CATHARE** solver,

3. **CATHARE** pre-postprocessor can be launched using the **run.csh** script. **<GUITHARE**_target_dir> should be the current directory.

6.2.2 Installation for WINDOWS 2000/Vista/XP version

1. Unpack the GUITHARE_V1.8.i_win_yyyymmdd.tar.gz archive to some location.

2. Replace the original **catharw.bat** files in your **CATHARE** solvers installations (**PC-procedurw** subdi-rectory) with the ones provided within this delivery. It can be found in **CATHARE** 2 patch directory,

3. Modify **WATCOM_ROOT** and the **pathv25/pathv25_1/pathv25_2/pathv25_3** environment variables in the **custom.bat** file in order to reflect the actual location of the WATCOM compiler and **CATHARE** solvers.

4. **GUITHARE** can be launched with help of **run.bat** script.

   Notes :

1. It is strictly recommended to avoid usage of "(" and ")" symbols in the installation path.

2. In case if you use a compiler that is different than WATCOM, please configure the environment yourself in a way that the **catharw.bat** file may correctly compile **CATHARE** .

3. In case if path to the root installation directory contains white spaces, it is necessary to enclose values of ***BIN and ***LIB environment variables in the **custom.bat** file into double quotes in order for the operating system to process the paths correctly.

6.3 Video card settings

Antialiasing is a technique used to minimize the "stair step" effect sometimes seen along the edges of Open GL objects. Anisotropic filtering is used for improving image quality. Sometimes it is reasonable to increase degree of antialiasing settings and anisotropic filtering to obtain correct pictures in **GUITHARE** viewers.

See in the Figure 6.3.1, an example of video card settings (Mandriva 08, NVIDIA graphic card).

Under Mandriva 08, this dialog can be launched using popup menu of Mandriva 08 desktop (tools, system tools, NVIDIA X Server Settings, Figure 6.3.2).

See in the Figure 6.3.3 an example of video card settings (WINDOWS XP, NVIDIA graphic card).
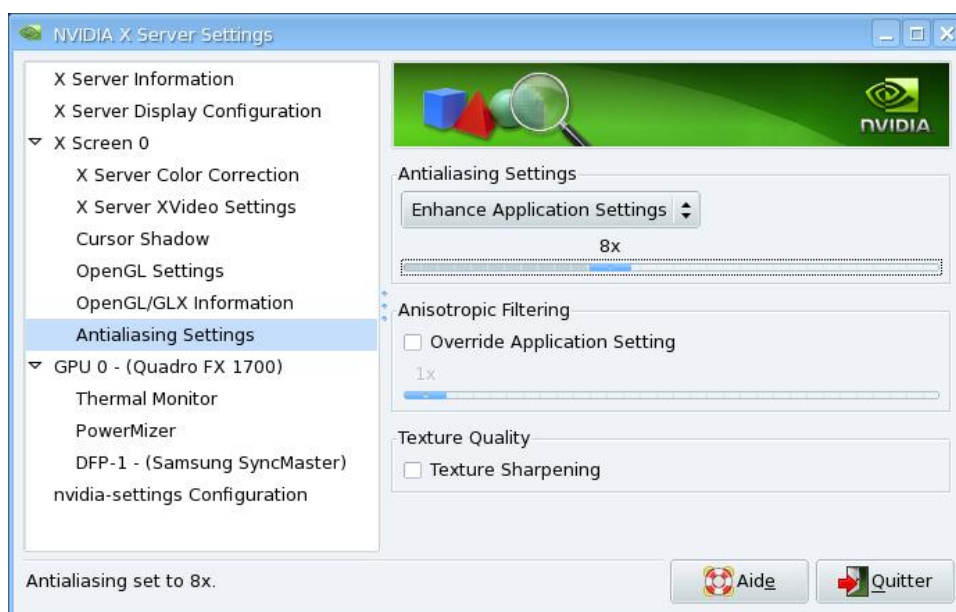
Figure 6.3.1: Video card settings (Mandriva 08, NVIDIA graphic card)

Under WINDOWS XP this dialog can be launched using popup menu of WINDOWS desktop (Figure 6.3.4).

Note : Availability of antialiasing settings and anisotropic filtering depends on the graphics card you are using. Please consult your video card user documentation for details.

6.4 GUITHARE work folder

Work folder is intended to keep all **GUITHARE** auxiliary files ; ex. **CATHARE** calculation results, backup data and log-files for different operations.

CATHARE_TEMPDIR environment variable specifies work folder location. By default it refers to "WORK" folder located in **GUITHARE** installation directory for WINDOWS and "GUITHARE_WORK" folder located in user home directory for LINUX platform.

On LINUX with a default environment if "GUITHARE_WORK" folder does not exist in the user home it is created automatically by the system.

On WINDOWS empty "WORK" folder already exists in **GUITHARE** installation directory.

SALOME_BACKUP_FOLDER environment variable specifies the location of backup data used by **GUITHARE** to restore studies after crash. By default it refers to CATHARE_TEMPDIR variable.

After **GUITHARE** installation it is necessary to check whether the users who will launch application have the permission to write in these folders.
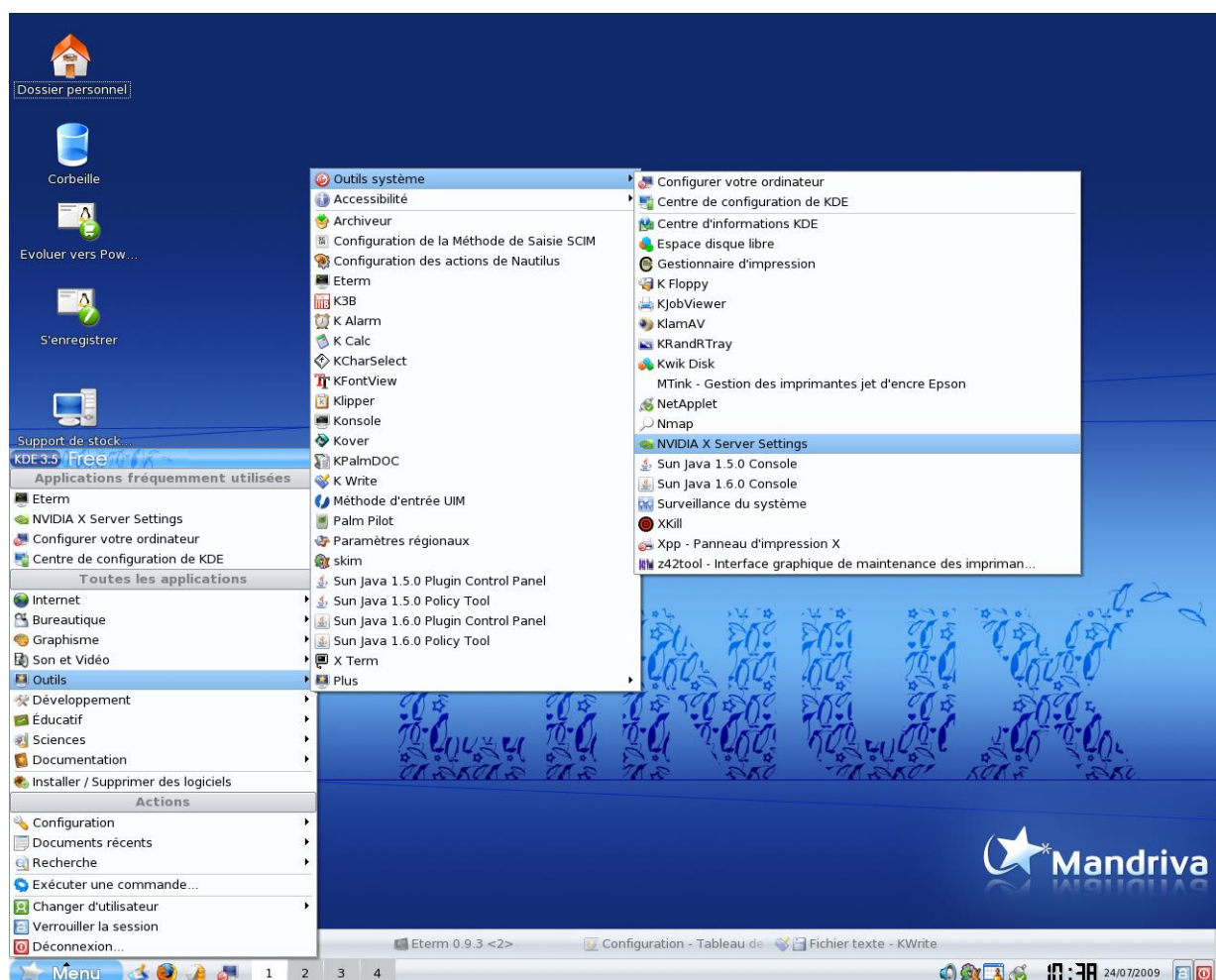
Figure 6.3.2: Popup menu of LINUX desktop

6.5   Installation of 32-bit GUITHARE version on 64-bit LINUX platforms

GUITHARE contains only one archive for installation on 64-bit LINUX platform

GUITHARE_V1.8.i_Debian_64_yyyymmdd.tar.gz for Debian Squeeze 64-bit   .

This 64-bit GUITHARE version cannot be installed on 32-bit systems.

But, 64-bit platforms can execute 32-bit programs. So the 32-bit GUITHARE version can be launched on 64-bit platforms if all necessary 32-bit system libraries are installed on the target system.

For example, if GUITHARE sends message "libXmu.so not found", this means that the application needs "libXmu.so" system library, which is not installed on the target system. A 32-bit version of this library is needed; it is usually installed in "/usr/lib" folder. 64-bit version installed in "/usr/lib64" is useless for the 32-bit GUITHARE version. Please ask your system administrator to install the necessary package on the target system.
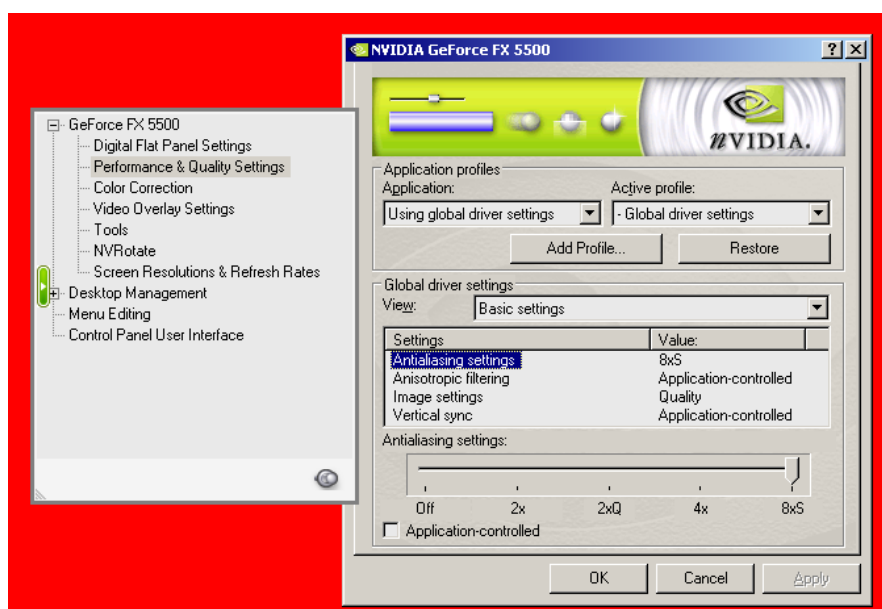
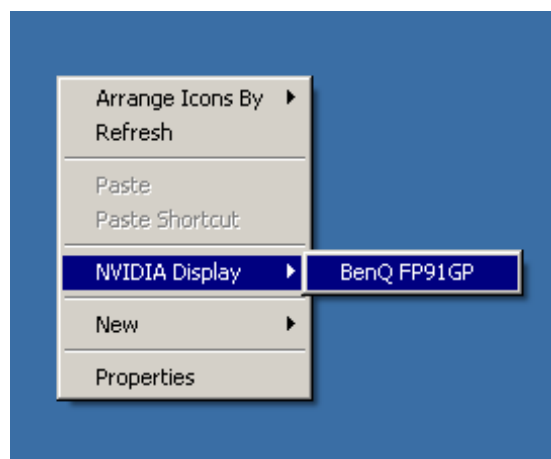Figure 6.3.3: Video card settings (WINDOWS XP, NVIDIA graphic card)

Figure 6.3.4: Popup menu of WINDOWS desktop

All-sufficient 64-bit GUITHARE versions will appear since V1.8 version series only.

6.6   Check GUITHARE

Special scenario can be used for verification of **GUITHARE** application after its installation. This scenario is available on help page of **GUITHARE** module together with **CATHARE** dictionaries, **GUITHARE** tutorials, etc.

All Files used for **GUITHARE** check are located in the "[INSTALLATION_FOLDER]/share/salome/examples" folder.

"Portability test of GUITHARE on supported platforms for CATHARE 2" document contains scenario and results of GUITHARE testing on all supported platforms. It is available on help page of GUITHARE module.

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ACRONYMS

OMP : Open MultiProcessing. 18, 24, 26
COMETE : CATHARE application for rocket motors and engines. 18, 27

END OF DOCUMENT