

TINE Studio (RBE\*)

# **VIEWING ARCHIVE DATA**

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\*Real Best Ever

# THE ARCHIVE SYSTEM

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- ✘ Trends of relevant Machine Data
  - + *What is happening on a regular basis ...*
  - + **Properties** of Control System Servers
  - + **Local Histories**
    - ✘ Long-term storage on the server's local file system
    - ✘ Archive depth ~ months
    - ✘ Tolerance filters
      - ★ Absolute and/or relative
  - + **Central Archive Server**
    - ✘ Usually **context specific** (PETRA, DESY2, FLASH ...)
    - ✘ Data is never compromised
      - ★ Never removed from disk
      - ★ Never adulterated (averaged, compressed, etc.)
    - ✘ Numerous filters

# THE ARCHIVE SYSTEM

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## × Event Archive System

+ *What happened at some time due to a defined Event ...*

- × Post-mortem (something bad happened)
- × State change
- × User-defined

+ That's **another presentation!**

## × DAQ

+ *Save everything all the time!*

- × Data mining to find what you're looking for?
- × The **TINE Archive System can help** you out here!



# INTERFACES

## × APIs to the Archive System

+ C, C++

### × `GetArchivedData()`, `GetArhivedDataAsAny()`, ...

```
int GetArchivedDataAsAnyEx ( char *   devsrv,  
                           time_t   start,  
                           time_t   stop,  
                           int       index,  
                           int       sampleRaster,  
                           HstHdr *  dataHdr,  
                           BYTE *    data,  
                           int       dataFmt,  
                           char *    dataTag,  
                           int *     num  
                           )
```

Retrieves archive data as requested in the call (extended form).

This call retrieves archive data from the archiver requested in the call. This call retrieves an archived data set according to the data format given. It differs from `GetArchivedDataAsAny()` in that it allows a specific array index as well as the desired sampling raster to be input.

#### Parameters:

<b>devsrv</b>	[in] must be the keyword-appended full device server name for which the archive data is desired.
<b>start</b>	[in] is the start time input (expressed as a UNIX timestamp) for which the archive data are desired.
<b>stop</b>	[in] is the end time input (expressed as a UNIX timestamp) for which the archive data are desired.
<b>index</b>	[in] is the desired array index to be retrieved. This only applied if the value of index is > 0 and the target data record is an array. In case of multi-channel arrays, the device name generally gives the targeted array element index.
<b>sampleRaster</b>	[in] gives the desired sampling raster for the targeted server to use. if <= 0 the sampling raster is determined by the server in order to best honor the desired time range (and insert any points of interest into the returned data set).
<b>dataHdr</b>	[out] is a pointer to an array to hold the history header information. This is an array of HstHdr objects containing a TINE timestamp (UTC double), a system data stamp (32-bit integer) and the user data stamp (32-bit integer) in one-to-one correspondence with the data array returned.
<b>data</b>	[out] is a pointer to an array of data objects to receive the archive data. This should an array of the desired data format (and large enough to hold the requested data).
<b>dataFmt</b>	[in] is the TINE data format code of the requested data. If this doesn't match the stored format, an attempt will be made to reformat the data. However this will not always be possible and could lead to an error.
<b>dataTag</b>	[in] is the TINE tagged structure tag to be used if the stored data is a TINE tagged structure. If the stored data is not a structure, this parameter is ignored.
<b>num</b>	[in/out] is a pointer to an integer giving (as input) the size of the data buffer which is to receive the archive data, and (as output) which contains the amount of archive data actually returned by the call.

#### Returns:

0 if successful, otherwise a TINE completion code which can be interpreted by a call to `GetLastLinkError()`.

#### Example:

# INTERFACES

## × MatLab

### **tine\_history**

Simply typing 'tine\_history' at the command prompt will generate the 'usage' message shown below:

```
??? Error using ==> tine_history
tine_history usage:
tine_history('/<context>/<server>/<name>[<property>]', 'stop
time', 'depth'[,sampleInterval,index,'acquireSystemStamps'])
'ret' contains array of (timestamp,data) or (timestamp,system stamp,data)
```

We see that there are three required input parameters, namely the targeted endpoint, the 'stop time' (i.e. the most recent requested data point) and the depth of the archive trend.

All parameters are strings. The 'stop time' should be given in a string data format ('dd.mm.yyyy hh:mm:ss') or the string 'now' to refer to the current time. The 'depth' is a string beginning with a number and followed by a representative unit of time ('days','hours','minutes', etc.)

Optionally one can specify a 'sampling interval'. If this is '0' or less then the targeted server will determine a suitable sampling raster so that the returned data cover the desired time interval. Internally a maximum of 8000 data points will be returned. Thus for a large time interval it could happen that stored data points are 'skipped' in order to supply data throughout the requested range. If this is not the desired behavior, an explicit sampling interval can be provided. To avoid skipping any points a value of '1' should be passed (default = '0'). One can also optionally specify an array 'index' as the 5th parameter. If this value is greater than '0' then the specific array index will be selected from the any archive record that refers to an array. In the case of multi-channel arrays, this parameter is usually not necessary as the the device name will determine the array index (default = '0'). Finally one can optionally indicate in the 6th parameter whether or not to return associated 'system stamps' with the archive data. In most cases one is interested in data versus a timestamp. As most data are also archived along with the accompanying system stamp, it could be useful to retrieve this information as well. The system stamp might refer to a 'cycle number', 'pulse number', or 'shot number' depending on the nature of the accelerator. The timestamp returned is the MatLab time (and not UTC).

The targeted end point can be a specific server, in which case the 'local history' is obtained directly from the server (if it is available!), as in:

```
>> format long
>> tine_history('/PETRA/Idc/Buffer-0[I]', 'now', '1hour')

ans =

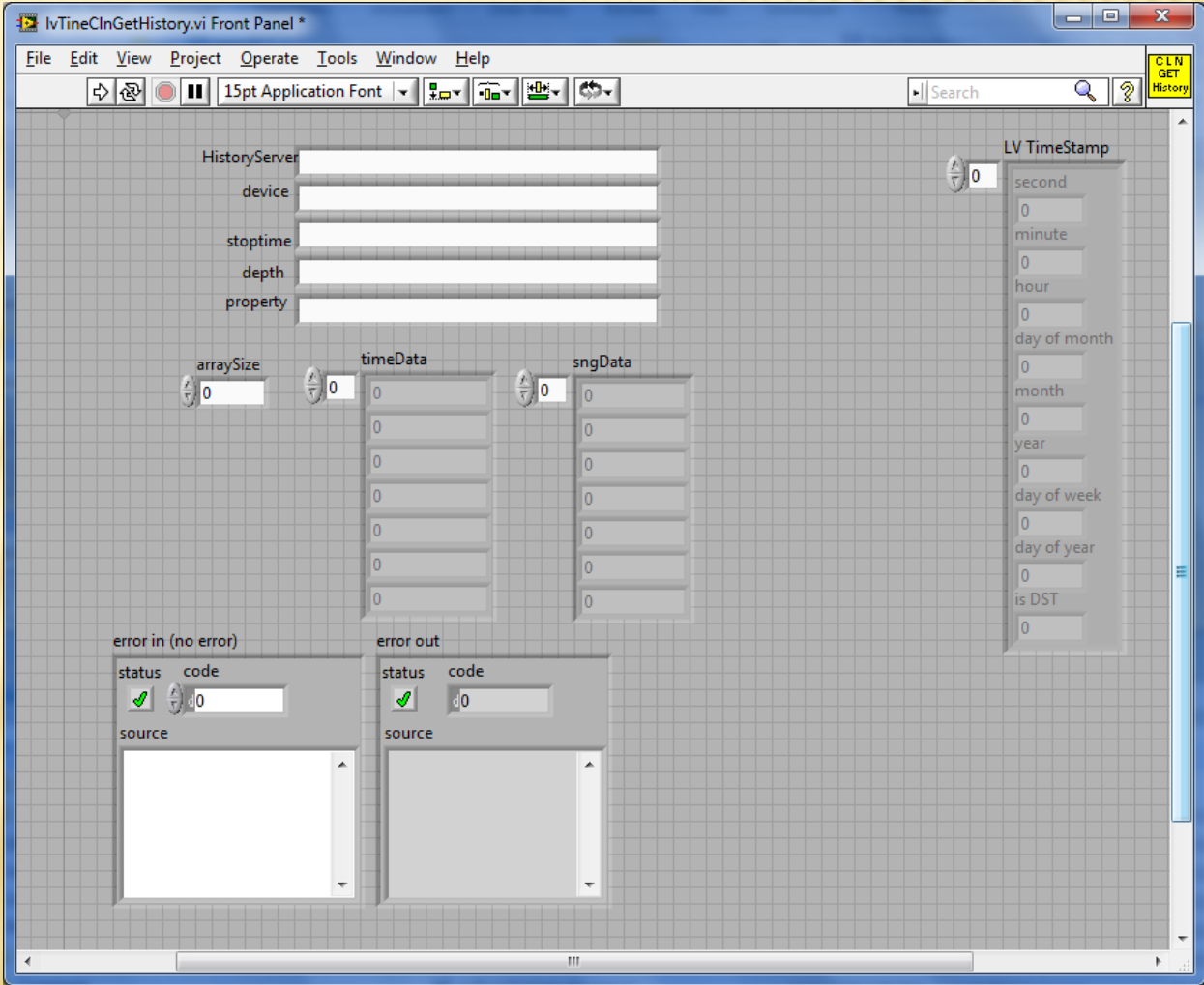
1.0e+005 *

7.354026290012483    0.001006214523315
7.354026290140839    0.001006183395386
7.354026290370469    0.001006119766235
7.354026290498942    0.001006123504639
7.354026290728571    0.001006073532104
7.354026290958316    0.001006025466919
```

Note that as the number involved are large it is frequently useful to make use of the 'format long' specification in MatLab

# INTERFACES

## ✗ LabView:





# INTERFACES

## × Command Line:

### **thistory**

Typing 'thistory' at the command line will produce the following output:

Retrieves a stored archive data for the keyword and device specified  
Data can be obtained from a central archive server or from a local history,  
depending on how the context and keyword are specified.

A simple keyword along with a context will contact the central archive  
server for the context.

e.g. thistory thistory HERA HPDCCur now 1hour

The history depth can be specified in hours, days, weeks, or months and  
is parsed as

<number><time unit>

The history target time can be 'now', a valid unix timestamp, or a date  
and time string in the form

<day>.<month>.<year>\_<hour>.<minute>.<second>

where all entries except <day> are optional from right to left.

e.g. thistory HERA HPDCCur 31.05.2006 1day  
or thistory HERA HPDCCur 31.05.2006\_12:00:00 1hour

A local history can be obtained by specifying the target device server  
along with the context (with a leading "/")

e.g. thistory /HERA/HEEKOLLI SOLLWERT HESL66i 31.05.2006 1day

A history snapshot of an array record at a specific time can be obtained  
by specifying 'snapshot' as the depth parameter.

e.g. thistory /HERA/HEPBPM ORBIT.X #1 7.06.2006\_12:00:00 snapshot

returns the array data record stored at or after noon on June 7th 2006.  
The timestamp of the record found is always displayed along with the data.

Usage : thistory <context> <keyword> <device name> <stop time> <depth>

# INTERFACES

## ✘ Java:

### + THistory.getArchiveData() + overloads ...

```
static int de.desy.tine.histUtils.THHistory.getArchiveData ( String context,
String server,
String property,
String device,
double start,
double stop,
TCompoundDataObject[] data,
THistorySource src,
int timeout
) [static]
```

Retrieves an archive data set.

Retrieve an archive data set (value - timestamp pairs) for the target property and device given and over the time range specified. Both the central archive and local archive are queried for the number of stored points over the interval. Data are usually retrieved from the central archive system if there are at least 500 points over the time interval in question. Otherwise the local archive system is used. By examining the THistorySource object one can see which source was chosen and how many points both sources have over the interval. For dedicated retrieval from one source or the other, please use an overloaded method which does not take the THistorySource parameter!

#### Parameters:

- context** is the desired context
- server** is the device server which manages the archived parameter. If null then the central archive will be queried for the property and device
- property** is the desired archived property
- device** is the desired device name
- start** is the start time in seconds (UTC double, a TINE timestamp)
- stop** is the stop time in seconds (UTC double, a TINE timestamp)
- data** is a reference to a (doublet) data array object to contain the returned data. This can be one of FLTINT[], DBLDBL[], NAME64I[], and so on. The array should be dimensioned to the maximum number of points desired (effectively determining a raster over which the archived data will be distributed). The reference object can also be an array of HISTORY[] object instances, which have been constructed with the desired data type (usually a compound data type) to be returned. The src parameter will give the exact number of points actually stored over the interval specified. The number of points returned in the call will often be less than array dimension and less than the exact number of points stored over the interval.
- src** is a reference to a THistorySource object to receive the history source information.
- timeout** gives the number of milliseconds to wait for the call to complete (usually 1000 is sufficient).

#### Returns:

0 upon success or a TINE error code.



# ARCHIVE VIEWER USES JAVA API

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- ✗ Always checks 2 data sources
  - + Local and central archives
    - ✗ Check number points in interval
    - ✗ If Central has > 500 points use it !
    - ✗ Else use source with most points.
- ✗ Optical zooming
  - + There's a raster !
  - + BUT: there are points of interest !
  - + n.b. The archive API also allow a 'fill and increment' strategy (where sample raster = 1).
- ✗ Array Records and Snapshots
  - + Waveforms (Spectra) and Multi-Channel Arrays
  - + Snapshots: history of record at a specific time

# DATA ACQUISITION

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## × Central archive:

- + Monitors data in **TIMER** mode (default)
- + BUT can receive '*scheduled*' data.
- + A Record can be **bound** to another Record
  - × *“archive me too, when you archive him”*
- + Meta Info can be **associated**
  - × *Device names for Record A are the same for Record B.*

## × Local archive:

- + Monitors data in **TIMER** mode
- + Can be *scheduled!*
- + Equipment Module always sees the **CA\_HIST** access flag.

# ARCHIVE DATABASE MANAGER

Archive Database Manager: PETRA

File Configurations Navigate Options Help

### Database Entries

Index	Active	Device Server	Device Name	Device Property
59	ENABLED	Cms.PsGroup	PeMain	Strom.Soll
60	ENABLED	Cms.PsGroup	EwCorr	GroupDevices
61	ENABLED	Cms.PsGroup	EwCorr	Strom.Ist
62	ENABLED	Cms.PsGroup	EwCorr	Strom.Ims
63	ENABLED	Cms.PsGroup	EwCorr	Strom.Soll
64	ENABLED	Cms.PsGroup	EwMain	GroupDevices
65	ENABLED	Cms.PsGroup	EwMain	Strom.Ist
66	ENABLED	Cms.PsGroup	EwMain	Strom.Ims
67	ENABLED	Cms.PsGroup	EwMain	Strom.Soll
74	ENABLED	NEG.ABSCHNITTE	#0	GpDruck.NAM
75	ENABLED	NEG.ABSCHNITTE	#0	GpDruck
76	ENABLED	NEG.STROMKREISE	#0	CAct.NAM
77	ENABLED	NEG.STROMKREISE	#0	CAct
78	ENABLED	NEG.STROMKREISE	#0	VAct
81	ENABLED	LBRENV.RPT	BPM_SWR_13	SA_X
82	ENABLED	LBRENV.RPT	BPM_SWR_13	SA_Y
83	ENABLED	LBRENV.RPT	#0	DEVICES
84	ENABLED	TermoLogger	#0	TERMOLOG_ARRAY
85	ENABLED	TermoLogger	#0	DEVICES
86	ENABLED	VAC.ION_PUMP	SEK.*	P.MEAN
87	ENABLED	VAC.ION_PUMP	SEK.*	P.MEAN
88	ENABLED	Kicker	Kicker1_Inj	DelayAllARC
89	ENABLED	Kicker	#0	DEVICES
90	ENABLED	Kicker	Kicker1_Inj	HVall
91	ENABLED	P3PiloProxy	#0	Status
92	ENABLED	P3PiloProxy	#0	Name
93	ENABLED	EwPiloProxy	#0	Status
94	ENABLED	EwPiloProxy	#0	Name
95	ENABLED	P3WdwProxy	#0	Status
96	ENABLED	P3WdwProxy	#0	Name
97	ENABLED	EwWdwProxy	#0	Status
98	ENABLED	EwWdwProxy	#0	Name
119	ENABLED	P3MagTempProxy	#0	Temperature
120	ENABLED	P3MagTempProxy	#0	Name
121	ENABLED	P3MDTTempProxy	#0	Temperature

Reload DB Write DB

Index: 82 Tweak Clone New Add MCA Names

**Data Collection Configuration**

**Device Context:** PETRA **Device Server:** LBRENV.RPT

**Device Name:** BPM\_SWR\_13 **Device Property:** SA\_Y

**Format:** FLOAT **Array Size:** 227 **Input Format:** NULL **Data Input:**

**Filtering of Data Storage:**

NEVER  ONCE  ALWAYS  FAST

SLOW  FIXTIME  HRT  STATUS

VOLATILE  NOPOI  BEAM  RUNNING

**Access Rate:** 1000 ms

**Archive Heartbeat:** 900 sec

**Property Viewing Configuration** archive only when machine is running

Orbit.Y, FLOAT, 227, nm, 2000000.0, -2000000.0, 25000.0, 0.0, LIN, 1.0, 0.0, , Orbit.X.NAM, , Diagnostics

Maximum size [bytes]: 908 Remaining elements: 0

Keyword	Data Format	Size	Units	Max	Min
Orbit.Y	FLOAT	227	nm	2000000.0	-2000000.0

**Abs. Tolerance:** 25000.0 **Rel. Tolerance:** 0.0 **Plot Style:** LIN **Offset:** 0.0 **Scale:** 1.0

**Description:** **Subsystem:** Diagnostics  Associate: Orbit.X.NAM

Bind To:  Spectrum Axis:

Apply Add Remove



# ARCHIVE DATABASE MANAGER

Archive Database Manager: PETRA

File Configurations Navigate Options Help

### Database Entries

Index	Active	Device Server	Device Name	Device Property
571	ENABLED	UNDBPOS	Zelle0	Yangle.NAM
572	ENABLED	UNDBPOS	Zelle0	Yangle
575	ENABLED	Petra3_P09vil.CDI	KW_FROND_1_E	DURCHFLUSS_OUT.NAM
612	ENABLED	Undulator	PU00	Gap
613	ENABLED	Undulator	PU00	Gap.NAM
614	ENABLED	Undulator	PU00	Taper
615	ENABLED	Petra3_P10vil.CDI.SRV	BS_0_S_V	P10
616	ENABLED	Petra3_P10vil.CDI.SRV	#0	P10.NAM
617	ENABLED	MPU_FEC	#0	Output_ARV
618	ENABLED	MPU_FEC	#0	Output_ARV.NAM
619	ENABLED	MPU_FEC	#0	Output_MIN
620	ENABLED	MPU_FEC	#0	Output_MAX
623	ENABLED	Petra3_P08vil.CDI.SRV	#0	P08
624	ENABLED	Petra3_P08vil.CDI.SRV	#0	P08.NAM
626	ENABLED	Petra3_P03vil.CDI.SRV	#0	STELLUNG.NAM
630	ENABLED	SpsInfo	P00	BufferPressureBandAlarm
632	ENABLED	SpsInfo	P00	HeaterPowerOutput
634	ENABLED	SpsInfo	P00	HPBufferNitrogenLevel
636	ENABLED	SpsInfo	P00	IonPumpsControlReset
637	ENABLED	SpsInfo	P01	IonPumpsControlVoltage
638	ENABLED	SpsInfo	P00	MainVesselNitrogenLevel
640	ENABLED	SpsInfo	P00	MeasuredCoolingPower
642	ENABLED	SpsInfo	P00	NitrogenBufferPressure
644	ENABLED	SpsInfo	P00	NitrogenFeedPressure
646	ENABLED	SpsInfo	P00	NitrogenFeedTemperature
648	ENABLED	SpsInfo	P00	NitrogenFlowRate
650	ENABLED	SpsInfo	P00	NitrogenPumpSpeedSetting
652	ENABLED	SpsInfo	P00	NitrogenReturnTemperat...
654	ENABLED	SpsInfo	P00	ObjectiveTemperature
656	ENABLED	SpsInfo	P00	ObjectiveTemperatureSP
658	ENABLED	SpsInfo	P00	PressureDifference
660	ENABLED	SpsInfo	P01	PrUsvBatAlarm
661	ENABLED	SpsInfo	P01	PrUsvBatCharge
662	ENABLED	SpsInfo	P01	PrUsvNormalOperation
663	ENABLED	SpsInfo	P00	PumpMotorSpeedOutput

Reload DB Write DB

Index: 612 Tweak Clone New Add MCA Names

### Data Collection Configuration

**Device Context:** PETRA **Device Server:** Undulator

**Device Name:** PU00 **Device Property:** Gap

**Format:** FLOAT **Array Size:** 16 **Input Format:** NULL

**Filtering of Data Storage:**

NEVER  ONCE  ALWAYS  FAST

SLOW  FIXTIME  HRT  STATUS

VOLATILE  NOPOI  BEAM  RUNNING

**Access Rate:** 1000 ms

**Archive Heartbeat:** 900 sec

### Property Viewing Configuration

Undulator.Gap.Test,FLOAT,1,mm,220.0,9.5,1.0,0.0,LIN,1.0,0.0,Gap Width in mm,,Experiments

Undulator.Gap,FLOAT,15,mm,220.0,9.5,0.01,0.0,LIN,1.0,0.0,Gap Width,,Experiments

Maximum size [bytes]: 64 Remaining elements: 0

Keyword	Data Format	Size	Units	Max	Min
Undulator.Gap	FLOAT	15	mm	220.0	9.5

**Abs. Tolerance:** 0.01 **Rel. Tolerance:** 0.0 **Plot Style:** LIN **Offset:** 0.0 **Scale:** 1.0

**Description:** Gap Width **Subsystem:** Experiments  Associate:

Bind To:   Spectrum Axis:

Apply Add Remove

# ARCHIVE DATABASE MANAGER

The screenshot displays the 'Archive Database Manager: PETRA' application. The main window shows a table of data with columns for 'Index', 'Status', 'Name', 'Device Name', and 'Description'. A 'Filters Editor' window is open, showing a list of filters for 'PETRA'. The 'Filters Editor' window has a 'Tag' dropdown set to 'BEAM' and a 'Description' field containing 'archive only with beam in the machine'. The 'Keyword' is 'CurDC', 'Valid min' is '0.05', 'Valid max' is '1.0E10', and 'Valid text' is 'MATCH'. There are 'New', 'Edit', 'Remove', and 'Close' buttons in the 'Filters Editor' window.

The main window has a menu bar with 'File', 'Configurations', 'Navigate', 'Options', and 'Help'. The 'Filters Editor' window is open over the 'Configurations' menu. The main window has a table with the following data:

Index	Status	Name	Device Name	Description
3	ENABLED	Idc	#0	
12	ENABLED	BunchScope	#0	
13	ENABLED	BunchScope	#0	
19	ENABLED	ALARMSTATE	#0	
20	ENABLED	ALARMSTATE	#0	
21	ENABLED	ALARMSTATE	#0	
22	ENABLED	ALARMSTATE	#0	
23	ENABLED	BunchScope	#0	
24	ENABLED	Bunche_EWeg	IMA-E03	bunchPartices9
26	ENABLED	Bunche_EWeg	#0	BunchPartices9.NAM
28	ENABLED	GlobalsCollector	keyword	MachineStateText
29	ENABLED	GlobalsCollector	keyword	BeamPermissionText
30	ENABLED	GlobalsCollector	keyword	MagnetCurrentPermissio...
38	ENABLED	BunchScope	#0	Bunch.N
39	ENABLED	GlobalsCollector	#0	Energy
40	ENABLED	VAC.ION_PUMP	*	P
41	ENABLED	VAC.ION_PUMP	*	P
47	ENABLED	Idc	#0	Ladung
48	ENABLED	Cms.PsGroup	PeCorH	Strom.Ist
49	ENABLED	Cms.PsGroup	PeCorH	Strom.Ims
50	ENABLED	Cms.PsGroup	PeCorH	Strom.Soll
51	ENABLED	Cms.PsGroup	PeCorH	GroupDevices
52	ENABLED	Cms.PsGroup	PeCorV	GroupDevices
53	ENABLED	Cms.PsGroup	PeCorV	Strom.Ist
54	ENABLED	Cms.PsGroup	PeCorV	Strom.Ims
55	ENABLED	Cms.PsGroup	PeCorV	Strom.Soll
56	ENABLED	Cms.PsGroup	PeMain	GroupDevices
57	ENABLED	Cms.PsGroup	PeMain	Strom.Ist
58	ENABLED	Cms.PsGroup	PeMain	Strom.Ims
59	ENABLED	Cms.PsGroup	PeMain	Strom.Soll
60	ENABLED	Cms.PsGroup	EwCorr	GroupDevices
61	ENABLED	Cms.PsGroup	EwCorr	Strom.Ist
62	FNARI FD	Cms.PsGroup	FwCorr	Strom.Ims

The main window has 'Reload DB' and 'Write DB' buttons at the bottom. The 'Filters Editor' window has 'New', 'Edit', 'Remove', and 'Close' buttons. The 'Property Viewing Configuration' window has 'Apply', 'Add', and 'Remove' buttons.

# LOCAL HISTORY CONFIGURATIONS

Archive Viewer: DESY2 Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

**Add To Local History**

**Any editorial changes will be lost upon the next server restart. Please notify the responsible parties if your edits need to be made permanent!**

Context: DESY2

Server: D2BPMs

Device: MON1

Property: liveSynchCntInt

Data Size: 24

Format: INT32

Depth Long (months): 1

Depth Short (ring buffer): 600

Heart Beat (seconds): 1800

Polling Interval (msec): 1000

Archiving Interval (msec): 1000

Relative Tolerance: 0

Absolute Tolerance: 0

OK Cancel

Time: UTC: System: Live: System:

Status	Property [Device]	Value
--------	-------------------	-------

Device Name: MON1

Selected Bit: ALL

Add Selected Add All

Add Devices Add Subdevices

Add To History

Refresh All Remove Selected Remove All

History Mode Live Mode

16:33:36: Devices loaded.

This will dump the new history manifest file, hstmf.csv, at the server !

Then: copy hstmf.csv -> history.csv !  
*(if the server uses 'history.csv' configuration)*



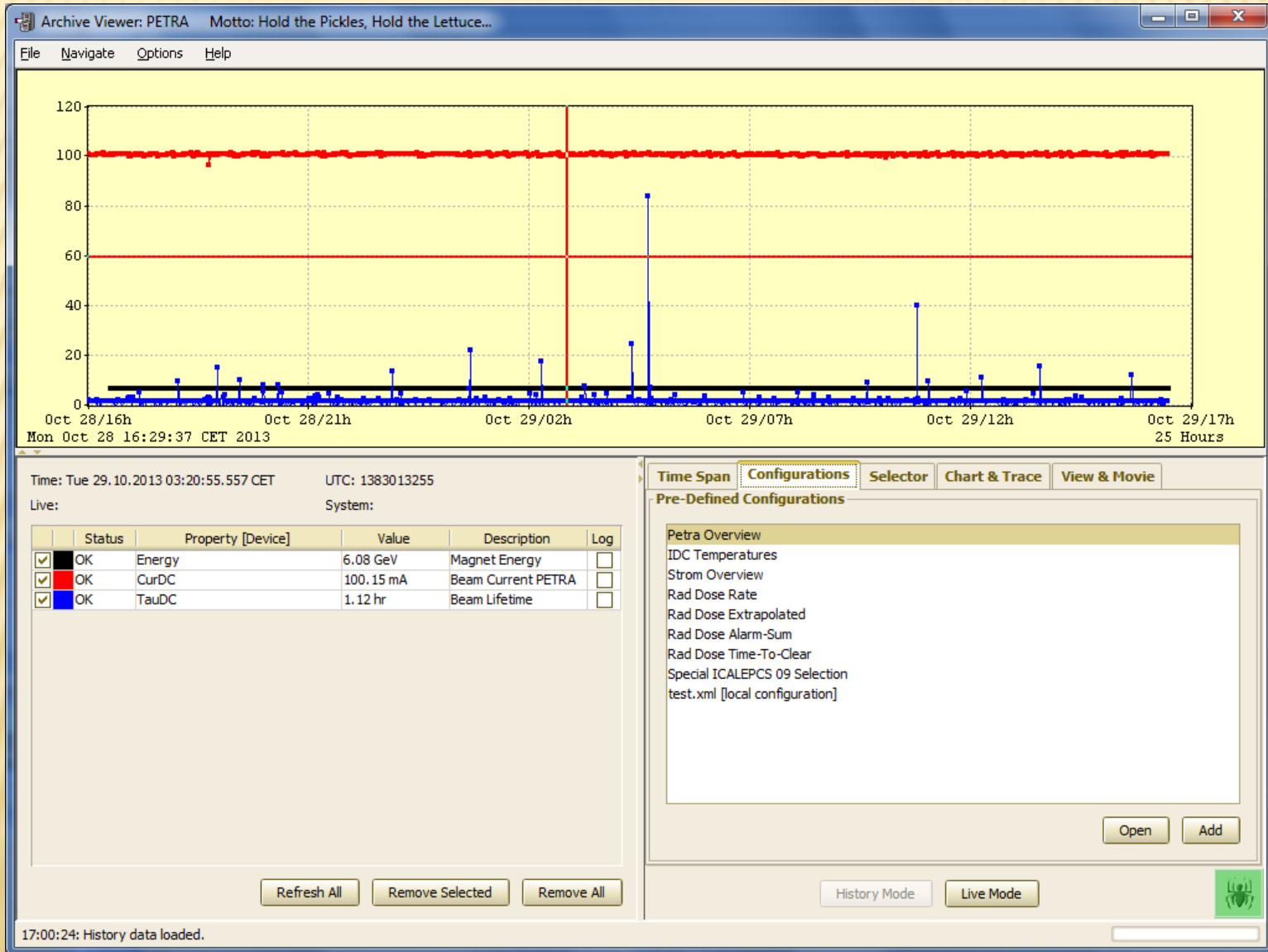
# ARCHIVE VIEWER

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## × Feature Rich !!!

- + The application with 1 and only 1 feature can probably be made '*bug free*'
  - × `printf("hello world\n");`
- + The application with N features has at least  $2^N$  ways of introducing bugs even if each feature has been fully tested individually.
  - × Probably more like  $N! * 2^N$
- + => we will probably find a few things to report to **cosylab** !

# ARCHIVE VIEWER



# ARCHIVE DATABASE MANAGER

**Archive Database Manager: PETRA**

File Configurations Navigate Options Help

Filters Editor  
Archive Viewer Config Editor  
Multi-Channel Config Editor  
Trace Config Editor

ID	Status	Name	Subsystem
575	ENABLED	Petra3_P09vil.CDI	KW_
612	ENABLED	Undulator	PU00
613	ENABLED	Undulator	PU00
614	ENABLED	Undulator	PU00
615	ENABLED	Petra3_P10vil.CDI.SRV	BS_0
616	ENABLED	Petra3_P10vil.CDI.SRV	#0
617	ENABLED	MPU_FEC	#0
618	ENABLED	MPU_FEC	#0
619	ENABLED	MPU_FEC	#0
620	ENABLED	MPU_FEC	#0
623	ENABLED	Petra3_P08vil.CDI.SRV	#0
624	ENABLED	Petra3_P08vil.CDI.SRV	#0
626	ENABLED	Petra3_P03vil.CDI.SRV	#0
630	ENABLED	SpsInfo	P00
632	ENABLED	SpsInfo	P00
634	ENABLED	SpsInfo	P00
636	ENABLED	SpsInfo	P00
637	ENABLED	SpsInfo	P01
638	ENABLED	SpsInfo	P00
640	ENABLED	SpsInfo	P00
642	ENABLED	SpsInfo	P00
644	ENABLED	SpsInfo	P00
646	ENABLED	SpsInfo	P00
648	ENABLED	SpsInfo	P00
650	ENABLED	SpsInfo	P00
652	ENABLED	SpsInfo	P00
654	ENABLED	SpsInfo	P00
656	ENABLED	SpsInfo	P00
658	ENABLED	SpsInfo	P00
660	ENABLED	SpsInfo	P01
661	ENABLED	SpsInfo	P01
662	ENABLED	SpsInfo	P01
663	ENABLED	SpsInfo	P00

Reload DB Write DB

**Archive Viewer Configuration Editor**

Petra Overview

- IDC Temperatures
- Strom Overview
- Rad Dose Rate
- Rad Dose Extrapolated
- Rad Dose Alarm-Sum
- Rad Dose Time-To-Clear
- Special ICALEPCS 09 Selection

Reload Configuration

Configuration Navigation

Context: PETRA Selected Configuration: Petra Overview

Archive Group: CENTRAL

Reload All New Remove Rename

Configuration Settings

Device Context: PETRA Device Server: HISTORY

Device Name: #0 Property Name: Energy

Index: 0 Sub Index: 0 Scale: 0.0 Offset: 0.0

Max: 0 Min: 0 Units:

Description: Plot Style: LIN Draw Mode: PolyLine

Edit New Remove

Save Changes Re-Initialize Server

Maximum size [bytes]: 64 Remaining elements: 0

Keyword	Data Format	Size	Units	Max	Min
Undulator.Gap	FLOAT	15	mm	220.0	9.5

Abs. Tolerance	Rel. Tolerance	Plot Style	Offset	Scale
0.01	0.0	LIN	0.0	1.0

Description: Gap Width Subsystem: Experiments

Associate:

Bind To:   Spectrum Axis:

Min Max Units

Apply Add Remove



# ARCHIVE VIEWER

The screenshot displays the 'Archive Viewer: PETRA' application window. The title bar includes the motto 'Motto: Hold the Pickles, Hold the Lettuce...'. The 'File' menu is open, showing options like 'Default Printer', 'Logbook print...', 'Print...', 'TCP', 'UDP', 'Console', 'Save Visible Data...', 'Save Interpolated Data...', 'Save Array Data...', 'Open Configuration File...', 'Save Configuration File...' (highlighted), 'Open Visual Configuration File...', 'Save Visual Configuration File...', 'Save Settings...', 'Default Settings', 'Abort Activity', and 'Exit'. A 'Save' dialog box is overlaid on the main window, showing the save location as 'ArchiveViewer' and the filename 'test.xml'. The dialog also shows a list of recent locations: Recent, Desktop, My Documents, Computer, and Network. The main window features a 'Live:' section with a system status table and a 'Selected Bit' section with a list of bits and buttons for 'Add Selected', 'Add All', 'Add Devices', and 'Add Subdevices'. The status bar at the bottom shows '17:03:04: History data loaded.' and 'History Mode' / 'Live Mode' buttons.

File | Navigate | Options | Help

Default Printer Ctrl+Alt-P  
Logbook print... Ctrl-L  
Print... Ctrl-P

TCP  
 UDP

Console

Save Visible Data...  
Save Interpolated Data...  
Save Array Data...  
Open Configuration File...  
**Save Configuration File...**  
Open Visual Configuration File...  
Save Visual Configuration File...  
Save Settings...  
Default Settings  
Abort Activity  
Exit Ctrl-X

Save In: ArchiveViewer

test.xml

Recent  
Desktop  
My Documents  
Computer  
Network

File Name:   
Files of Type: Configuration file (.xml)

Save  
Cancel

Live: System:

Status	Property [Device]	Value	Description
<input checked="" type="checkbox"/> OK	CurDC	100.48 mA	Beam Current PE
<input checked="" type="checkbox"/> Error	IDC.Cur.OR08 [Bunch-1]	101.66	
<input checked="" type="checkbox"/> Error	IDC.Cur.OR19 [Bunch-1]	100.77	
<input checked="" type="checkbox"/> OK	CurBunch.Sum	96.53 mA	
<input checked="" type="checkbox"/> OK	NBunches	40.00	Number of Bunch
<input checked="" type="checkbox"/> Error	BunchFill.IThreshold [Bunch-1]	41.43	
<input checked="" type="checkbox"/> OK	Temps.MDI.Strom [IMD-OR-08-...	104.01 C	Temps
<input checked="" type="checkbox"/> OK	Temps.MDI.Strom [IMD-OR-08-...	67.92 C	Temps
<input checked="" type="checkbox"/> OK	Temps.MDI.Strom [IMD-OR-19-...	107.55 C	Temps
<input checked="" type="checkbox"/> OK	Temps.MDI.Strom [IMD-OR-19-...	50.92 C	Temps

Beam Emission Test  
BeamPositionDelta.X  
BeamPositionDelta.Y  
BeamPositionQuality.X  
BeamPositionQuality.Y  
BL\_1\_Alarms.Concentration  
BL\_2\_Alarms.Concentration

Selected Bit: ALL

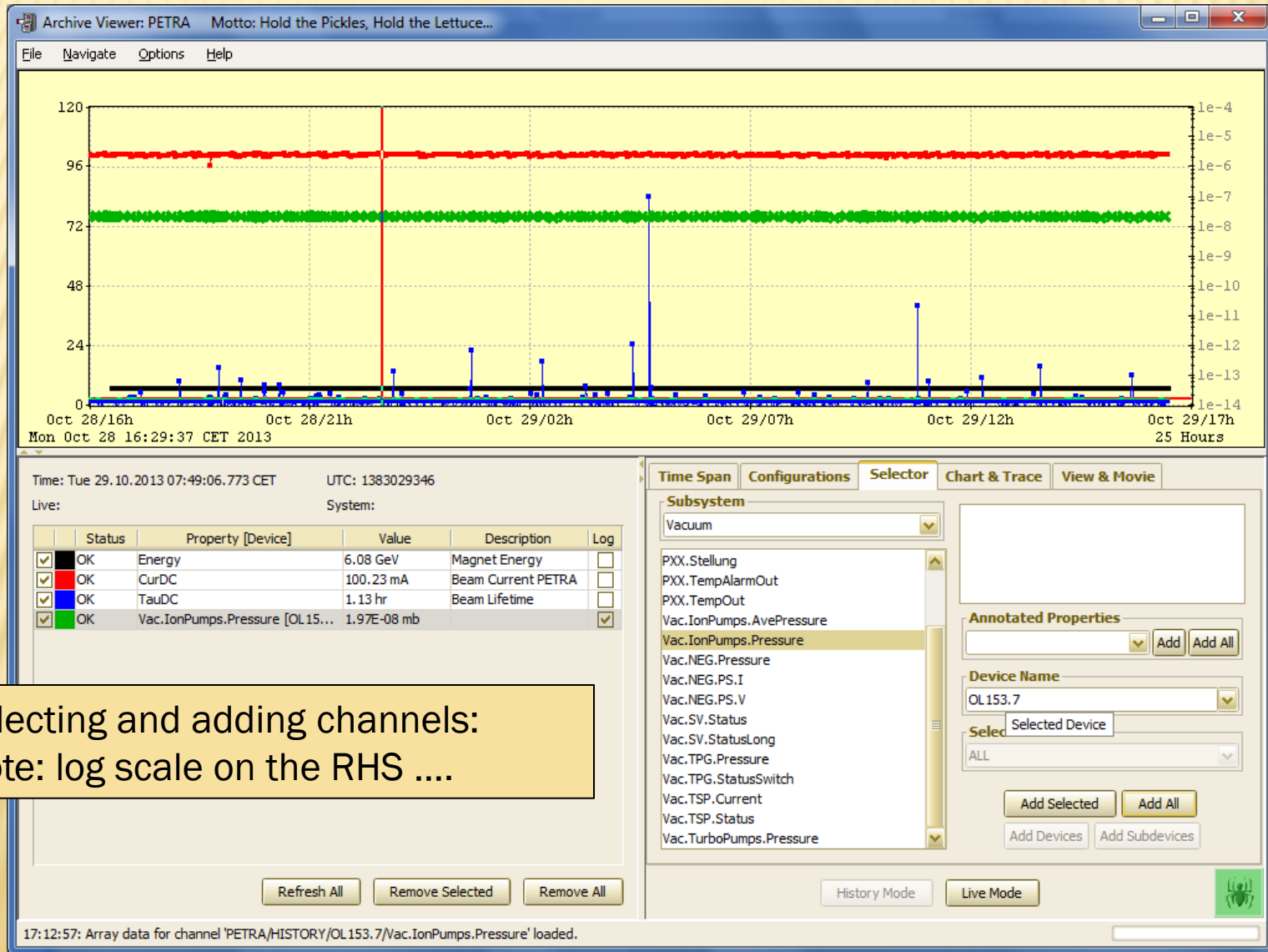
Add Selected Add All  
Add Devices Add Subdevices

Refresh All Remove Selected Remove All

History Mode Live Mode

17:03:04: History data loaded.

# ARCHIVE VIEWER

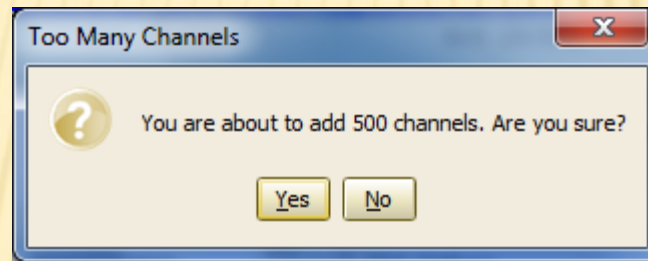


selecting and adding channels:  
Note: log scale on the RHS ....

# ARCHIVE VIEWER

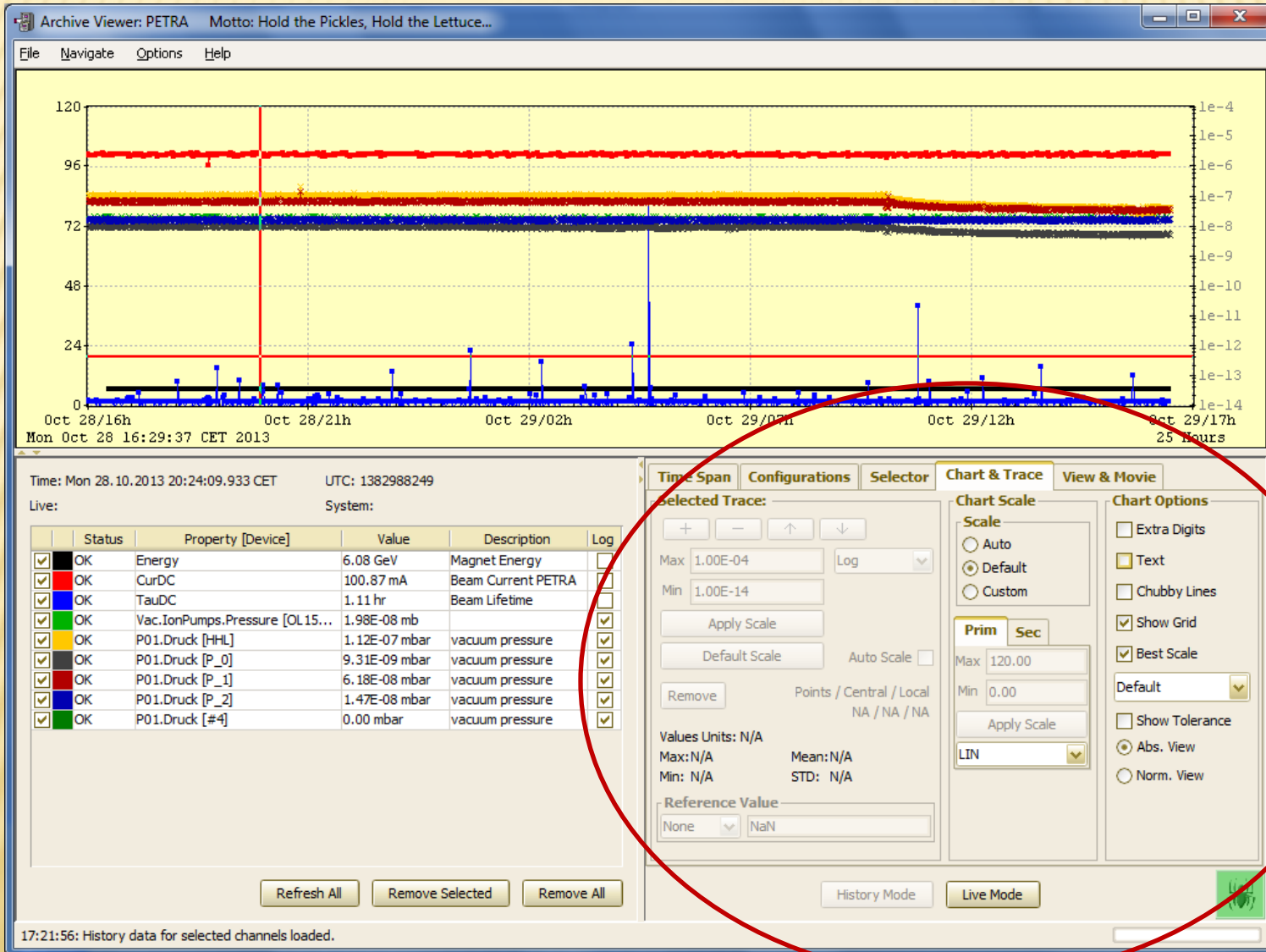
---

- ✘ And if you hit that 'Add All' button and there are more than 10 channels:





# ARCHIVE VIEWER



# ARCHIVE VIEWER

The screenshot displays the 'Archive Viewer: PETRA' application window. The main chart shows data over a 10-hour period from 00:00 to 10:00 on Wednesday, October 30, 2013. The y-axis ranges from 0 to 120. A red horizontal line is drawn at approximately y=100. A blue line shows data points with spikes, and a black line shows a lower-level signal. An 'Annotation Message' dialog box is open, with a red arrow pointing to a context menu on the chart. The context menu includes options: 'Chart Preferences...', 'Add Annotation...', 'Add Context Annotation...', 'Edit Annotation...', 'Remove Annotation...', 'Hide All Annotations', and 'Paste'. The 'Add Annotation...' option is highlighted. Below the chart, there is a status bar with system information and a table of live data.

Time: Wed 30.10.2013 07:07:13.295 CET    UTC: 1383113233  
Live:    System:

	Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/>	OK	Energy	6.08 GeV	Magnet Energy	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK	CurDC	-0.36 mA	Beam Current PETRA	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK	TauDC	1.14 hr	Beam Lifetime	<input type="checkbox"/>

Annotations

Time Span    Configurations    Selector    Chart & Trace    View & Movie

Pre-Defined Configurations

- Petra Overview
- IDC Temperatures
- Strom Overview
- Rad Dose Rate
- Rad Dose Extrapolated
- Rad Dose Alarm-Sum

Open    Add

Refresh All    Remove Selected    Remove All

History Mode    Live Mode

09:59:18: History data loaded.

# ANNOTATING FROM THE LOGBOOK

**PETRA - Logbuch**  
Energy 6.1 GeV Status Fehler  
Current 0.0 mA News Betriebsparameter: In jeder Schicht dokumentieren  
Schichtauswahl | Schnellübersicht | Suchen | Kalender | Hilfe 30.10.2013 10:06 --Logbuch--

### eLogBook Eintrag

**Autor** Sahoo **Kennung** Keine  
**Datum Zeit** 30.10.2013 09:23:22 **Rubrik** Sonstiges  
**Titel** Cherenkov detector

No signal is detected. Only noise. Single bunch with 2.5mA at 6.0GeV

I (mA)	RF (MV)	T (h)
2.61	14.0	1.183
2.32	8.2	0.137
1.63	7.6	0.025
1.12	7.0	0.002

**Text**  
beam loss No cherenkov signal  
2.05 13.0 0.94  
1.97 9.1 0.250  
1.88 7.2 0.001 Beam loss No cherenkov signal seen  
2.18mA no cherenkov signal seen with regular beam dump

**Datei upload**  
Wähle Bilddatei  
(standard Bidtypen wie: jpg, ps, png, ...)  
Browse...  
 Annotate in TINE Archive

**Mail an Experten**  
Bereich: Koordinatoren Experten: -----  
clear  
Anderer Empfänger: add

Eintrag speichern



# ARCHIVE VIEWER

The screenshot displays the Archive Viewer application window. The main plot shows a red line at 100% and blue lines with spikes over a 12-hour period. A callout box points to a vertical red line at 10:00 with a question mark, labeled 'A 'Context' Annotation !'. Below the plot is a table of system properties and a configuration panel for the 'MachineStateText' subsystem.

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

120  
100  
80  
60  
40  
20  
0

00:00 02:00 04:00 06:00 08:00 10:00 12:00  
Wed Oct 30 00:00:00 CET 2013 12 Hours

Time: Wed 30.10.2013 09:54:27.941 CET UTC: 1383123267  
Live: System:

Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/> OK	Energy	6.08 GeV	Magnet Energy	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	CurDC	1.72 mA	Beam Current PETRA	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	TauDC	0.53 hr	Beam Lifetime	<input type="checkbox"/>

Subsystem: ALL

Machine State Text

Annotated Properties: MachineStateText Add Add All

Device Name: keyword

Selected Bit: ALL

Add Selected Add All Add Devices Add Subdevices

History Mode Live Mode

10:09:30: History data for selected channels loaded.

# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Cherenkov detector  
No signal is detected. Only noise. Single bunch with 2.5mA at 6.0GeV I(ma) RF(MV) T(h) 2.61 14.0 1.183 2.32 8.2 0.137 1.63 7.6 0.025 1.12 7.0 0.002 beam loss No cherenkov signal 2.0  
(link)

Wed Oct 30 00:00:00 CET 2013 12 Hours

Time: Wed 30.10.2013 01:59:03.307 CET UTC: 1383094743  
Live: System:

	Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/>	OK	Energy	6.08 GeV	Magnet Energy	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK	CurDC	100.36 mA	Beam Current PETRA	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK	TauDC	1.13 hr	Beam Lifetime	<input type="checkbox"/>

Refresh All Remove Selected Remove All

Time Span Configurations **Selector** Chart & Trace View & Movie

Subsystem  
ALL

Machine State Text

Annotated Properties  
MachineStateText Add Add All

Device Name  
keyword

Selected Bit  
ALL

Add Selected Add All  
Add Devices Add Subdevices

History Mode Live Mode

10:09:30: History data for selected channels loaded.

# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Time range selection

Time: Wed 23.10.2013 21:22:20.382 CEST UTC: 1382556140  
Live: System:

Status	Property [Device]	Value	Description	Log
--------	-------------------	-------	-------------	-----

Refresh All Remove Selected Remove All

09:47:26: Devices loaded.

Time Span Configurations Selector Chart & Trace View & Movie

Calendar Interval Recent Past

October 2013

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Today

History Mode Live Mode

Time Span Configurations Selector Chart & Trace View & Movie

Calendar Interval Recent Past

October 2013

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	1	2	3			
7	8	9	10			
14	15	16	17			
21	22	23	24			
28	29	30	31			
4	5	6	7			

Log

Day Month Year UTC [s]  
Start Date: 23 October 2013 1382479200  
End Date: 23 October 2013 1382565599  
Time Shifting: Overlap Time [%]: 10  
Use Chart Time Interval  
Apply Cancel  
History Mode Live Mode



# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Which records have been annotated ?

Time: Wed 23. 10. 2013 21:22:20.382 CEST UTC: 1382556140  
Live: System:

Status	Property [Device]	Value	Description	Log
--------	-------------------	-------	-------------	-----

Refresh All Remove Selected Remove All

Time Span Configurations **Selector** Chart & Trace View & Movie

Subsystem: ALL

- AlarmsCount
- AlarmsCountALL
- AlarmsISREADY
- BeamAngleDelta.X
- BeamAngleDelta.Y
- BeamAngleQuality.X
- BeamAngleQuality.Y
- BeamLoss
- BeamPermissionText
- BeamPositionDelta.X
- BeamPositionDelta.Y
- BeamPositionQuality.X
- BeamPositionQuality.Y
- BL\_1\_Alarms.Concentration
- BL\_2\_Alarms.Concentration

Inst. Ave Beam Loss (all BLMs)

**Annotated Properties**

- BeamLoss
- BeamLoss
- CurDC
- POV11

Selected Bit: ALL

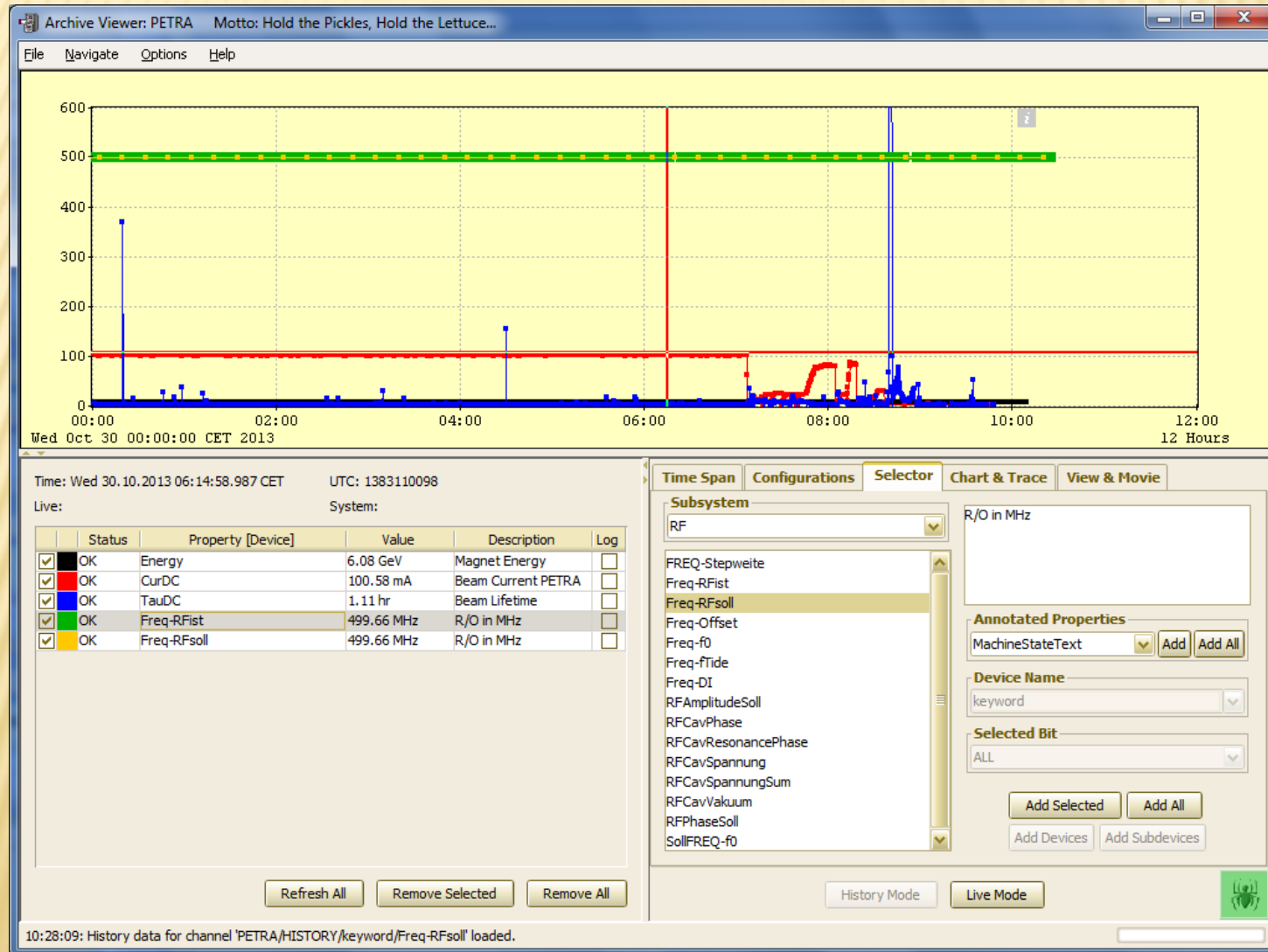
Add Selected Add All

Add Devices Add Subdevices

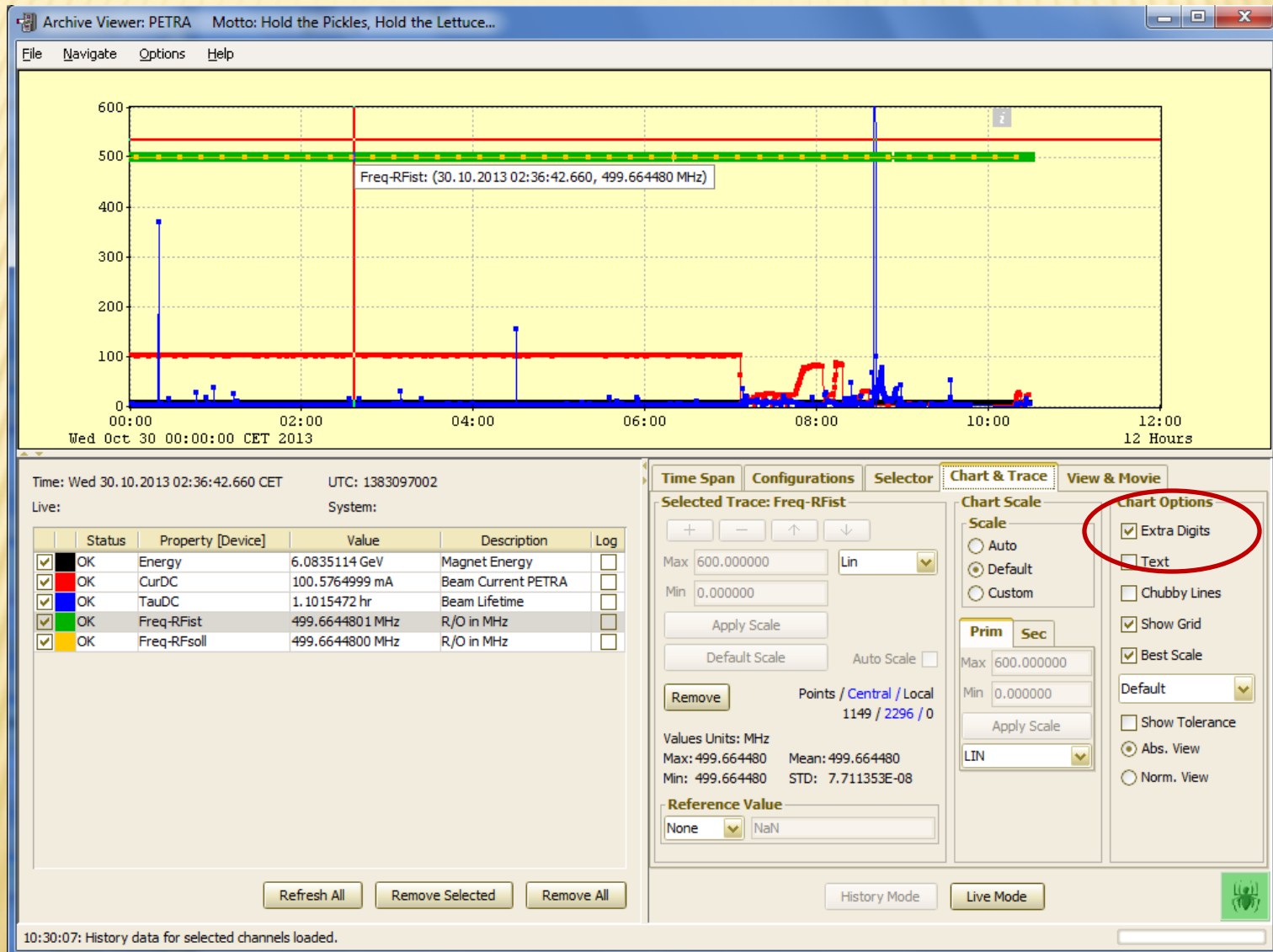
History Mode Live Mode

09:54:32: No history data available for selected channels.

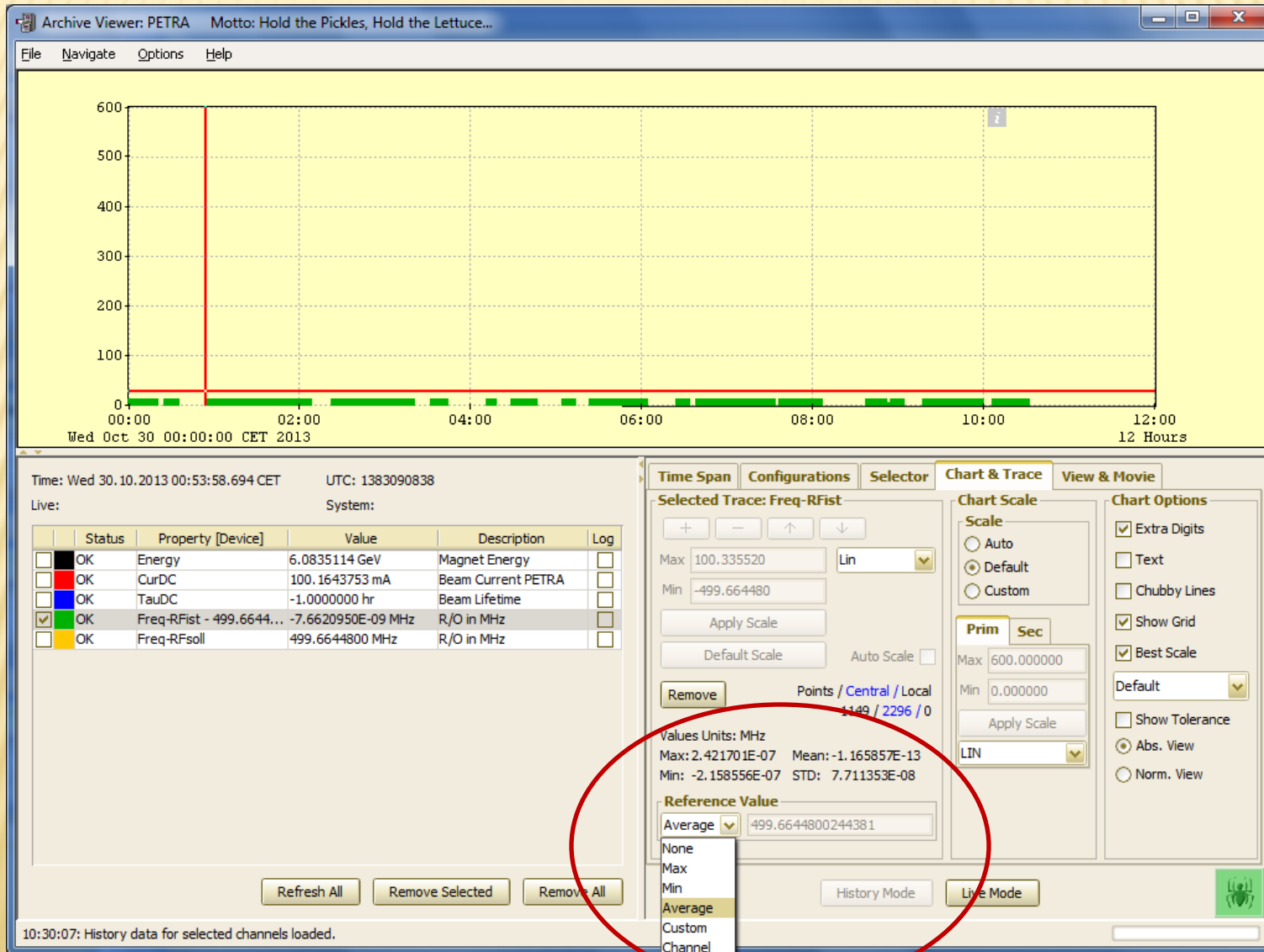
# ARCHIVE VIEWER



# ARCHIVE VIEWER

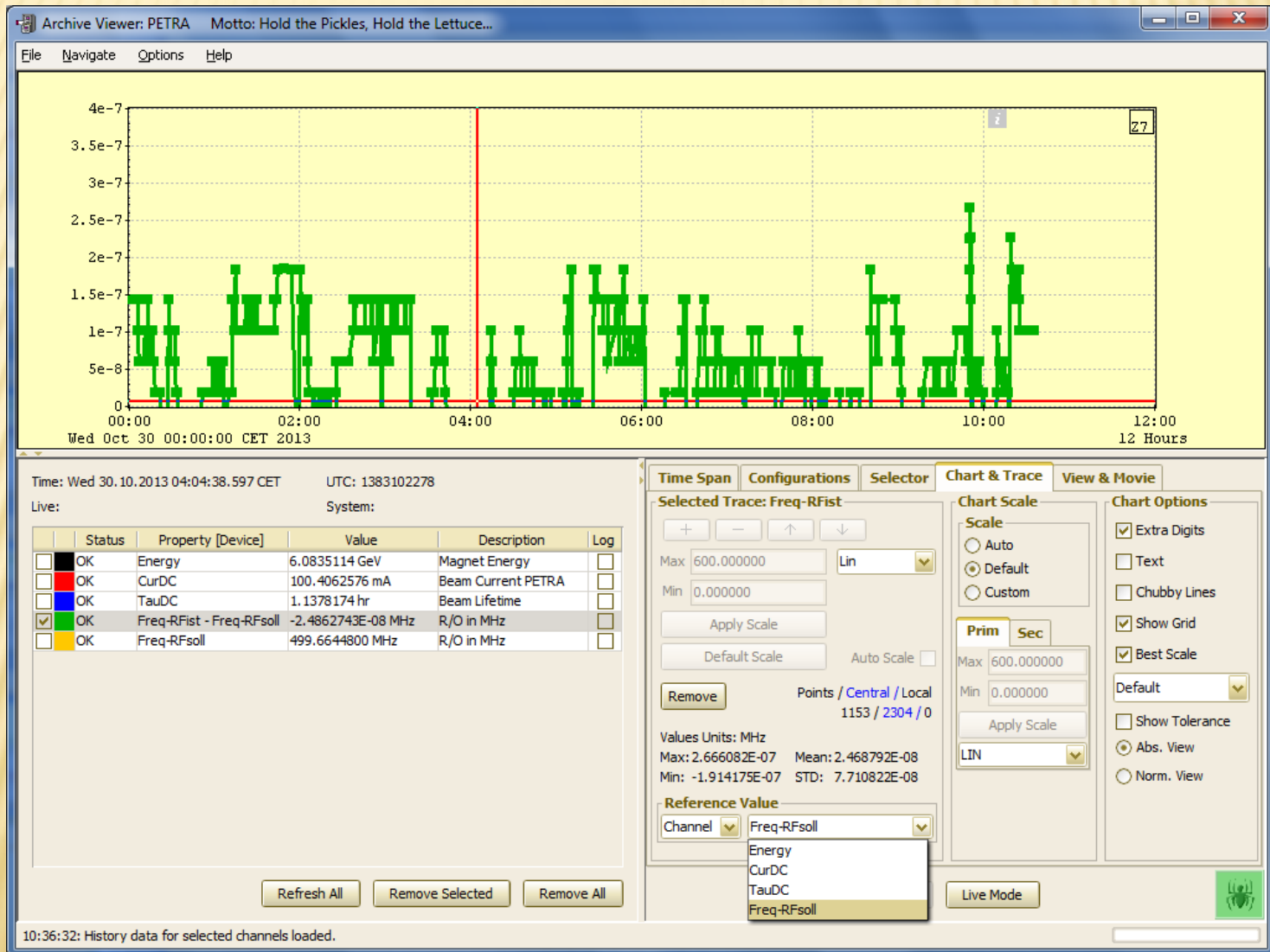


# ARCHIVE VIEWER





# ARCHIVE VIEWER



# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Time: Wed 23.10.2013 13:05:17.775 CEST UTC: 1382526317

Live: System:

Status	Property [Device]	Bit values
<input type="checkbox"/>	OK Energy	
<input type="checkbox"/>	OK CurDC	
<input type="checkbox"/>	OK TauDC	
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 0}	1 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 1}	1 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 2}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 3}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 4}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 5}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 6}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 7}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 8}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 9}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 10}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 11}	0 0=...
<input checked="" type="checkbox"/>	OK PI.ExpS2.displayState [ABS02_0_Auffahren] {Bit 12}	0 0=...

Refresh All Remove Selected Remove All

Time Span Configurations Selector Chart & Trace View & Movie

Subsystem: Interlock

0=OK 3=MISSING 2=ERROR 1=COUNTDOWN

Annotated Properties: BeamLoss Add Add All

Device Name: ABS02\_0\_Auffahren

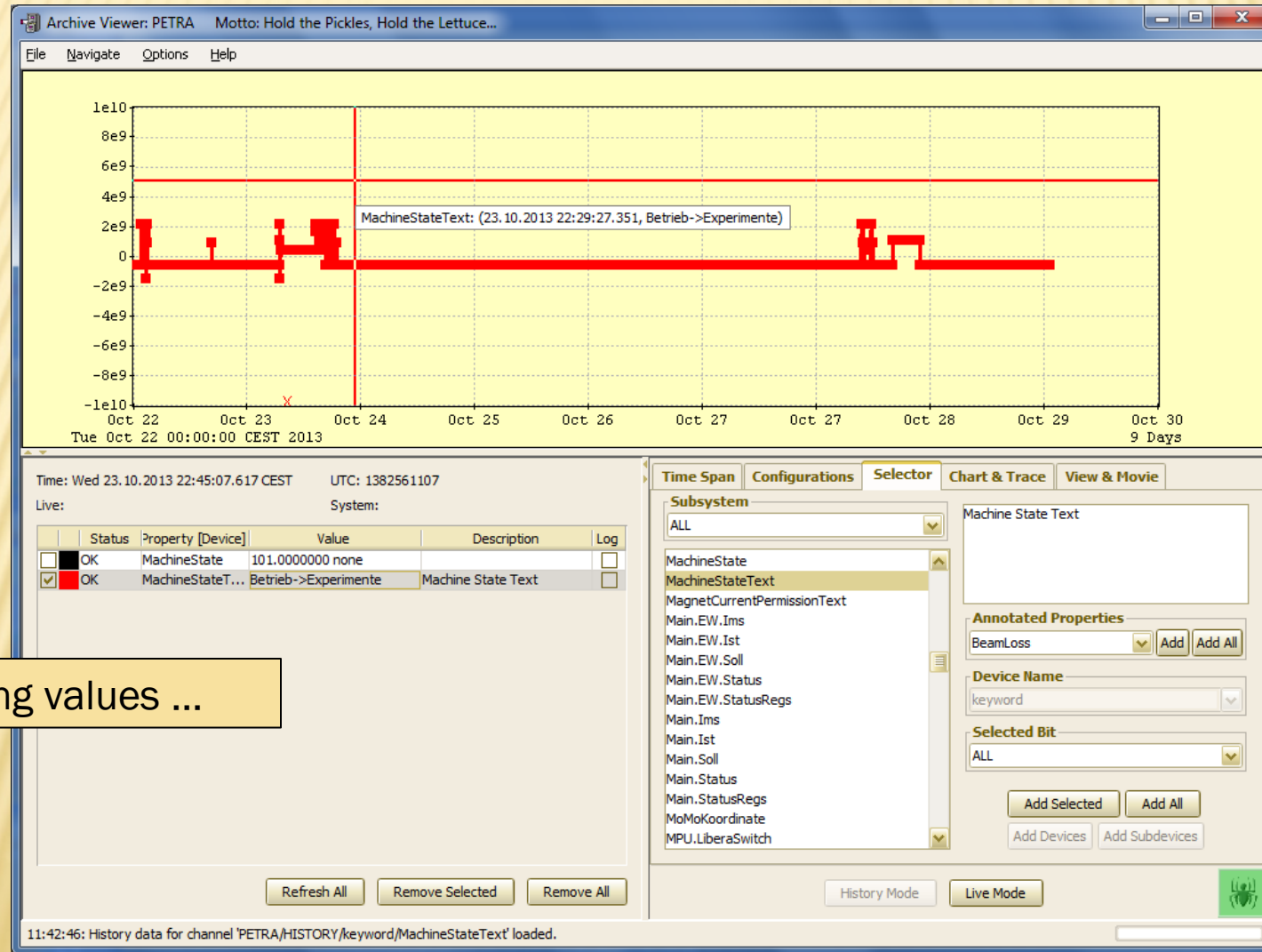
Selected Bit: Bit 0 {1}

Add Selected Add All Bits Add Devices Add Subdevices

History Mode Live Mode

11:39:55: Devices loaded.

# ARCHIVE VIEWER



String values ...

11:42:46: History data for channel 'PETRA/HISTORY/keyword/MachineStateText' loaded.

# ARCHIVER VIEWER

The screenshot displays the Archive Viewer software interface. The main window is titled "Archive Viewer: PETRA" with the motto "Hold the Pickles, Hold the Lettuce...". The interface is divided into several sections:

- Top Left:** A time-series plot showing data from October 22 to 29, 2013. The y-axis ranges from  $-1e10$  to  $1e10$ . The plot shows a signal fluctuating around a baseline, with several sharp peaks and troughs. A vertical green line is at approximately Oct 25, and a vertical red line is at approximately Oct 27.
- Top Right:** A bar chart titled "P01.Druck 01:34:23.108". The y-axis ranges from  $1e-10$  to  $1e-4$ . The x-axis categories are HHL, P\_0, P\_1, P\_2, and #4. The bars show values for each category, with HHL being the highest.
- Bottom Left:** A table showing system status and properties. The table has columns for Status, Property [Device], Value, Description, and Log. Two rows are visible: one for "MachineStateT..." and one for "P01.Druck [HHL]".
- Bottom Right:** A control panel with tabs for "Time Span", "Configurations", "Selector", "Chart & Trace", and "View & Movie". The "Chart & Trace" tab is active, showing options for "Main Chart", "Correlation Chart", and "Array Chart". The "Array Chart" option is checked and circled in red. Other options include "Array Chart Options" (Axis Scale: LOG, Lock Axis checked, Simple-Histogram) and "Corr. Chart Options" (Axis Scale (X-Y): LIN-LIN).

At the bottom of the window, there are buttons for "Refresh All", "Remove Selected", and "Remove All". A status bar at the very bottom indicates "11:46:28: Array data for channel 'PETRA/HISTORY/HHL/P01.Druck' loaded."

Multi-Channel Arrays ...



# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

1e10  
6e9  
2e9  
-2e9  
-6e9  
-1e10

1e-4  
1e-5  
1e-6  
1e-7  
1e-8  
1e-9  
1e-10  
1e-11  
1e-12  
1e-13  
1e-14

Oct 22 Oct 24 Oct 26 Oct 27 Oct 29  
Tue Oct 22 00:00:00 CEST 2013 9 Days

Vac.IonPumps.Pressure 07:06:34.990

1e-4  
1e-5  
1e-6  
1e-7  
1e-8  
1e-9  
1e-10  
1e-11  
1e-12  
1e-13  
1e-14

OL153.7 SL020.1CAV2 NWL089\_083 NORPU5V0

Time: Tue 29.10.2013 23:35:39.938 CET UTC: 1383086139

Live: System:

	Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/>	OK	MachineStateT... Betrieb->Experimente		Machine State Text	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK	P01.Druck [HHL]	3.8603506E-08 mbar	vacuum pressure	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	OK	Vac.IonPumps....	1.9936762E-08 mb		<input checked="" type="checkbox"/>

Time Span Configurations **Selector** Chart & Trace View & Movie

Subsystem  
Vacuum

- P01.Druck
- P06.Druck
- P09.Druck
- P13vil.Temps
- PXX.Stellung
- PXX.TempAlarmOut
- PXX.TempOut
- Vac.IonPumps.AvePressure
- Vac.IonPumps.Pressure
- Vac.NEG.Pressure
- Vac.NEG.PS.I
- Vac.NEG.PS.V
- Vac.SV.Status
- Vac.SV.StatusLong
- Vac.TPG.Pressure

**Annotated Properties**

BeamLoss

**Device Name**  
OL153.7

**Selected Bit**  
ALL

11:48:40: Array data for channel 'PETRA/HISTORY/OL153.7/Vac.IonPumps.Pressure' loaded.

# ARCHIVE VIEWER

The screenshot displays the 'Archive Viewer: LINAC2' application window. The title bar includes the motto 'Motto: Hold the Pickles, Hold the Lettuce...'. The interface is divided into several sections:

- Top Left Plot:** A time-series plot with a y-axis from -5 to 1 and an x-axis from 'Aug 09/00h' to 'Aug 09/20h'. It shows a thick black horizontal bar at y=0 and a red horizontal line at y=-4.5. A green vertical line is positioned at approximately 10h on Aug 09.
- Top Right Plot:** A waveform plot titled 'I4.1-Pulse-Fcup 11:50:17.685'. The y-axis ranges from -5 to 1, and the x-axis ranges from -0.5 to 999.5. It shows a red signal with a small pulse around x=500.
- Bottom Left Panel:** Contains system information: 'Time: Tue 13.08.2013 00:32:08.173 CEST', 'UTC: 1376346728', 'Live:', and 'System:'. Below this is a table with columns for Status, Property [Device], Value, and Description.
- Bottom Right Panel:** A control panel with tabs for 'Time Span', 'Configurations', 'Selector', 'Chart & Trace', and 'View & Movie'. It includes checkboxes for 'Main Chart', 'Correlation Chart', and 'Array Chart'. Under 'Array Chart Options', 'Axis Scale' is set to 'LIN' and 'Lock Axis' is checked. Under 'Array Options', 'All Devices' is selected, and a range of 998 to 1997 is shown. There are buttons for 'Start Movie', 'Stop Movie', and 'Save Ref'.

At the bottom of the window, a status bar reads: '12:02:40: Array data for channel 'LINAC2/HISTORY/#0/I4.1-Pulse-Fcup' loaded.'

Waveforms (aka: Spectra)

# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

40000  
31000  
22000  
13000  
4000  
-5000

1e9  
1e8  
1e7  
1e6  
1e5  
10000  
1000  
100  
1

Oct 29/12h Oct 29/22h Oct 30/08h

Tue Oct 29 12:09:59 CET 2013 25 Hours

Correlation Of Selected Channels

keyword/HorizontalTune Hz

Sector 1/BeamAngleDelta.X micro-rad

Time: Wed 30.10.2013 12:34:55.604 CET UTC: 1383132895

Live: System:

Status	Property [Device]	Value	Description	Log	X
OK	Energy	6.08 GeV	Magnet Energy		
OK	CurDC	49.94 mA	Beam Current PE...		
OK	TauDC	-1.00 hr	Beam Lifetime		
OK	BeamAngleDelta.X [Sector 1]	0.03 micro-rad	Beam Angle delta...		
OK	BeamLoss [PU01I]	241.00 cnts/sec	Inst.Ave Beam Lo...		
OK	BeamLoss [PU10I]	25.00 cnts/sec	Inst.Ave Beam Lo...		
OK	Temps.Magnets [NL_151DKs]	35.66 C	NL_151DKs 457.0...		
OK	Undulator.Gap [PU01a]	217.00 mm	Gap Width		
OK	VerticalTune	3.96E04 Hz	Tune Peakfind au...		
OK	HorizontalTune	1.51E04 Hz	Tune Peakfind au...		

Refresh All Remove Selected Remove All

Time Span Configurations Selector Chart & Trace View & Movie

**Charts**

Main Chart

Correlation Chart

Array Chart

**Array Chart Options**

Axis Scale:

LIN

Bit Breakdown

Lock Axis

SimpleHistogram

**Corr. Chart Options**

Axis Scale (X-Y):

LIN-LIN

Array Options

All Devices  Devices  Subdevices

Start Movie Stop Movie

1

Display Ref Save Ref

Sub Ref Ref:

Data Options...

History Mode Live Mode

12:16:08: History data for channel 'PETRA/HISTORY/keyword/HorizontalTune' loaded.

# ARCHIVE VIEWER

Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Time: Wed 30.10.2013 12:46:36.903 CET UTC: 1383133596

Live: System:

Status	Property [Device]	Value	Description	Log	X	Y
OK	Energy	6.08 GeV	Magnet Energy			
OK	CurDC	49.94 mA	Beam Current PE...			
OK	TauDC	-1.00 hr	Beam Lifetime			
OK	BeamAngleDelta.X [Sector 1]	0.03 micro-rad	Beam Angle delta...			
OK	BeamLoss [PU01I]	241.00 cnts...	Inst.Ave Beam Lo...			
OK	BeamLoss [PU10I]	25.00 cnts/sec	Inst.Ave Beam Lo...			
OK	Temps.Magnets [NL_151DKs]	35.66 C	NL_151DKs 457.0...			
OK	Undulator.Gap [PU01a]	217.00 mm	Gap Width			
OK	VerticalTune	3.96E04 Hz	Tune Peakfind au...			
OK	HorizontalTune	1.51E04 Hz	Tune Peakfind au...			

Correlation Of Selected Channels

Chart Preferences...

- X Data Transformation
- Y Data Transformation

Y Axis

Function:  $Y^2 + Y^3$

History:  $Y^2 + Y^3$ ,  $Y^2$

Available operators: Addition: 'x + 2', Subtraction: 'x - 2', Multiplication: 'x \* 2', Division: 'x / 2', Exponentiation: 'x ^ 2', Unary Minus, Plus (Sign Operators): '+x - (-2)', Modulo: 'x % 2'

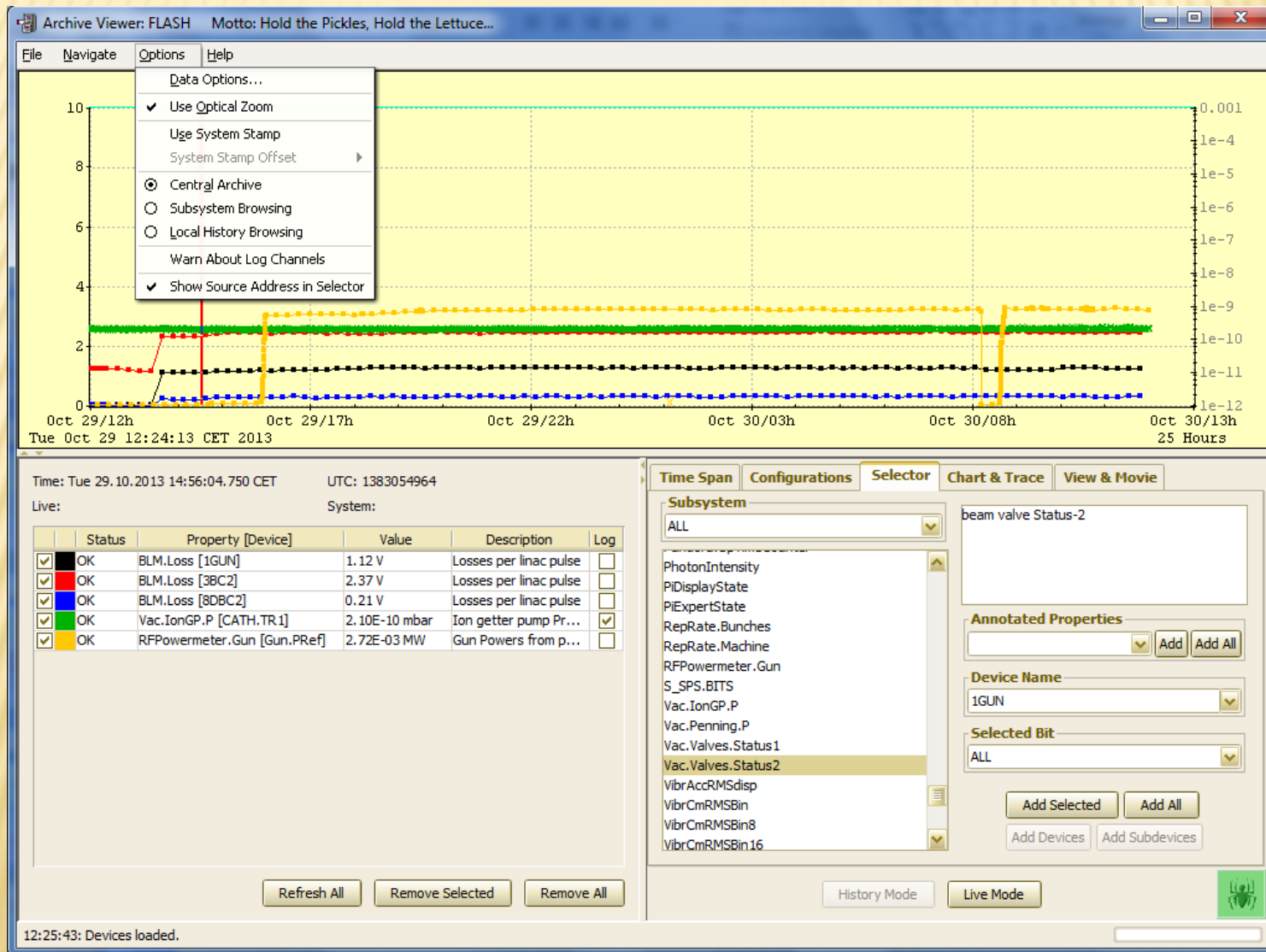
Corr. Chart Options

Axis Scale (X-Y): LIN-LIN

12:16:08: History data for channel 'PETRA/HISTORY/keyword/HorizontalTune' loaded.



# ARCHIVE VIEWER



# ARCHIVE VIEWER

Archive Viewer: FLASH Motto: Hold the Pickles, Hold the Lettuce...

File Navigate Options Help

Time: Wed 30.10.2013 06:39:16.426 CET UTC: 1383111556  
 Live: System:

Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/>	OK BLM.Loss [1GUN]	1.24 V	Losses per linac pulse	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK BLM.Loss [3BC2]	2.45 V	Losses per linac pulse	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK BLM.Loss [8DBC2]	0.29 V	Losses per linac pulse	<input type="checkbox"/>
<input checked="" type="checkbox"/>	OK Vac.IonGP.P [CATH.TR 1]	2.10E-10 mbar	Ion getter pump Pr...	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	OK RFPowermeter.Gun [Gun.PRef]	3.19 MW	Gun Powers from p...	<input type="checkbox"/>

Refresh All Remove Selected Remove All

12:27:45: Devices loaded.

Time Span Configurations Selector Chart & Trace View & Movie

Subsystem: ALL Gun Powers from power meter

PhotonIntensity  
 PIDisplayState  
 PIExper Source Address for **VibrAccRMSdisp** (right mouse click to pin)  
 RepRat Gun.PRef: /TTF2/VibrCM.Data/Acc1QuadHoriz[RMSdisp]  
 RepRate.Machine

RFPowermeter: **RFPowermeter.Gun**  
 S\_SPS.BITS Gun.PRef: /TTF2.RF/POWERMETER/GUN.PREF[CH00.CALC]  
 Vac.IonGP.P Gun.PFor: /TTF2.RF/POWERMETER/GUN.PFOR[CH00.CALC]  
 Vac.Penning.P  
 Vac.Valves.Status1  
 Vac.Valves.Status2  
 VibrAccRMSdisp  
 VibrCmRMSBin  
 VibrCmRMSBin8  
 VibrCmRMSBin16

Selected Bit: ALL

Add Selected Add All  
 Add Devices Add Subdevices

History Mode Live Mode

# ARCHIVE VIEWER

Plotting vs. 'system stamp':  
e.g. PETRA/DESY2/LINAC2 : cycle number  
FLASH: pulse number

The screenshot displays the Archive Viewer software interface. At the top, the title bar reads "Archive Viewer: PETRA Motto: Hold the Pickles, Hold the Lettuce...". The main window is divided into several sections:

- Plot Area:** A large graph showing data over time. The x-axis is labeled "23 Hours" and ranges from  $3e5$  to  $9e5$ . The y-axis ranges from 0 to 120. A red line represents the "System Stamp", which is mostly constant at 100 but has several sharp downward spikes. A green dashed horizontal line is at approximately y=25. A blue line shows low-level data with small spikes. A black dashed horizontal line is at approximately y=5.
- Options Menu:** A dropdown menu is open, listing various settings:
  - Data Options...
  - Use Optical Zoom
  - Use System Stamp
  - System Stamp Offset
  - Central Archive
  - Subsystem Browsing
  - Local History Browsing
  - Warn About Log Channels
  - Show Source Address in Selector
- Metadata:** Below the plot, it shows "Mon Oct 28 00:00:00 CET 2013 (offset = 1.29E8)" and "23 Hours".
- Time Span and Configurations:** A section with tabs for "Time Span", "Configurations", "Selector", "Chart & Trace", and "View & Movie".
- Calendar:** A calendar for October 2013. The date "30" is highlighted with a box, indicating the current data range.
- Channel Status Table:** A table with columns for Status, Property [Device], Value, Description, and Log.

Status	Property [Device]	Value	Description	Log
<input checked="" type="checkbox"/> OK	Energy	6.08 GeV	Magnet Energy	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	CurDC	100.16 mA	Beam Current PETRA	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	TauDC	1.14 hr	Beam Lifetime	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	InjektionPhase	25.00 Grad	Timing Injection Phase	<input type="checkbox"/>
<input checked="" type="checkbox"/> OK	Kicker.HVSoll [Kicker1_Inj]	5.22 kV	HV Sollwert	<input type="checkbox"/>
- Buttons:** "Refresh All", "Remove Selected", and "Remove All" are located below the table.
- Footer:** "12:34:21: History data for selected channels loaded." and "History Mode" / "Live Mode" buttons.

# ARCHIVE VIEWER

The screenshot displays the Archive Viewer application window titled "Archive Viewer: PETRA" with the motto "Motto: Hold the Pickles, Hold the Lettuce...". The main window features a menu bar with "File", "Navigate", "Options", and "Help". The "Options" menu is open, showing several settings. A red circle highlights the "Options" menu, and a red arrow points from it to the "Data Options" dialog box. Another red arrow points from the "Filter Settings" dialog box to the "Options" menu.

The "Options" menu includes the following items:

- Data Options...
- Use Optical Zoom
- Use System Stamp
- System Stamp Offset
- Central Archive
- Subsystem Browsing
- Local History Browsing
- Warn About Log Channels
- Show Source Address in Selector

The "Data Options" dialog box is open, showing the following settings:

- Horizontal Axis Window Size**
  - Automatic (+/- heartbeat)
  - No Extra Time
- Use Absolute X Scale:
- Autoscale X (button)
- Live Mode Time Offset [ms]:
- Plot Bit Channels At Zero:
- Live Data Append Buffer Size:
- Number of History Points:
- A large number of points could result in truncation unless the targeted server is known to have increased its transport buffer size*
- Connection Timeout [ms]:
- Default Time Span [days]:
- Filters... (button)
- Close (button)

The "Filter Settings" dialog box is open, showing the following settings:

- Display Conditions**
  - CurD2: 1.0 <= (value) <= 100.0
  - PartidesD2: 1.0 <= (value) <= 1.0
- PartidesD2:
- Add (button)
- Remove (button)
- Clear (button)
- Apply (button)
- Close (button)

The main window displays a plot with a red line and a green dashed line. The y-axis ranges from 0 to 120. The x-axis is labeled with "Sun" and "Today". A calendar grid is visible in the bottom right corner, showing the dates from 30 to 10. The date 30 is highlighted.

30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Buttons at the bottom of the main window include "History Mode", "Live Mode", and "Today".



# ARCHIVE VIEWER

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✘ Coming soon ...

+ Save all data in range option

✘ Now only saves data shown in chart(s)

+ ???