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Without effort no harvest will be abundant. (Burundian proverb)

Check-List for Commissioning with Braumat

Controlled Document Distribution List

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Original	Stefan Schraner	
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REVISION HISTORY

Ver	Date	Prepared	Checked	Approve	Description
0.1	11.2.201				First issue
0.2	27.3.201				revision

REVISION SUMMARY

Ver	Section	Description
00	all	First issue
02		

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1. Introduction

At the end of a project the time is often rare. A checklist might help for not to forget some points which could cause trouble later.

All these are recommendations and not mandatory!

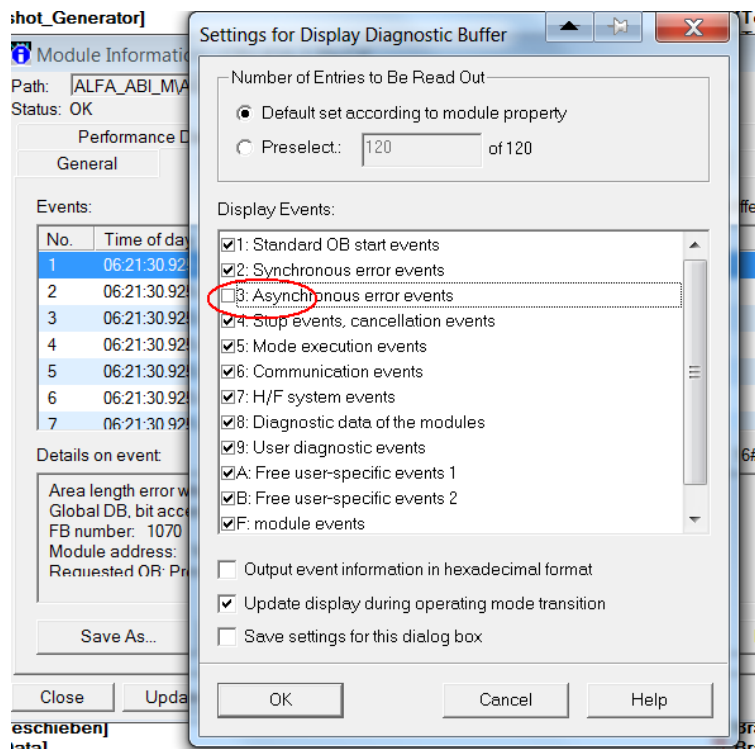
2. Regularly Topics (if programming is ongoing)

To ensure quality and safety, a regular backup is mandatory. Maybe at the weekend when production is down this is possible.

- Braumat: Transfer all DBs from PCU to IOS;
- Simatic-Manager: Backup all Blocks of all PCU.
- Generate new cross-reference for all PCUs
- CPU Error-check all PCUs
- Reorganization of the project
- Clean up not used folder
- Compare all FBs, FCs online / offline
- Check Traceserver (Main-Menu, Diagnostics)

To get the faults, the I/O-Alarms of the CPU can be filtered by removing at Setting “asynchronous” errors. And then the program-errors pop-up.

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3. Interlocks

- Safety first! Double-Check at least these Interlocks
- Human and machine-protection is mandatory by interlock!
- Door-Switches and safety switches, emergency-off: Interlock all relevant elements that can harm human (Inlet-valves, Agitator and Pumps).
- You might switch a lamp on when hot mash is in the vessel (flashing CIP-lamp?). There was an injury by opening of the manhole with hot mash inside.
- A pump may not run without liquid. Check valves and level.
- Steam-valves must have liquid in the vessel or in the pipe to avoid overheating.
- Close the inlet-valve and pump if the tank is full for to avoid overflowing
- Product and CIP is interlocked?

In the Steps you should program, that Outputs for dosing are switched off, if the next-Step-condition is a counter or time. If not, if somebody put the sequence to A- there will be overdosing and may be destroy of the vessel.

Program like this:

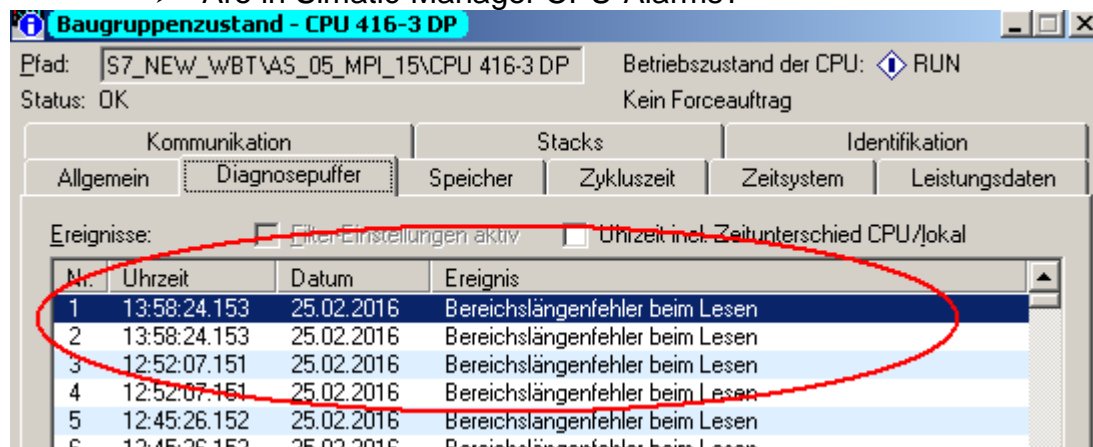
A M 102.1 //Release Step-on condition

AN M 102.3 //last Run GOP

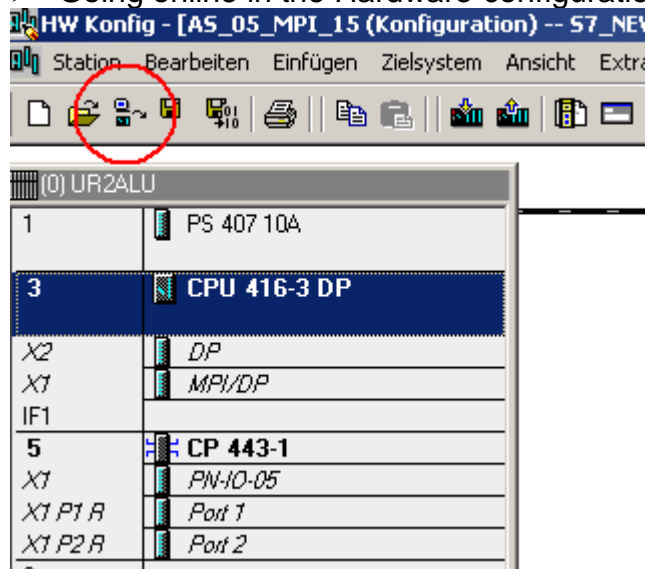
= M 128.0 //here the according Outputs...

4. Hardware

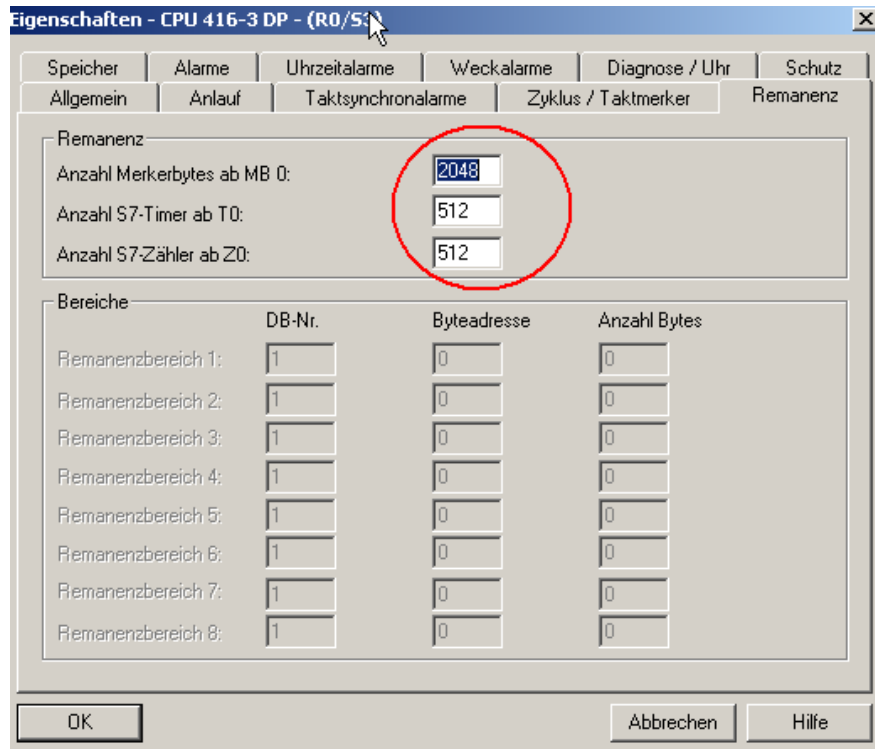
➤ Are in Simatic-Manager CPU-Alarms?



➤ Going online in the Hardware-configuration without Error-Message?



➤ Are all needed flags remanent? That is very important, otherwise all Sequences are off after a PCU-Restart!



Compare Software

5. Improve Operator-handling

The handling of the system can be improved by switching as much as possible to automatic with start of production.

If the sequence starts you can switch automatically to A+
In the Unit FB 100x program:

```
A M 102.4 // "SEQU_Start"
S DB725.DBX 102.0 // "SEQ" . U.STATUS.boSeq_Held
R DB725.DBX 103.2 // "SEQ" . U.STATUS.boMan
```

Optional switch with the "Hold-Button" optional with A- the Pump and critical parts off

You can use the S88-Buttons (not available? Change in c:\windcs\sys\seqctrl.ini:
[MainWin]; EOPAdmin=255 and restart Braumat) for this function



Program like this:

```
O DB725.DBX 110.1 // "SEQ".U.CTRL.boHeld
R M 167.1 // "1904P03_CA" // all associated pumps etc ;
And more _CA-Signals involved in the Unit
```

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This should be programmed in the Sequence-FB at the end (action after GOP was running).

Does the Step-monitoring-time and waiting-time stops with Hold?

A restart of the times is not really mandatory and has to be done manually.

The PID and 3-Step-Controller should be switched to "Auto" and "External" with Sequence-start

Program-example in the Unit-FB 100x:

PID in Version < 7:

```
A M 102.4 // "SEQU_Start"
R DB730.DBX 366.0 // "PID".au[1]. BoA_H
R DB730.DBX 366.2 // "PID".au[1]. BoE_I
```

PID in Version >= 7:

```
A M 102.4
R DB730.DBX 409.0 // "PID".au[1].xManualMode
R DB730.DBX 409.2 // "PID".au[1].xInternalMode
```

Do the same for 3-Step-controller, if used.

Switch at start sequence the associated ICM Group to Automatic;

```
A M 102.4 // "SEQU_Start"
R M 712.0 //Manual Start Gr. 1
```

If these manual-groups are "0", this can be done explicitly in the data-set of the ICM.

6. Regenerate Alarms corresponding to the Unit at Start-up

In order to have the active Alarms corresponding to the Unit at Start of the Sequence, program like this at the end of the according Unit-FB 100x (after EOP-processing):

```
A M 102.4 // "SEQU_Start"
R M 888.0 //Alarm x
```

With this you also reset the flashing Alarm-Symbols of the Unit

PID in Version < 7:

```
A M 102.4 // "SEQU_Start"
R DB725.DBX 101.4 // R "SEQ".u.STATUS.boMsgError
R DB725.DBX 101.5 // R "SEQ".u.STATUS.boMsgProc
R DB725.DBX 101.6 // R "SEQ".u.STATUS.boMsgRCS
R DB725.DBX 103.2 // "SEQ" . U.STATUS.boMan
R DB725.DBX 103.5 // R "SEQ".u.STATUS.boMsgSystem
R DB725.DBX 103.6 // R "SEQ".u.STATUS.boMsgWarning
R DB725.DBX 103.7 // R "SEQ".u.STATUS.boMsgOperating
```


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PID in Version >= 7:

```
A M 102.4 // "SEQU_Start"
R DB725.DBX 601.4 // "SEQ".au[1].STATUS.boMsgError
R DB725.DBX 601.5 // "SEQ".au[1].STATUS.boMsgProc
R DB725.DBX 601.6 // "SEQ".au[1].STATUS.boMsgRCS
R DB725.DBX 603.2 // "SEQ".au[1].STATUS.boMan
R DB725.DBX 603.5 // "SEQ".au[1].STATUS.boMsgSystem
R DB725.DBX 603.6 // "SEQ".au[1].STATUS.boMsgWarning
R DB725.DBX 603.7 // "SEQ".au[1].STATUS.boMsgOperating
```

7. Clean up

Make a clean up of the programs, going through all the code, inserting comments and removing redundant Software. It's sometimes amazing what will be found by this. But do this not at the last days!

You can increase the performance by reducing the number of instances for example for the sequences measurements, PID, ICM to the number needed.

Measuring range of Analog input should be the same as the PID XANF and XEND, correct?

It is possible to call the weekly-trend from the process-picture. How it can be done you find in the Manual. Most easy it can be done with week-curves.

8. Call the according process images

In the sequence-overview you can call the according process images with key "F2"?

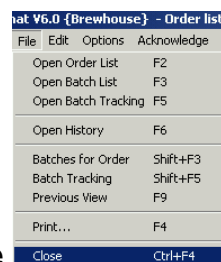


Modify the file \windcs\pcu.00x\texte\KETTBLD.TXT.

Line 1 corresponds to Unit 1 and the picture-name with extension .bik.

9. Order-system

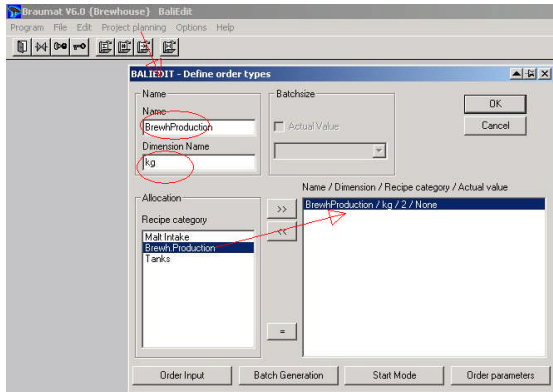
Define Recipe-Types in the Order-System. This is mandatory for the graphical recipe system online.



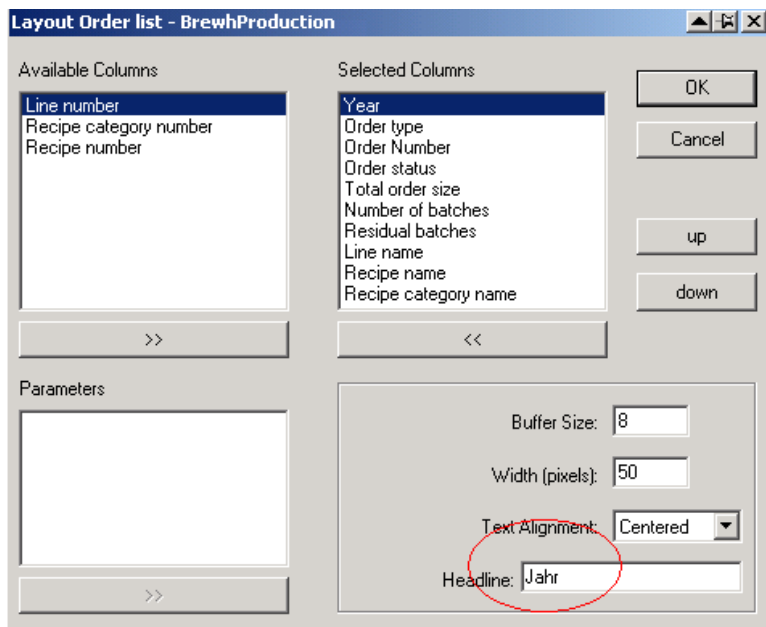
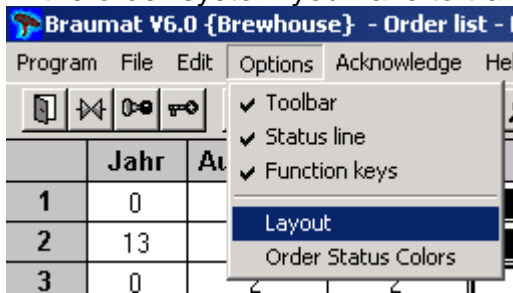
For this first make file close

Then project-planning, order-types. Make these settings for each Recipe-Type.

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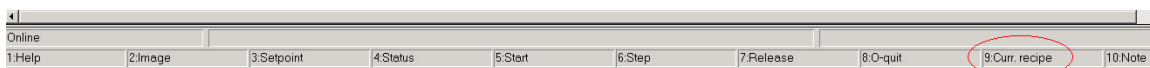
In the order-system you have to translate some text-file in here (Layout)



Here you can also define the columns needed in here

10. Graphical-recipe

You can activate the Graphical-recipe with key "F9" in the Sequence-Overview?



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If that does not work, the recipe types must be created in the order system.

11. Maximum number of windows

In order to avoid too many windows being open, you can fix the maximum number of windows in the file d:\windcs\sys\sys.ini.

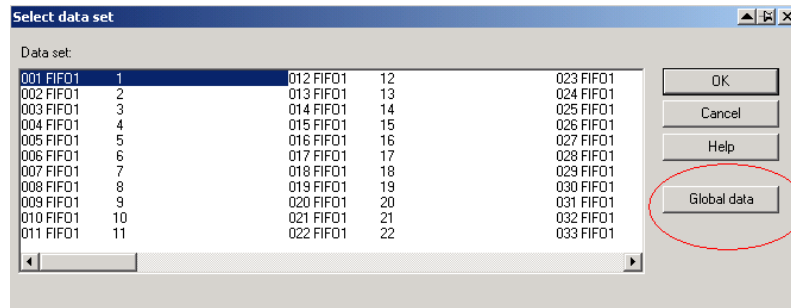
;Maximum account of SSTAR-Windows or 0, when there should be no limit

WndMax=8

Set (max.window) to may be 8 to increase performance.

12. Parameterization

Check the FIFO in the, Global Data. The Fifo is the Database for communication to the Servers.



Standard-Setting:

Fifo 1 (to Server 1) and Fifo 4 (to Server 2): Telegram 3, 7

Fifo 3 (to Server 1) and Fifo 6 (to Server 2): Telegram 5 +6 +14 +18

Use Telegram 7 only if the transTime-Function for time-synchro is not used (send time from IOS to the PCUs). Otherwise it has to be removed.

The Messages are coming from all PCU's to all relevant Servers and Clients?

In PCU_SERV.INI you can list of which PCUs the messages should not come.

Lock one PCU from any IOS (Client) from operation? This functionality is sometimes necessary.

Setting in PCU_SERV.INI , [Trans_NT], NoWrite = <PCU-Nrn.,.....>

Clean the hard disk from old files and Backups

13. Reduce the number of Alarms

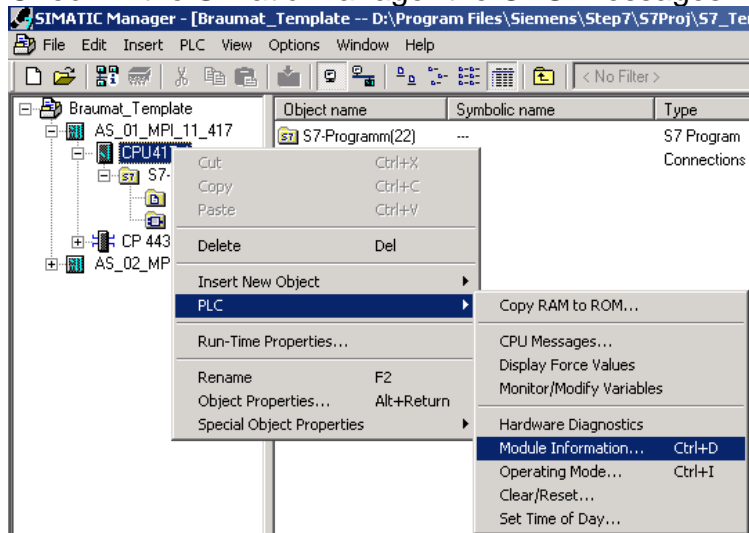
Too many alarms confuse the Operator and let them ignore what is coming. This is not a good situation. In Braumat, Parameterization, DIS_MSG. Here you can disable for example the outgoing messages for that not too many messages are coming up.

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	Name	D.Type	A.Type	Value	Com
1	SPERR0	B1	ENG	0	Message disable user fault
2	SPERR1	B1	ENG	1	Message disable user fault
3	SPERR2	B1	ENG	0	Message disable user mes
4	SPERR3	B1	ENG	1	Message disable user mes
5	SPERR4	B1	ENG	0	Message disable ESG1-err
6	SPERR5	B1	ENG	1	Message disable ESG1-err
7	SPERR6	B1	ENG	0	Message disable MESS-en
8	SPERR7	B1	ENG	1	Message disable MESS-en
9	SPERR8	B1	ENG	0	message lock for unit EOP
10	SPERR9	B1	ENG	0	Message disable ASTA-Stz
11	SPERR10	B1	ENG	0	Message disable ASTA par
12	SPERR11	B1	ENG	0	Message disable PID
13	SPERR12	B1	ENG	0	Message disable unit opera
14	SPERR14	B1	ENG	0	Message disable ESG2-err
15	SPERR15	B1	ENG	1	Message disable ESG2-err
16	SPERR17	B1	ENG	0	Message disable 3-PU

14. Are still Alarms pending?

Check in the Simatic-Manager the CPU-messages which are still pending



Start\Windcs\sys\TraceSvr.exe: are there any errors?

You can check Windows, Administrative Tools, Event Viewer, there are faults?

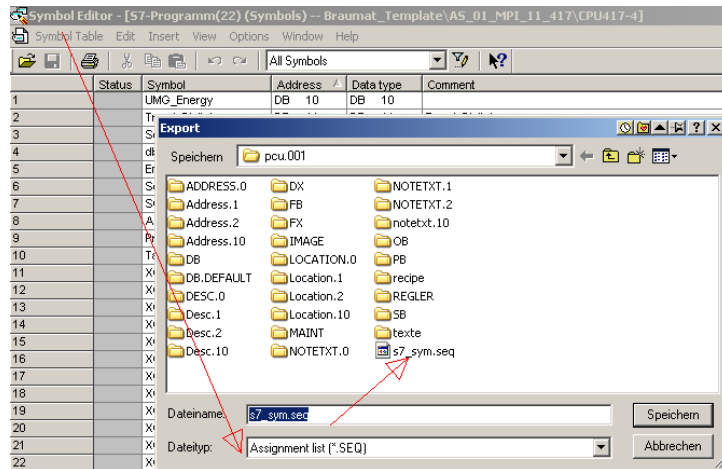
15. Reset the Alarms at the beginning of a Unit

```
A M 102.2
R DB725.DBX 101.4 ///<"SEQ".u.STATUS.boMsgError
R DB725.DBX 103.5 ///<"SEQ".u.STATUS.boMsgSystem
R DB725.DBX 103.6 ///<"SEQ".u.STATUS.boMsgWarning
R DB725.DBX 103.7 ///<"SEQ".u.STATUS.boMsgOperating
```

16. Export assignment-list

Export the new assignment-list from the Simatic-Manager in the format .seq to Braumat PCU.00x\Texte\ s7_sym.seq on all Servers.

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17. Password list

Make a batch-file to distribute the password list, optional assignment-list to all stations. In V7.0 you have a different procedure.

You identify one PC as Password-list-Master?

Distribute this file \windcs\sys\PASSWD.DAT with a batch-file to other servers and clients.

May be like that:

XCOPY D:\WINDCS\ sys\PASSWD.DAT [\\los02\d\windcs\sys /s/e/d/y](#)

18. Recipe-Server switchover

Test the automatic Recipe-Server switchover. Shut down one Server, the second one should start in about 3 minutes?

To enable go to

windcs\sys\recipe.ini

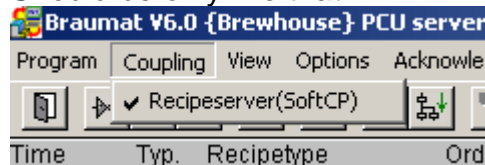
ServerSupervising

Enable server Supervising and automatic server activation = 1

The other preset values are ok.

There should be no way to switch the PCU-Server to simulation!

Should be only like that



If not, you need to edit in windcs\sys\PCU_SERV.INI like that:

Communication types

Type = & RecipeServer , RecipeServer (& SoftCP)

Or &client if client-Mode

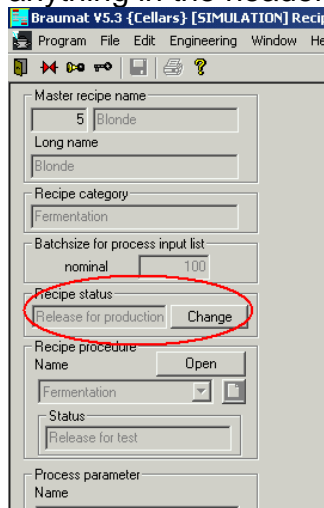
19. Test the automatic switching of clients

to the other server in case of failure of one Server.

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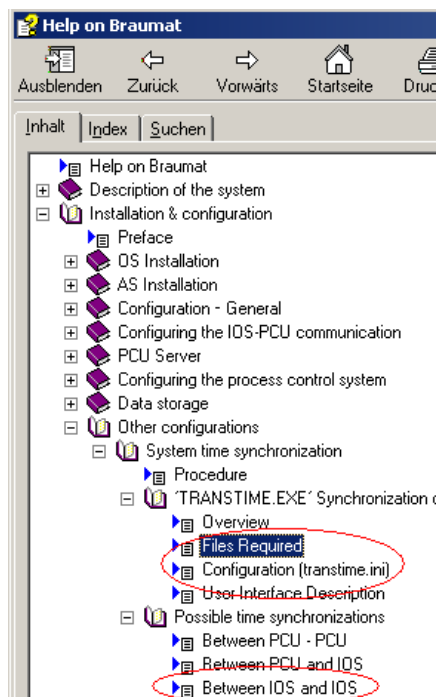
20. Recipe-Status

In the recipe-system set Recipe-Status to "Release for production" for nobody to change anything in the header which can cause problems.



21. Time synchronization

For to synchronize the Data and Time on all Server, Clients and PCU, refer to manual for Details:



For the IOS-synchronization of the time of Windows 7 and higher, additionally make these adjustments.

The group "BRAUMAT" must have the right to "Change the system time"

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How to proceed:

- call "gpedit.msc" call (as administrator)
- Path ... Computer Configuration \ Windows Settings \ Security Settings \ Local Policies \ Open User Rights.
- Open the list of Policies & "Change the system time" with a double click
- In the dialog you can add "Change the system time" now to the BRAUMAT (note: additionally in the search window the Button "Object Types ..." the entry "Groups" must be selected, otherwise the BRAUMAT Group is not accepted).

22. Data-synchronization

During start-up of the Recipe-Server synchronization of the Data-Base is proceeded. Don't interrupt that procedure. Or trigger it from the Menu. The clients don't need to be synchronized.

Synchronize the folder \Symbole manually if you create your own symbols on all servers.

23. Start Trend Manager automatically

Clarify which values should be logged on both Servers. It makes sense to have the same on both servers. You can copy the file d:\windcs\trend\MEASDESC.DBF and d:\windcs\trend\DIGIDESC.DBF to both servers.

Are the trending pictures available on the clients?

The Trend Manager is started automatically with Braumat-Startup?

In V7.x this is managed by the System

In other versions Program change in

\Windcs\sys\Prosched.ini

<Global>

Processes=trendman

<trendman>

Application=c:\windcs\sys\trendman.exe

;Window caption to identify mainwindow

Window=TRENDMAN

;Start this application if not running an check for running

Type=PERMANENT

;At own shutdown, shutdown although this application

ShutDown=1

Then in PCU_Serv.ini

;Start and Check for running of ProcessScheduler "ProSched.exe"

RunProcessScheduler=1

24. Improving the handling for the operators

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Improve the work for the operator by designing a big flashing operator-Symbol in the process-image if there is an operator-request. Link this flag to "OpReq" of the according sequence.

Operator appreciate very much Hot-keys (Strg + 1 etc) for changing the process-pictures. You can minimize the button "image-navigator" very much (invisible), in order to access all relevant process-pictures.

A Hold-Button is mandatory to stop the process in case of critical incidents.

25. Area.ini

The configuration is the same on all computers? You can see that in the Application siteconfig if it shows on all connected PC's a "ok" –sign. If it is a blue hash, then the area-files are not the same and you need to synchronize (by saving the configuration). But don't check the button "Checking PCU-subdirectories".

26. Backup

Compare the FB and FC-Blocks in Simatic-Manager online / offline

Compare the hardware configuration in Simatic-Manager offline / online.

Upload all Data from PCU to IOS with PCU-IOS-File-Transfer. There are Templates for all PCUs

Upload all data from PCU using the Simatic-Manager.

Make sure that there is no production / CIP during the backup.

Or import the DB725 (Units) from an older backup, where no Unit have been active.

Otherwise after a complete reloading CIP and Product might mix, when the wrong programs are started.

A back up which runs automatically f.e. every Friday in the night helps in case the Step-7-CPU gets corrupt. There are tools available!

Hand the Backup of Braumat and Step7 to the customer with Date by a DVD or USB-device, because Production-Server might break. It is not necessary to backup all Clients, one might be enough.

You may also copy the relevant Backup-data of Servers IOS02 to IOS01 and vice versa.

You can make a second copy of \Windcs on the same PC in order to have a fast recovery of Braumat by just renaming the folder. This helps to verify whether the client had changed anything.

Corel Draw or WinCC Background-pictures are stored on the server?

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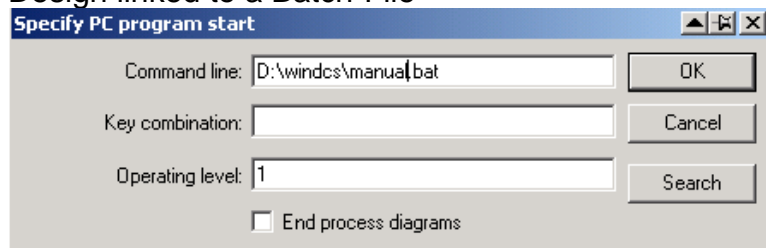
Maybe you can also make a PC backup (by Acronis?). It helps if a new PC needs to be installed.

27. Integrate documents in the System

Maybe there is time to integrate important documents about the Hardware-Modules, Operator-Manual etc. into the system. Export of the Hardware-Configuration from Simatic-Manager is also very useful.

You can access this data for example via a process images.

For to show pdf-files, Word-documents etc. you can specify a PC-Program with Image-Design linked to a Batch-File



In the file "manual.bat" you simply write the name of the according document like start d:\windcs\Manual.doc or start d:\windcs\Manual.pdf

Keep in mind to have the documents on all Servers and Clients. Maybe they can be synchronized by a batch file.

You can make a Process Image with all relevant phone numbers, Email-Addresses, Hotline-numbers for Braumat, FAQ in the Internet in order to have a fast reaction of the Operator in case of big problems. Also you can advise that there are Braumat-trainings available.

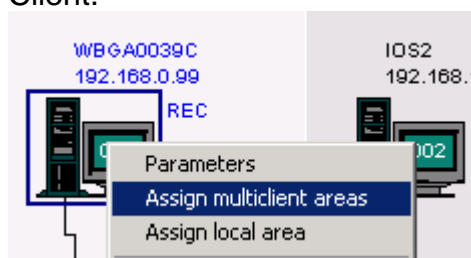
28. Operator Manual

There is an Operator Manual in German, English, Spanish and Romanian available. You may embed them into the system like above.

29. Multi-clients

Does the customer want to have a dedicated Client or Server as Multi-clients, who can see and change all Braumat-Stations in the factory?

You define this in the Site-configuration. A Server or a Client can be defined as Multi-Client.



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All Curves on this Multi-Client

Is it necessary to see all curves on this Multi-Client? You can get a readme for how to configure that.

30. Tools

The following tools could also help others: The Shareware Total Commander with dbf-viewer (plugin from Total Commander).

31. Braumat as a Shell

Start Braumat as a shell (see manual) to avoid interferences of the Operator with windows. Change in the registry HKEY_LOCAL_MACHINE\Software\... Microsoft\Windows NT\... CurrentVersion\Winlogon and there:
Shell (REG_SZ) = d:\windcs\sys\newmenu.exe (if BRAUMAT installed on D:)

32. Simulate Power-failure

You should simulate somehow Power-failure in order to have a proper restart of Server / Client / PLC after complete restart.

33. Report-footer

The customer-name and company is defined in the following files for documentation?
\ Texte.x\ARCH_FRM.TXT , BALIFRM.TXT , BRGRFRM.TXT , BRLIFRM.TXT , KURVFRM.TXT , MAINTFRM.TXT , MELDFRM1.TXT , PARAMFRM.TXT , PTXTFRM.TXT , RECMAFRM.TXT , RECOVFRM.TXT , REZ_LFRM . TXT , SRPROTFR.TXT , WOPFRM.TXT

34. Version

Braumat is upgraded on latest service pack and Hot-fix?

35. Remote Control

Remote Control Setup is clarified and configured? (For example TeamViewer, PCVisit, VNC etc). This depends strictly on the IT-department regulations. Leave the Access-Data for other colleagues who assist the System.

A Sheet with the Braumat-Version, login-Data and procedure for Remote-control, Telephone-numbers of relevant person, cross coupling description with DB 's, DW 's, where is the Backup, helps a lot in case of problems are coming up later .

A short Manual for specific handling of the system might help the staff, especially if new personal is working with the System. For example which Special-Values are relevant for changes etc.

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By the way, try to realize User-Interface always with Special-Values or values in the Images. The user should not need to go to Parameterization for changes.

You may edit the tooltips in the Images to give additional information to the Operators.

36. Unlicensed Software

Remove unlicensed Software for example **MS-Office** if installed. You can replace it by the freeware LibreOffice for example. It is under the GPL-license and thus also free for commercial use.

You can also help with that to create a shift-Protocol for the Operator. These files can be synchronized on all stations by a batch file

Be sure that there is no password after a restart of Windows necessary. If yes it has to be clearly visible and available for all operators.

Point out that the Braumat-Function of maintenance data is very useful tool.

Point out that the S7- CPU batteries must be renewed from time to time.

37. Safety

To avoid virus you can disable the USB-Ports. But keep in mind that may be your mouse and keyboard needs probably USB-Ports! There is some information about that in [here](#) or [here](#).

To avoid calling the Explorer you can rename the file explorer.exe in the windows-folder. But keep in mind that could cause some problems, if not communicated.

If you want to avoid calling Ctrl + Alt + Del look [this](#)