

PSA , 가

, CSARP

가

MIDAS

. [1-3] MELCOR

가

. MIDAS

MELCOR

Module

, Fortran90

Dynamic Allocation Method

Memory

. MIDAS

MELCOR

RELAP5/MOD3

MAAP

. MAAP

MELCOR

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MELCOR

. MELCOR

MAAP

MELCOR

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MELCOR

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Output

HISPLT

, HISPLT

MELCOR

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. MELCOR

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MELCOR

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MELCOR

MELCOR

Fortran

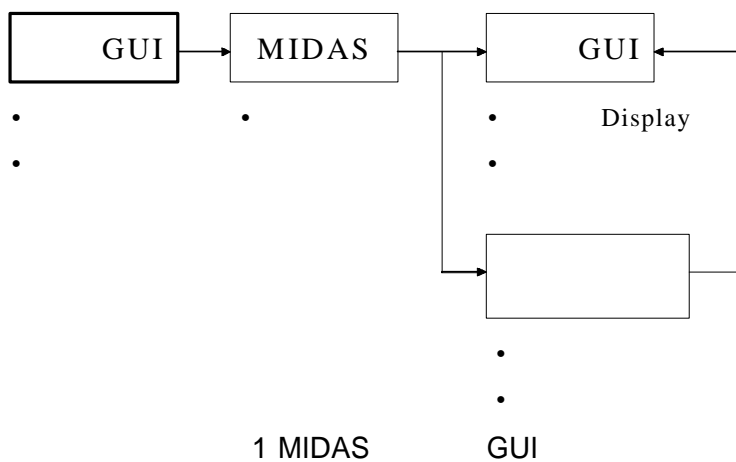
가

가
 GRS ATLAS[5], KEMA MAAP-GRAAPH[6], EDF
 SIPA 가 .
 KAERI MARS GUI[7-9],
 SAMAT [10-14], KEPRI NPA
 , PC P-CATS .
 MELCOR
 GUI GUI GUI

2. MIDAS GUI IEDIT

2.1

MIDAS IEDIT MELCOR GUI
 PC ,
 IEDIT MIDAS GUI ,
 1 MIDAS , GUI



HS, FL 3

GUI

Piping Heat Structure

2.2

IEDIT

MIDAS

MELCOR 1.8.4

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DB

IEDIT

DB

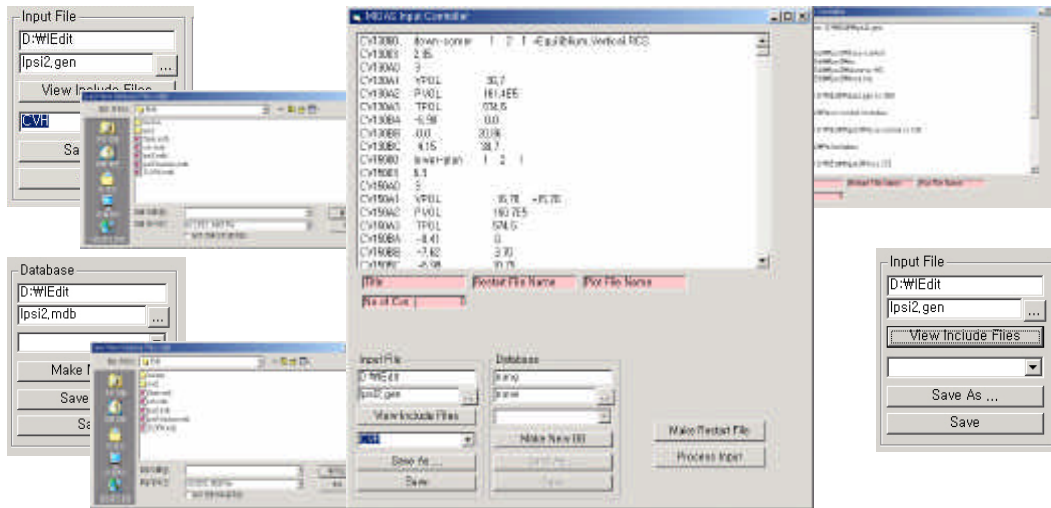
가

Open, Read, Write, Save

View Include Files

Display

(2).



2 IEDIT

DB

DB

DB

SQL

MS

가

OLEDB 4.0 Jet

MDB

ActiveX Data Objects 2.7 Library

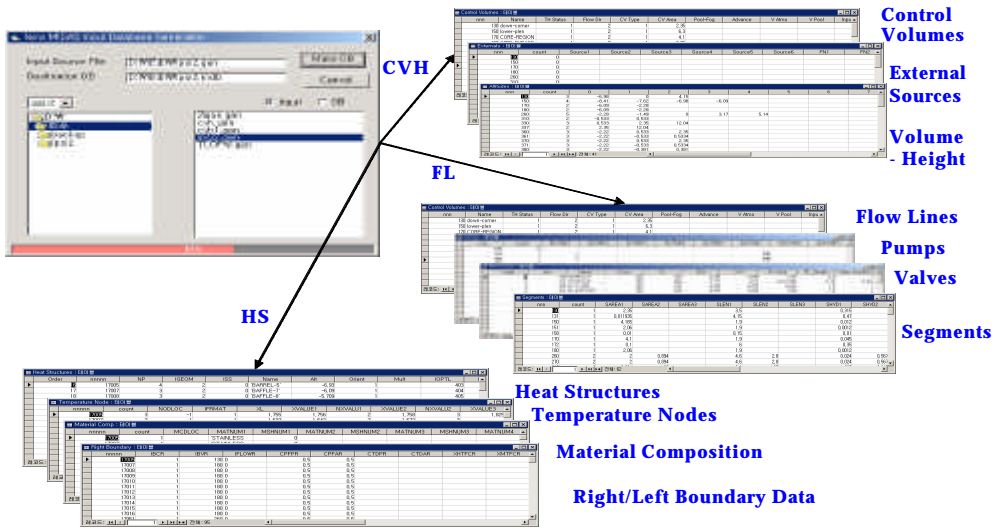
ADODB

DB

(3) CVH, FL HS

Token

DB



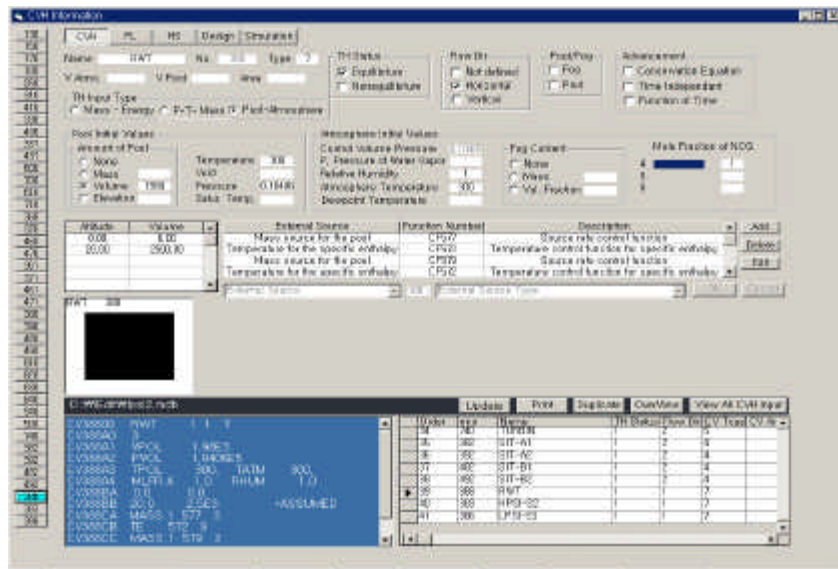
3

(CVH)

CVH

가

(4)



4 CVH

Display

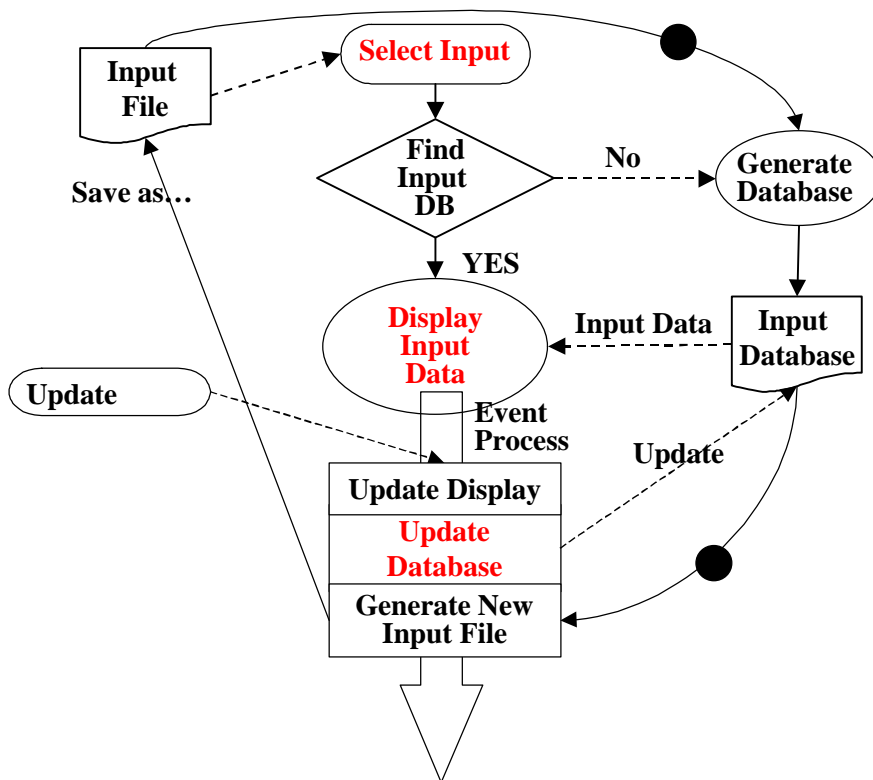
가

Update

가

5

(DFD: Data Flow Diagram)



5

GUI

IEDIT
Structure
Flow Line, Heat Structure

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, Flow Line, Heat
Control Volume,

3. MIDAS GUI SATS

3.1

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MELCOR

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TH
MELCOR
HISPLT

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TSC

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. SATS

3.1

MELCOR SATS

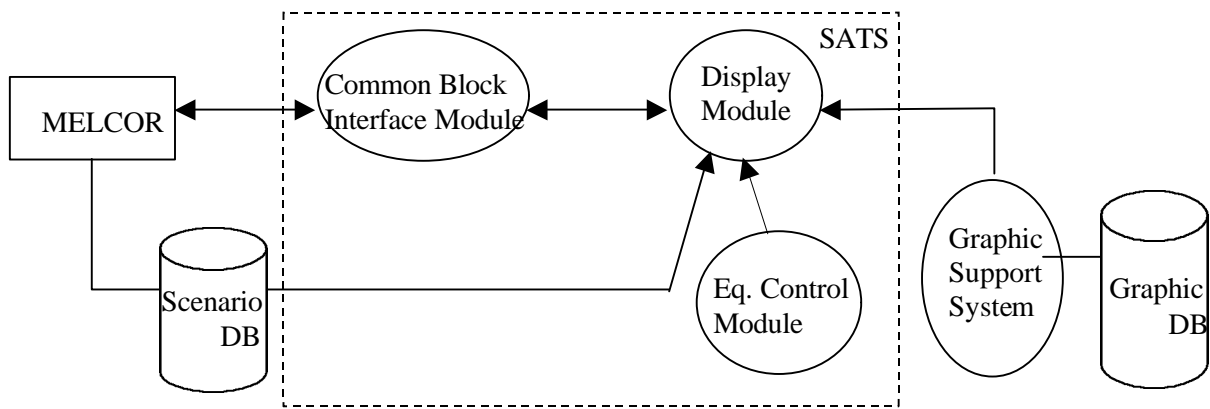
SATS MELCOR 1.8.4 Version

가

3,4

, MELCOR

TSC



- . Scenario DB: MELCOR PLOT File
- . Graphic DB: SL-GMS Rx Model
- . Display Module: 2D/3D dynamic behavior display of Rx, Cavity, RCS, Containment
- . Graphic Support System: SL-GMS
- . Common Block Interface Module: interface to MELCOR Common Block via shared memory

6. SATS

SATS SL-GMS

DB

MELCOR

DB, Common Block Interface Module, SL-

GMS Graphic Interface Module

Main Module

. Plot File

MELCOR

MELCOR Data

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, Common

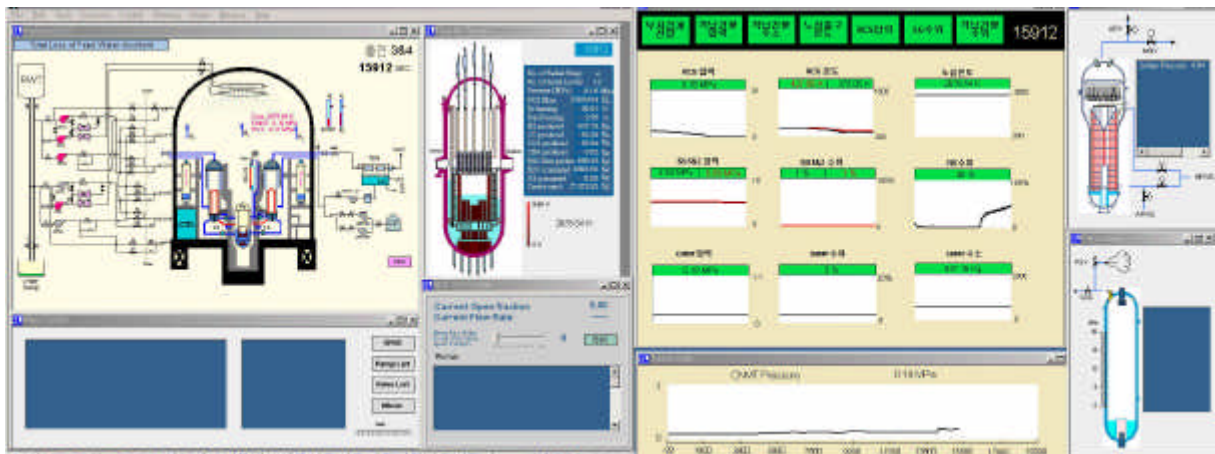
Block

HISPLT

MELCOR
 가 가 . MELCOR
 Common Block 가
 MELCOR Cycle ,

MELCOR
 가 , SATS Replay MELCOR

SATS 가 SL-GMS , CVH, COR, HS, FL
 가 . CVH Control Volume
 , COR nRad x nAxis . SATS



7. SATS Display

MFC (Microsoft Foundation Class)
 MELCOR 가
 Replay
 SPDS (Safety Parameter
 Display System) SPDS Alarm, 가 , ,

(TLOFW) . 1 TLOFW
 SATS 8(a) 가
 -02 11,000

TSC 가 가 가 가
 SDS
 8(b)

1. TLOFW

()		/
0	- TLOFW () - EOP	
3,000	- S/G	
	(10,000 가 가) (10,000)	
10,400	- (>371.1 ° C) - KAMG	- TSC
	(TSC 20) (MCR -01)	
11,600	- TSC	-
11,650		- -01 (AFW /MSADV)
11,800	- (< 371.1 ° C)	
15,910	- S/G	- -02 (SDS 80%)
16,180	-	- HPSI



(a)

(b)

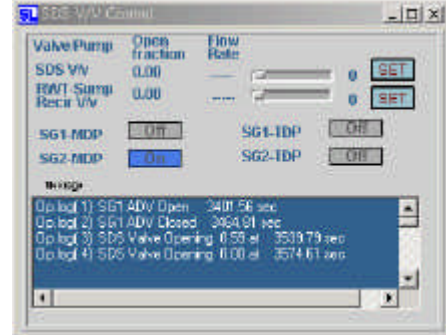
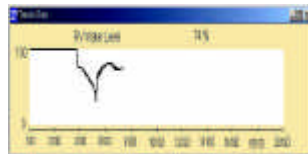
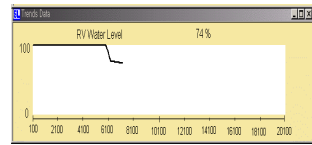
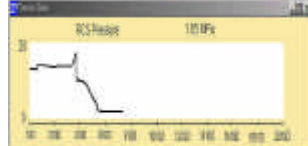
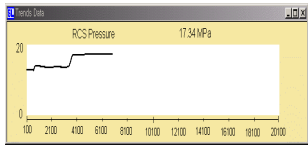
8. TLOFW -02

SATS 가 MELCOR ,
 MELCOR
 MELCOR
 . SATS
 LPSI, HPSI A/B, MDP/TDP, , ADV
 A/B, SDS Valve, H2 Ignitor, MainFW Pump SGA/SGB, MSIV, SIT Flow .

9 TLOFW , 3753 가

SDS 90%
, SDS

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9 SDS

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TMI

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SATS

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SATS

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1. MELCOR, KAERI/TR-1536/2000,
2. MELCOR, KAERI/TR-1543/2000,
3. MIDAS, KAERI/TR-2220/2002,
4. "MELCOR", KAERI/TR-810/97, 1997
5. "Phenomenology and Course of Severe Accidents in PWR Plants-Training by Teaching and Demonstration", M. Sonnenkalb, 2nd OECD Specialist Meeting on Operator Aids for Severe Accident Management, Lyon, France, Sept. 9-10, 1997
6. "Use of MAAP-GRAAPH for training of Borssel NPP Plant Operators", P.J.T. Bakker, KEMA, SAMOA-2 Meeting Lyon, France, Sept. 9-10, 1997
7. Modernization and Restructuring of Realistic Thermal-Hydraulic System Analysis Code, RELAP5/MOD3.2.1.2, NTHAS98, Pusan, Korea, Oct. 21-24, 1998
8. A Multi-Dimensional Thermal-Hydraulic System Analysis Code, MARS 1.3.1, Vol31, Number 3, pp. 344-363, June 1999
9. Development of a GUI-Based Retran Running Environment, Retran Newsletter, Nov. 2000
10. KAERI/TR-1564/00,
11. MELCOR, KAERI/TR-2078/02
12. KAERI/TR-2072/02
13. Development of Severe Accident Management and Training Support System, Annals of Nuclear Energy 29(2002)2055-2069
14. Development of a Severe Accident Training Simulator : SATS, 2002 ANS Annual Meeting