

NEW SCRAPER studies



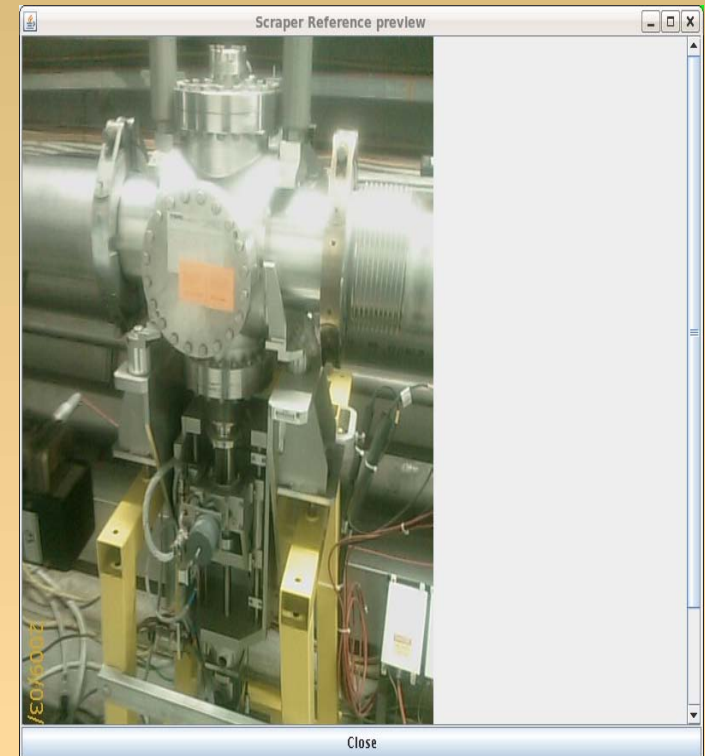
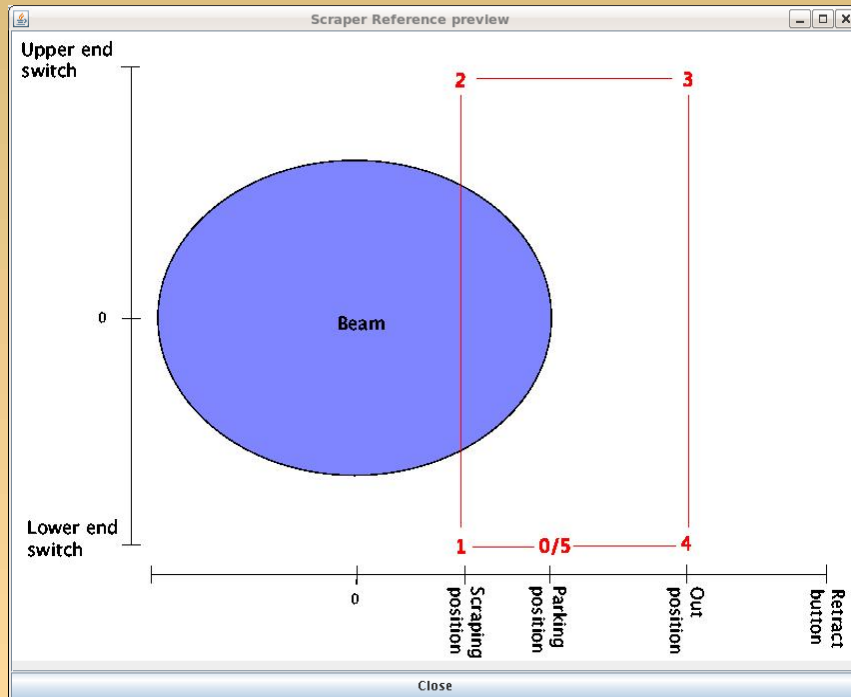
- Eric VEYRUNES

SUMMARY

- Scraper details
- Application
- First test since change
- Both plane
- Delay with settings 210-230 ms

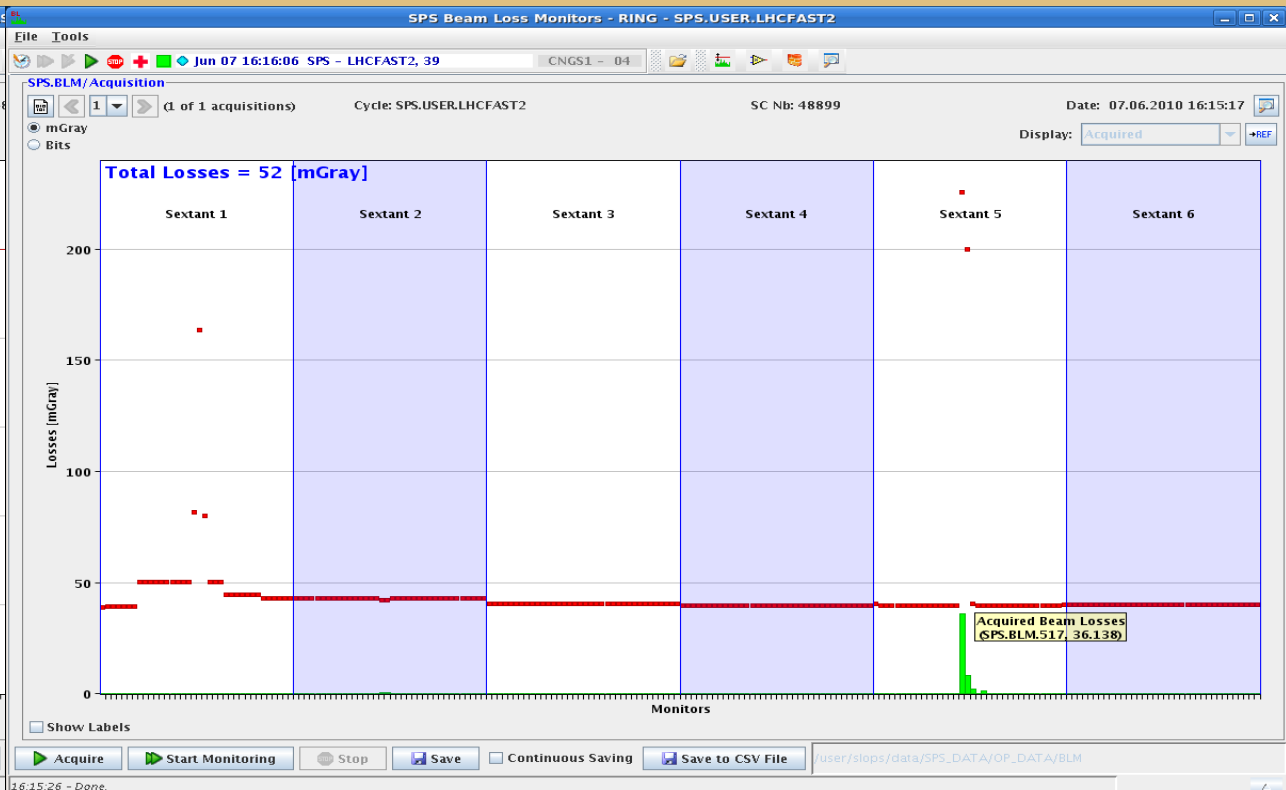
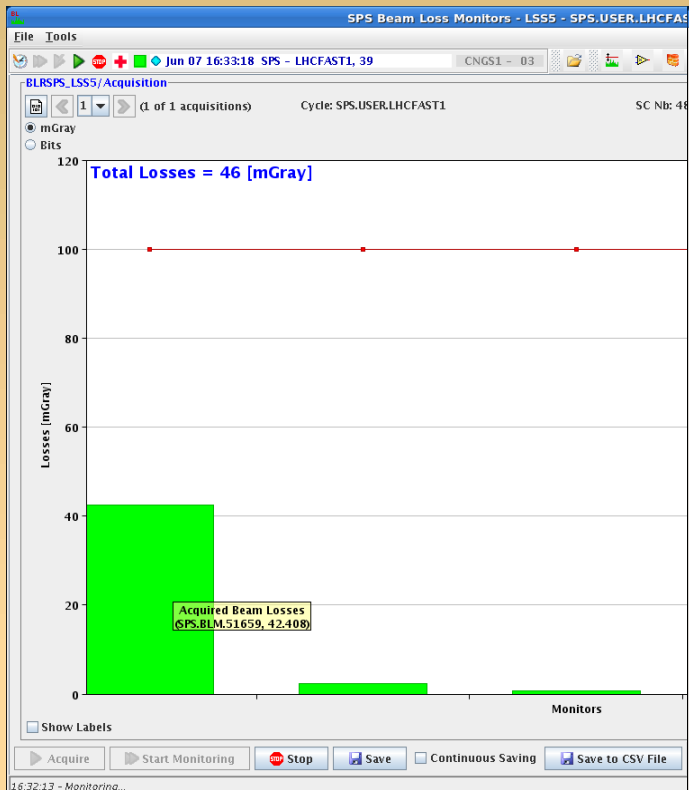
Scraper Details

- The scraper is used to clean satellites for LHC high intensity beam.



Scraper Details

- BSHV.51659, BA5(-), LSS5, position 51659.
- Ring : BLM517, LSS5 : BLM.51659



Scraper Details

- Only control change :
 - Cables, Motors (collimator type) and FESA class
 - Old class : BOSCR>SCR50S.
 - New class : SPSSCRAPER>BSHV.51659.
 - New Server : cfc-ba5-tscrap

Application

- SPS CONTROL>SPS Equipment Control>SPS Beam Obstacle>New-Scraper
- In the same spirit of MKP and MKE kicker application.

SPS Scraper v1.0.7 - May. 2010

Jun 01 19:17:08 SPS - LHC2, 01 LHC2 - 01

File References Analyze Help

SCRAPER Status	SCRAPER Settings	
Current User	D demanded	
LHC2	Acquired	
Status control		
RETRACT		
D demanded status	Scraper Status	
Scraping V	Scraping V	Scraping V
Current status	Scraper delay (ms)	
MOVE_TARGET	3,000	3,000
SCRAPER Mode	Scraper h Position (mm)	
REMOTE	3	3
SwitchFastV	Scraper v Position (mm)	
OUT	3	3
SwitchFastH	Scraper Park Position (mm)	
OUT	30	30
SwitchSlowV	Scraper Out Position (mm)	
OUT	40	40
SwitchSlowH		
OUT		
Delay Trigger Fast		
3,000		

Acquire Start Monitoring Stop Send

19:17:08 - Scraper updated

First test since change

- There is no more same retracted position for H and V (was -70 mm both plane).

	Position	Resolver	Speed	Switch In	Switch Out
Fast H	-19.0	-19.0	0.0	OUT	PARK
Fast V	-19.0	-19.0	0.0	OUT	PARK
Slow H	-54.29	-54.29	0.0	OUT	PARK
Slow V	-70.0	-70.0	0.0	OUT	PARK
Reset	Delay Too short	Scrap Aborted	Scrap Cmd Tim...	Scrap Cmd F...	Steps Lost

First test since change

- Bump 3 C close to the scraper H plane @ 3000 ms.

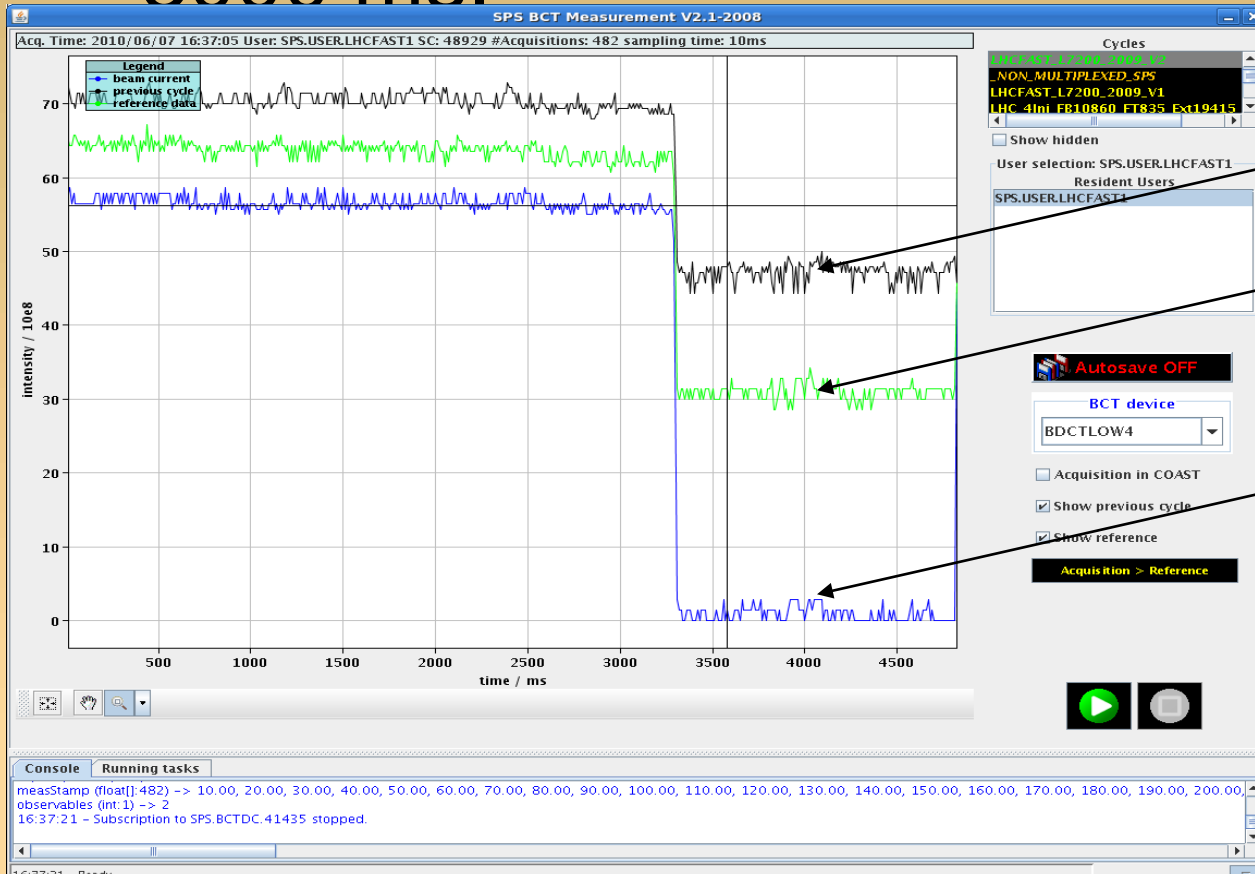
The screenshot displays the YASP V3.99.33 software interface. The title bar indicates the session is 'SPSRING / LHCFASST_L7200_2009_V2 / SPS.USER.LHCFASST1'. The main window is divided into several panels:

- Left Panel:** Contains control buttons for 'STurn', 'FTurn', and 'Orbit'. Below these, a time value of '3200 ms' is shown. There are checkboxes for 'Synchronize', 'Read CODs', and 'IN Coast'. A dropdown menu is set to 'Proton'. At the bottom, there are checkboxes for 'Autosave' and 'Simulation', and a 'Load Last' button.
- Center Panel:** Titled 'Bumping', it has tabs for '3C-Bump' and '4C-Bump'. The '3C-Bump' tab is active, showing a 'Calculate' button. Below this, the 'Plane' is set to 'Horizontal'. A field for 'BSHV.51659' is set to '0.5 mm'. There is a 'Corrector selection' section with 'Auto' selected and a 'Select' button. At the bottom, there is an 'Element selection ...' section with 'from DV' and 'Twiss' buttons.
- Right Panel:** A log window showing a list of system events and Twiss data. The log includes timestamps and messages such as 'total # of elements is 1792', 'Common element sign is 1.00', and 'Beam direction is FORWARD (-->)'. It also lists Twiss data for elements MDH.51407, MDH.51607, and MDH.51807.

```
-> total # of elements is 1792
Common element sign is 1.00
Beam direction is FORWARD (-->)
Integrated K false
16:24:40 - Twiss SPS-LHC-2009v1 added to TWISS list
16:24:40 - Twiss SPS-LHC-2009v1 is ACTIVE twiss
16:24:40 - Twiss data updated in DV
16:24:40 - Building response matrices...
16:26:35 - Selected correctors :
16:26:35 - MDH.51607
16:27:09 - >>> Running correction...
16:27:14 - >>> Running correction...
16:27:15 - >>> Running correction...
16:30:52 - >>> Running correction...
16:30:52 -
** 3C-bump @ BSHV.51659
Amp. [mm] 0.5000
Kicks (urad) :
MDH.51407      7.06
MDH.51607     -0.71
MDH.51807      7.06
```


First test since change

- Bump 3 C close to the scraper H plane @ 3000 ms.



0 mm

0.5 mm

1 mm

BOTH Plane

- Scraper position before touch the beam in both plane with pilot.

The screenshot displays the SPS Scrapper v1.0.7 software interface. The main window is titled "SPS Scrapper v1.0.7 - May, 2010" and shows the "SCRAPER Settings" for user "LHCFAST1". The status is "IDLE". The settings table is as follows:

Parameter	Value
Demanded	Demanded
Scraping H and V	Scraping H and V
Scrapper delay (ms)	3,050
Scrapper h Position (mm)	4.7
Scrapper v Position (mm)	7.4
Scrapper Park Position (mm)	30
Scrapper Out Position (mm)	40

Below the settings table are buttons for "Acquire", "Start Monitoring", "Stop", and "Send". A status bar at the bottom indicates "16:42:03 - Scraper updated".

An inset window titled "SPS BCT Measurement V2.1-2008" shows a graph of "Intensity / 10e8" versus "time / ms". The graph displays "beam current" (blue line), "previous cycle" (green line), and "reference data" (red line). The intensity starts at approximately 55, drops to about 50 at 1000ms, and then drops sharply to about 35 at 3500ms. The x-axis ranges from 0 to 4500ms, and the y-axis ranges from 0 to 60.

At the bottom of the interface is a "Console" window showing running tasks and system messages, including "superCytelo (int 1) -> 48938" and "measSlamp (float) [482] -> 10.00, 20.00, 30.00, 40.00, 50.00, 60.00, 70.00, 80.00, 90.00, 100.00, 110.00, 120.00, 130.00, 140.00, 150.00, 160.00, 170.00, 180.00, 190.00, 200.00, observables (int 1) -> 2".

BOTH Plane

- $V=7.4$ mm for pilot touch beam.
- $V=6.7$ mm for indiv ($2 \cdot 10^{10}$) kill the beam

SPS Scrapper v1.0.7 - May, 2010

Jun 07 16:16:06 SPS - LHCFAS2, 39

LHCFAS1 - ...

File References Analyze Help

SCRAPER Status	SCRAPER Settings	
Current User	Demanded	
LHCFAS2	IDLE - Stand By	
Status control	3,000	
RETRACT	4.7	
Demanded status	6.7	
RETRACT	30	
Current status	40	
IDLE		
SCRAPER Mode		
REMOTE		
SwitchFastV		
PARK		
SwitchFastH		
PARK		
SwitchSlowV		
PARK		
SwitchSlowH		
PARK		
Delay Trigger Fast		
3,000		

Intensity / 10⁸

Time / ms

Console | Running tasks

mechDump Float[482] -> 10.00, 20.00, 30.00, 40.00, 50.00, 60.00, 70.00, 80.00, 90.00, 100.00, 110.00, 120.00, 130.00, 140.00, 150.00, 160.00, 170.00, 180.00, 190.00, 200.00

observables (pt ID -> 2

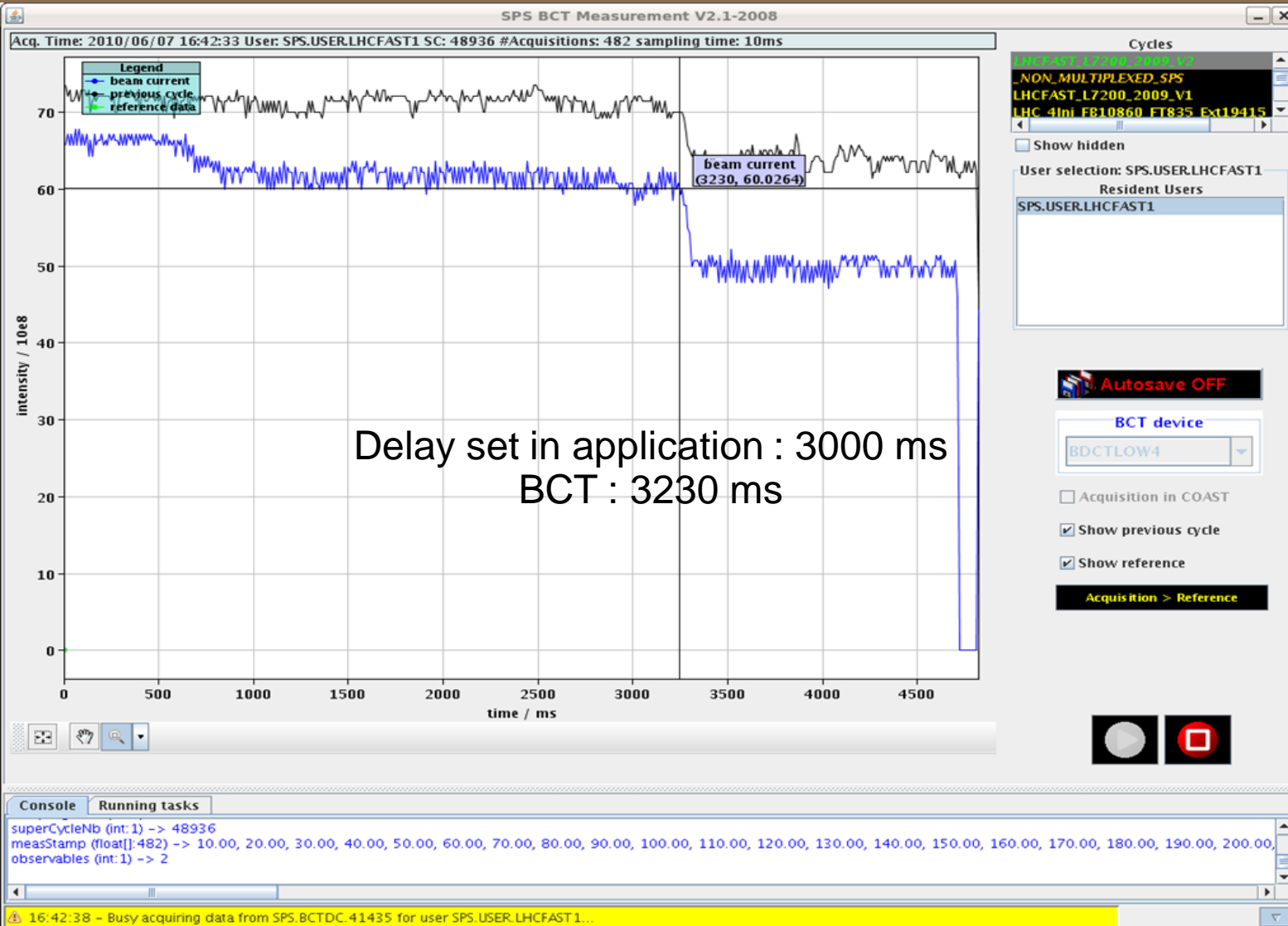
16:15:12 -> Subregion to SPS BCTDC 41435 stopped

16:16:22 - Ready

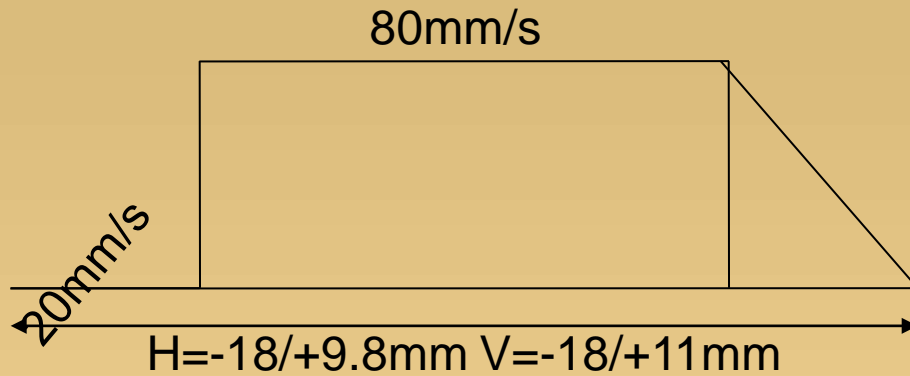
Acquire Start Monitoring Stop Send

16:16:54 - Scrapper updated

Delay (V)210ms-(H)230ms



Delay 210ms-230ms



200ms <> 16mm @ 80mm/s

> Delay probably due to the speed of the scraper.

Elogbook details

<http://elogbook/eLogbook/eLogbook.jsp?shiftId=1027364>

<http://elogbook/eLogbook/eLogbook.jsp?shiftId=1027382>