

European Spallation Source WebPV

Thomas Grandsaert
Development Engineer
European Spallation Source ERIC
October 23rd, 2018

- The idea
 - Why a web viewer?
 - Baselines (SNS, CERN Vistar)
- Realization
 - Backend Infrastructure: (python, pyepics)
 - Clientside Infrastructure: JSON object format
 - Result
- Wrapup
 - Future plans
 - Questions

The Idea

Why a web viewer?

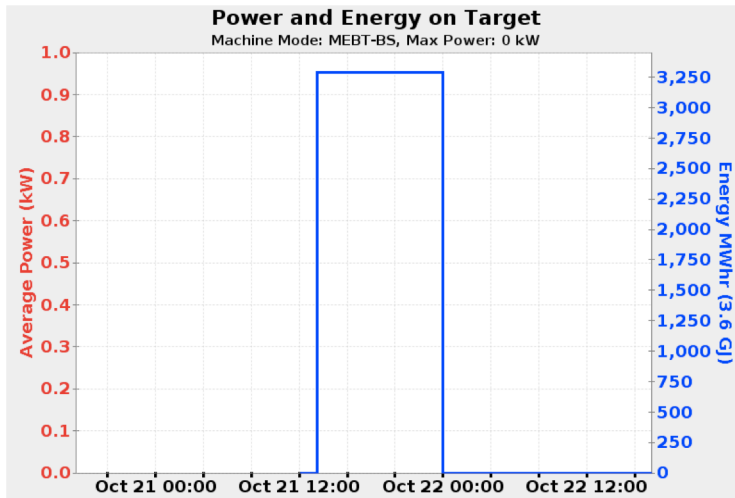


- Good PR
- PBI focused use cases
- Internal education
- To show off our hard work
- Validation for IK partners post-comissioning
- ?????
- It's cool.

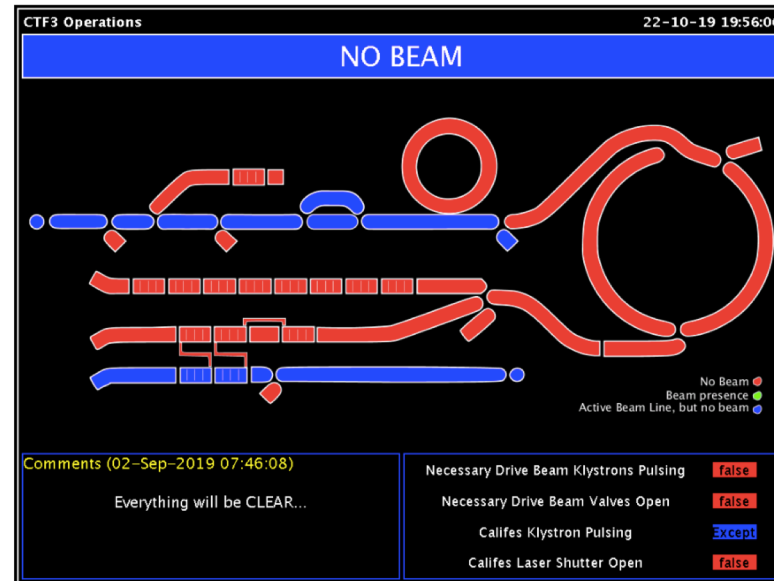
The Idea

Baselines (SNS, CERN Vistars)

SNS



CERN Vistars



Realization

Some Backend/frontend details



- Backend
 - Based on webEPICS from ORNL/SNS (<https://github.com/klemenv/WebEPICS>)
 - Adapted for python3 and pyepics3 on top of EPICSv3 (not EPICSv4 / pva)
 - Read-only (no "caput")
- Frontend
 - No conversion of OPI/BOB files to HTML/JS (hand crafted web pages)
 - Basic JS/HTML for text and graphics, plotly.ly for plots
 - Can connect directly to live IOC PV
 - Also with a python3 based IOC (using pccaspy) that performs proton counting
 - Websocket communication between the web server and the client

Realization

More frontend details



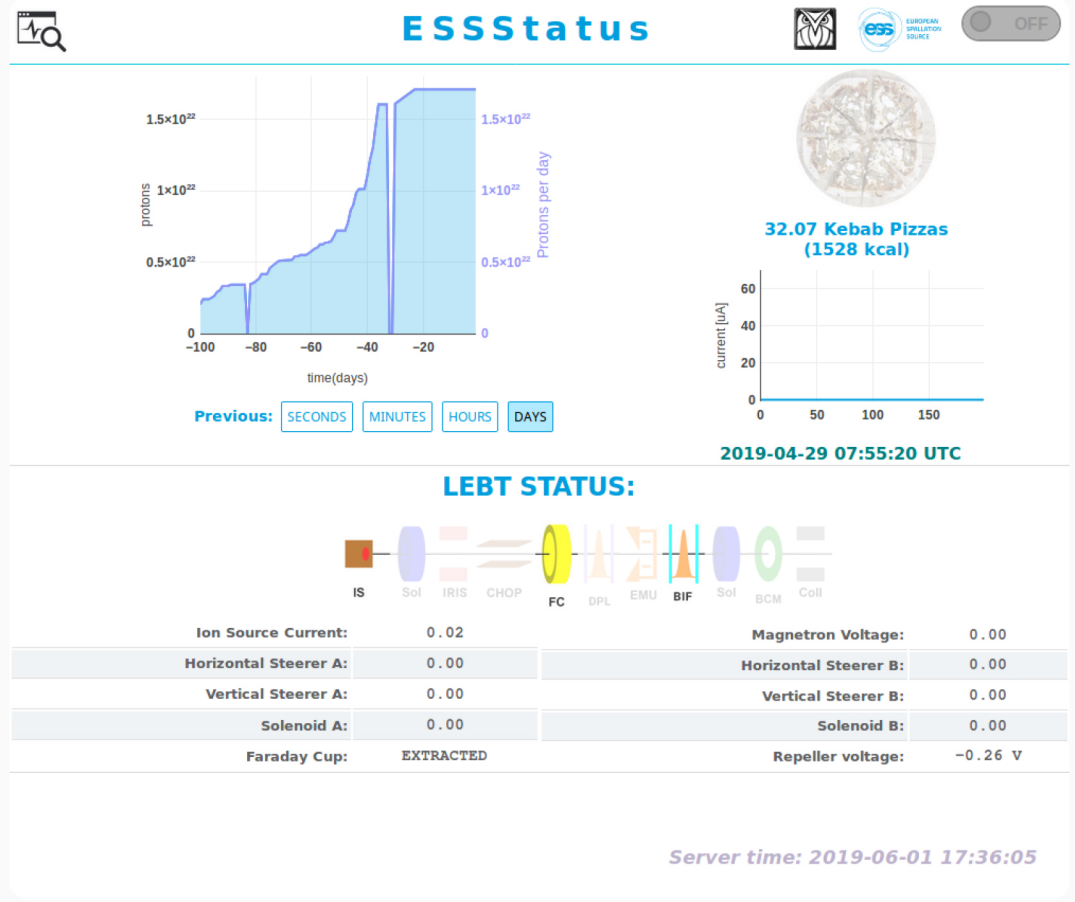
```
this.yAutoRange[0] = options.yAutoRange !== false;
this.yAutoRange[1] = options.y2AutoRange !== false;
this.yRange = [];
this.yMin = options.yMin;
this.yRange[0] = options.yRange;
this.yRange[1] = options.y2Range;
this.stop = false;
this.updatePlot = false;
this.modeBar = options.modeBar || false;
this.cover = options.cover;
this.scalingFactor = options.scalingFactor || 1;
this.colorScale = options.colorScale;
this.type = options.type || "scatter";
this.mode = options.mode || "lines";
this.plotDiv = options.plotDiv || "plots";
this.height = options.height || defaultHeight;
this.width = options.width || defaultWidth;
this.timeStamp = options.timeStamp !== false;
this.title = options.title !== false;
this.margin = options.margin || {l: 70,r: 10,b: 40,t: 10,pad: 4}
this.xTitle = options.xTitle;
this.yTitle = options.yTitle;
```

```
this.zMin = options.zMin;
this.zMax = options.zMax;
this.lineWidth = options.lineWidth || 2;
this.y2Title = options.y2Title;
this.numX = options.numX;
this.nDecimate = options.nDecimate || 1;
this.numY = options.numY;
this.units = options.units || "";
this.caseSwitch = options.caseSwitch || {};
this.yColor = [];
this.yAxisType = options.yAxisType || "";
this.yColor[0] = options.yColor || getRandomRgb();
this.yColor[1] = options.y2Color || getRandomRgb();
this.yColorFill = [];
this.yColorFill[0] = options.yColorFill || getRandomRgb();
this.yColorFill[1] = options.y2ColorFill || getRandomRgb();
this.fill = options.fill || "none";
this.refreshRate = options.refreshRate || 1000;
this.decimals = options.decimals || 2;
this.xTicksToReplace = options.xTicksToReplace || undefined;
this.newXTicks = options.newXTicks || undefined;
this.xTickSize = options.xTickSize || 12;
this.yTickSize = options.yTickSize || 12;
```

Realization Result

<http://webpv.ess.lu.se>

<http://webpv.ess.lu.se/LEBTTV.html>



ESSStatus

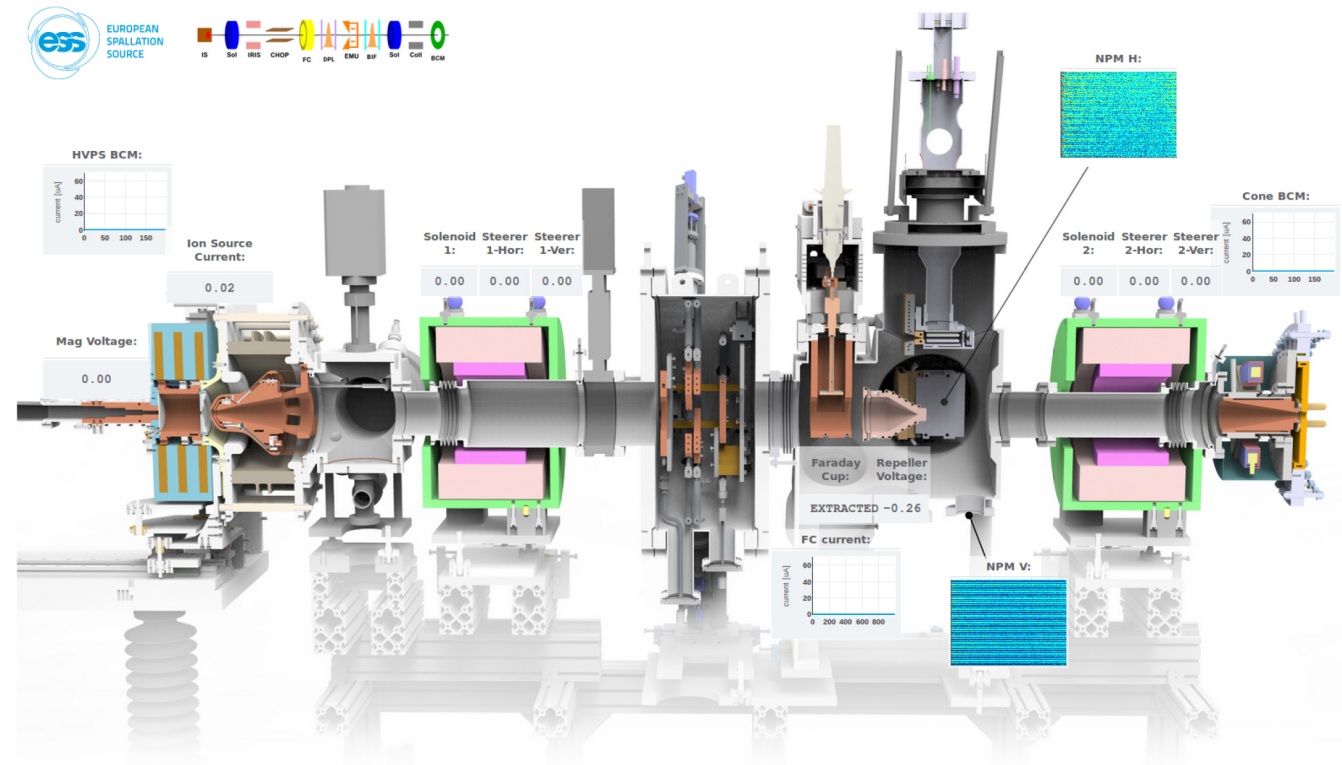
32.07 Kebab Pizzas (1528 kcal)

2019-04-29 07:55:20 UTC

LEBT STATUS:

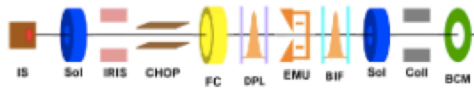
Ion Source Current:	0.02	Magnetron Voltage:	0.00
Horizontal Steerer A:	0.00	Horizontal Steerer B:	0.00
Vertical Steerer A:	0.00	Vertical Steerer B:	0.00
Solenoid A:	0.00	Solenoid B:	0.00
Faraday Cup:	EXTRACTED	Repeller voltage:	-0.26 V

Server time: 2019-06-01 17:36:05



Wrapup

Future plans



<http://webpv.ess.lu.se/RFQTV.html>

NPM H:

HVPS BCM:

Cone BCM:

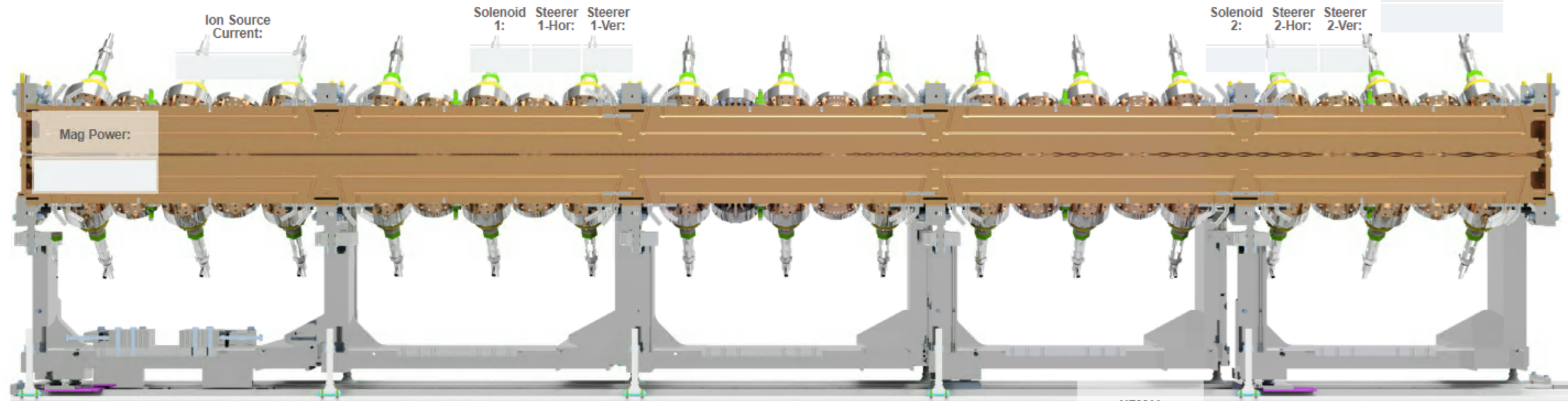
Ion Source
Current:

Solenoid 1:
Steerer 1-Hor:
Steerer 1-Ver:

Solenoid 2:
Steerer 2-Hor:
Steerer 2-Ver:

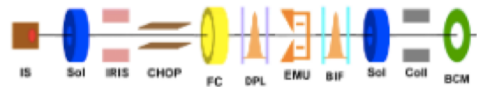
Mag Power:

NPM V:



Wrapup

Future plans



<http://webpv.ess.lu.se/MEBTTV.html>

