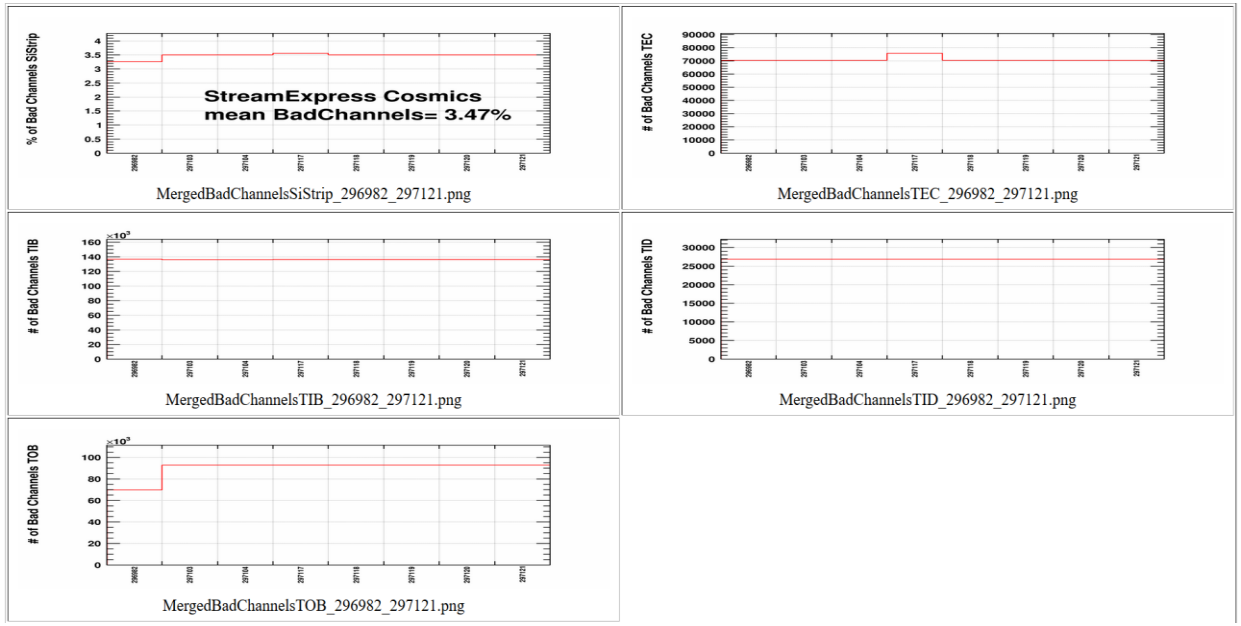
Bad Components Trend Plotter

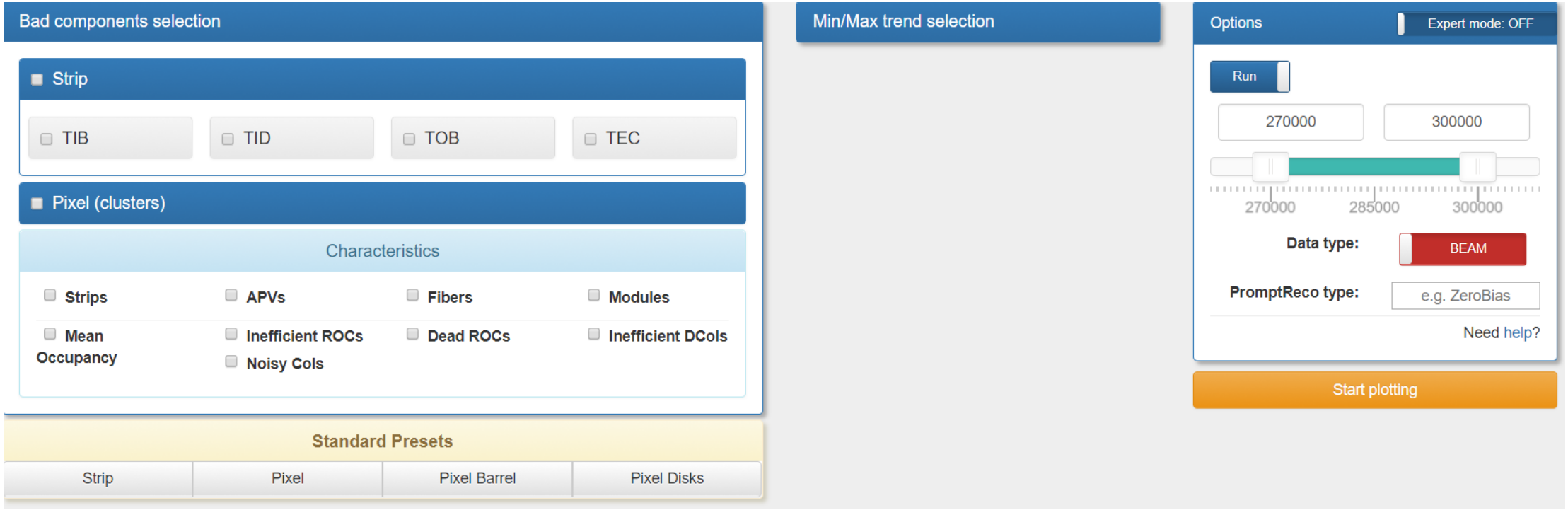
User Guide

The aim of the tool

- Replace Merged Bad Channels Tool:
  - http://vocms061.cern.ch/event_display/MergedBadChannels/
  - Shell script that produces bad component trends
  - Static png images
  - Not very user friendly
- Provide:
  - More flexibility
  - Easiness of use
  - New features



Bad Components Trend Plotter



http://vocms061.cern.ch/event_display/MergedBadChannelsReloaded

Main features

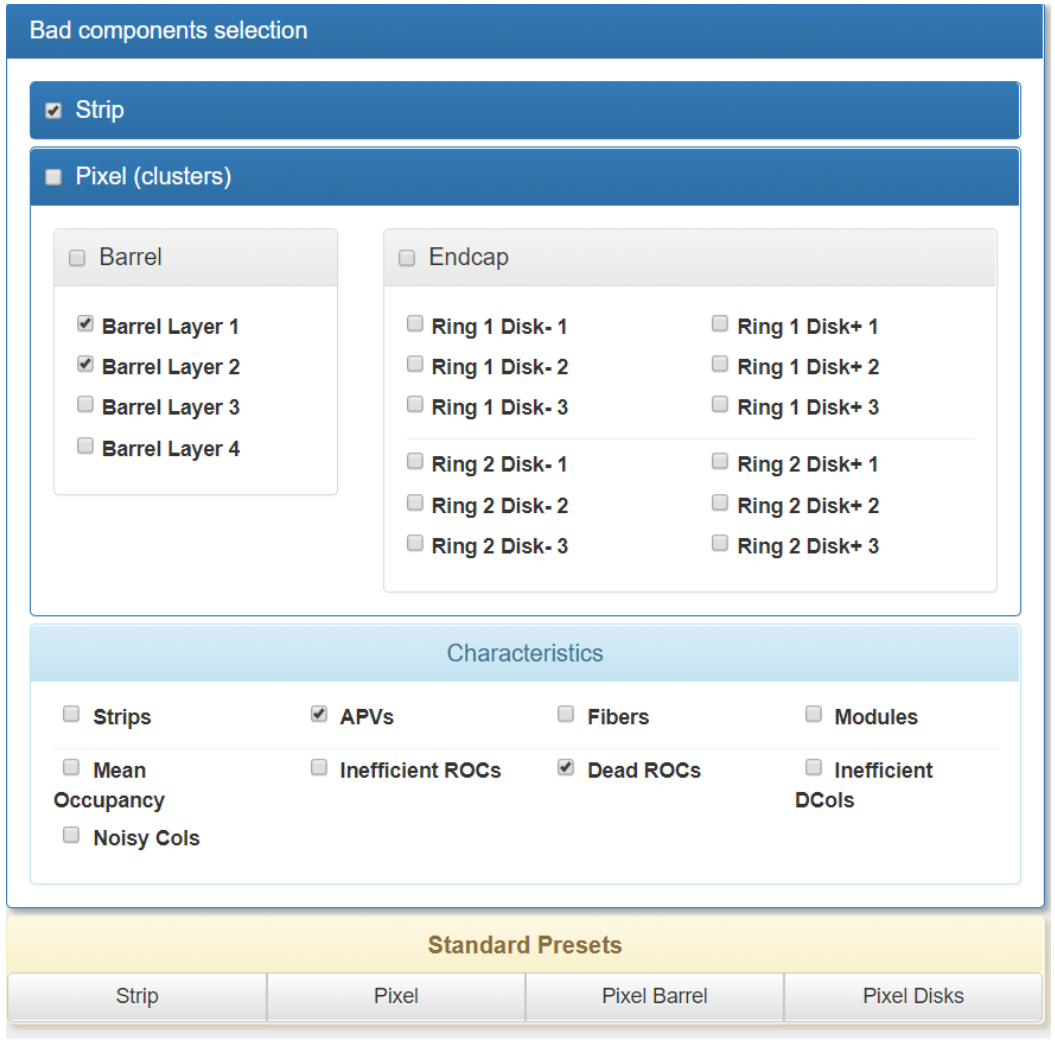
- Create your plots even with 3 clicks:
  - Predefined **Standard Presets** – use most frequently used presets without looking into details
- Flexibility:
  - Choose only those parameters that you really want to monitor from unfoldable panels: detector parts, characteristics (i.e. APVs, ROCs, ...)
  - Pick run range in the way you want:
    - Simple run start – run end
    - Runs in the given date range
    - Custom database queries

Main features

- **NEW:** Track extreme values (i.e min/max number of clusters)
  - Monitor whether Tracker module is among those that appear to have extreme value
- **NEW:** Customizeable plots:
  - Switch from linear to logarythmic scale
  - Show/Hide fill tags
  - Superimpose all trends
  - Save your plot on the disk
  - And More...
- **NEW:** Extended in-GUI help
  - most objects have tooltips that explain how to use given switch – just hover your mouse

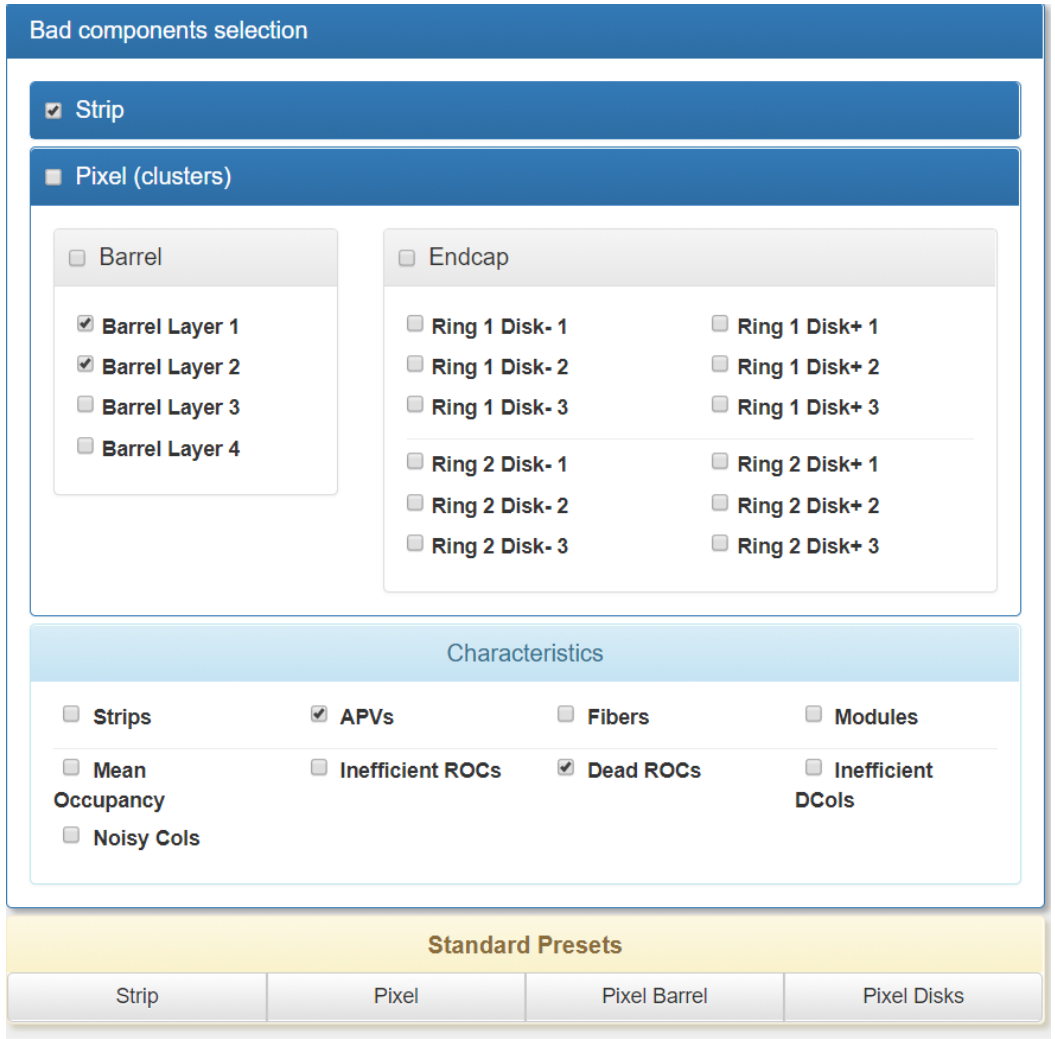
Choosing what you want to plot

- Select Bad Components:
  - Choose them from the unfoldable Strip/Pixel structured panel (**Bad components selection**)
- Choose your **Characteristics** appropriately:
  - If you select only Strip parts and Pixel-related characteristics you will get no plots (and vice versa)
  - You can choose multiple **Characteristics** in that way you will get many plots for the single component:
    - Barrel Layer 1 && (Dead ROCs + Mean Occupancy) -> 2 plots on the canvas



Choosing what you want to plot

- Some component-characteristic pairs are tricky:
  - Top level Pixel (clusters) + whatever Pixel characteristic gives only one plot, the trend of Pixel clusters
  - Inefficient Dcols (IDCs) / Noisy Cols are insensitive to the Ring choice:
    - Ring 1 Disk- 1 and Ring 2 Disk- 1 both will give you trend for Disk- 1
- **TIP:** fast (un)checking:
  - You can conviniently (un)check all checkbuttons in the group if you double click one of them
  - Available also in the Min/Max selection panel

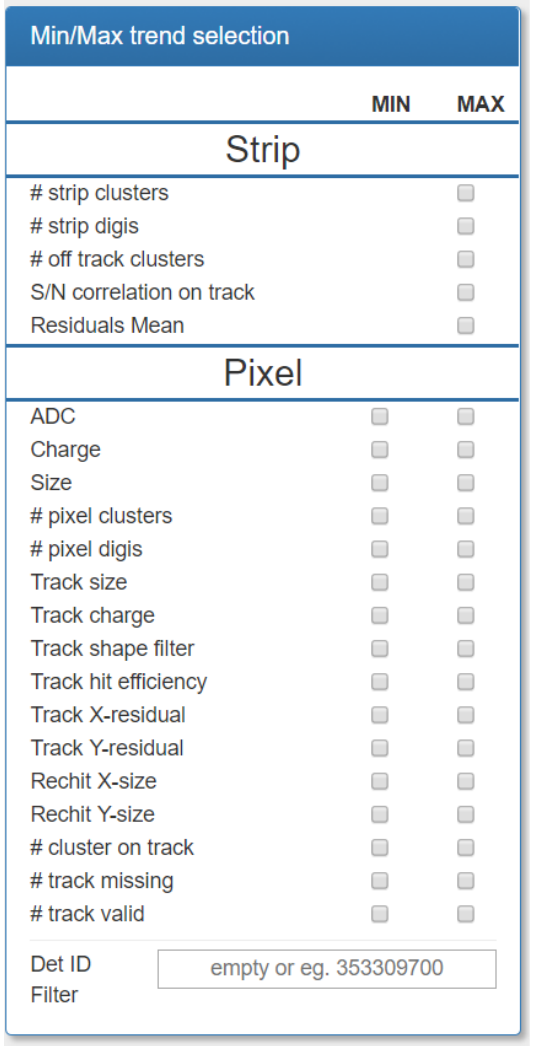


Choosing what you want to plot

- **Standard Presets** give you quick access to your mostly used plots:
  - Strip: (TIB + TID + TOB + TEC) && APVs
  - Pixel: (Barrel + Endcap) && Dead ROCs
  - Pixel Barrel (L1 + L2 + L3 + L4) && Dead ROCs
  - Pixel Disks (All Endcap subcomponents) && Dead ROCs
- **Standard Presets** set the default look of the plot:
  - **KNOWN ISSUE:** If you plot for the first time using Standard Preset Superimposed trend might be invisible. In that case redraw your plot simply clicking once again on the preset you chose or orange „Start plotting” button
- **BEWARE:** Plotting procedure starts right after the click at the Preset which means it will take all runs that are currently specified in the **Options panel**

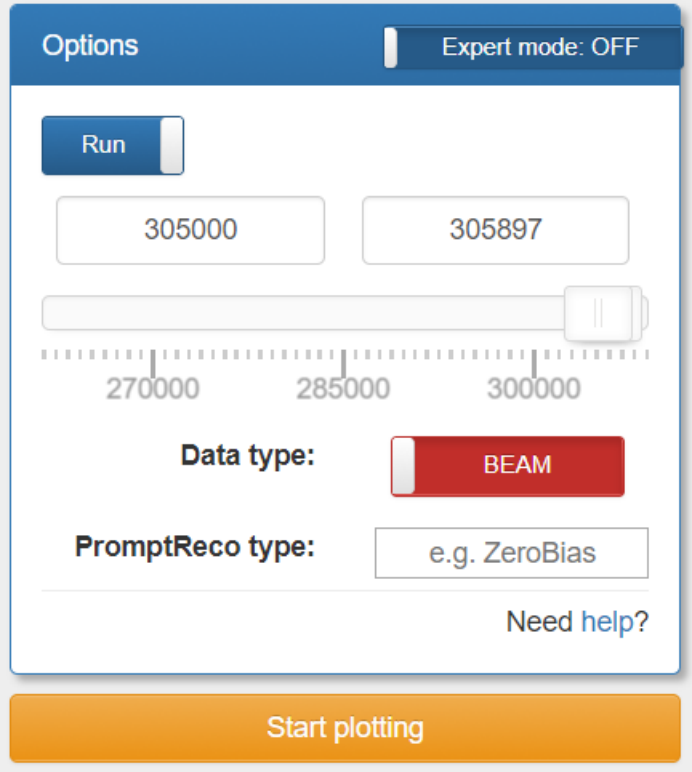
Choosing what you want to plot

- This panel is folded by default
  - Click on its name to unfold
- Choose trends you want to see
  - You will get an extreme value (i.e # of digis) for each run in the range
  - You can mix this with Bad Components on one plot
- Det ID Filter to check extreme behaviour of a single Tracker module:
  - When Det ID is provided algorithm checks whether given ID is among extreme valued modules:
    - If not, 0 is the output for the given run
    - Otherwise, it puts reported value in the bin



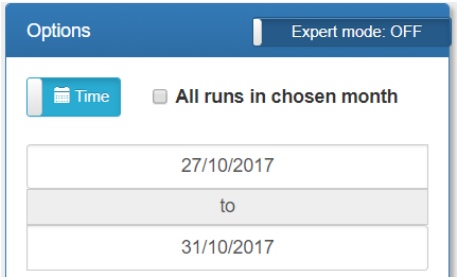
Dataset selection

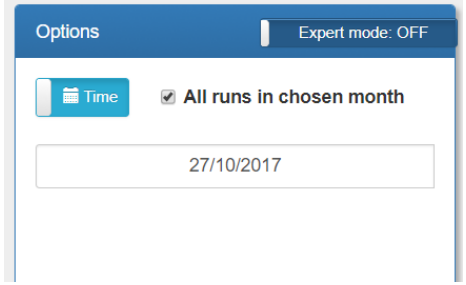
- Choose your runs:
  - Pass start and end run number, or
  - Pass dates of wanted runs, or
  - Switch to expert mode and create your own selctor (database query)
- Switch between Beam and Cosmics data type
- PromptReco type:
  - By default: Beam -> StreamExpress, Cosmics -> StreamExpressCosmics
  - You can pass your own string to look only for example „ZeroBias” subdatasets
- If you are ready with all settings press **Start plotting**

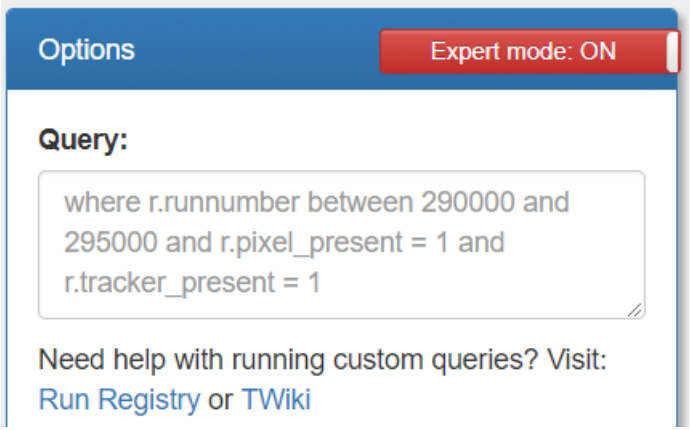


Dataset selection

- In time-based run range selection mode you have 2 possibilities:
  - Pick date range (start – end)
  - Pick a date and it will extract all runs in a given month (check **All runs in chosen month**)
- Expert mode:
  - For those with special needs in run querying
  - You can access all columns in *runreg_tracker.runs* with *r*
  - Reading linked TWiki page is strongly advised



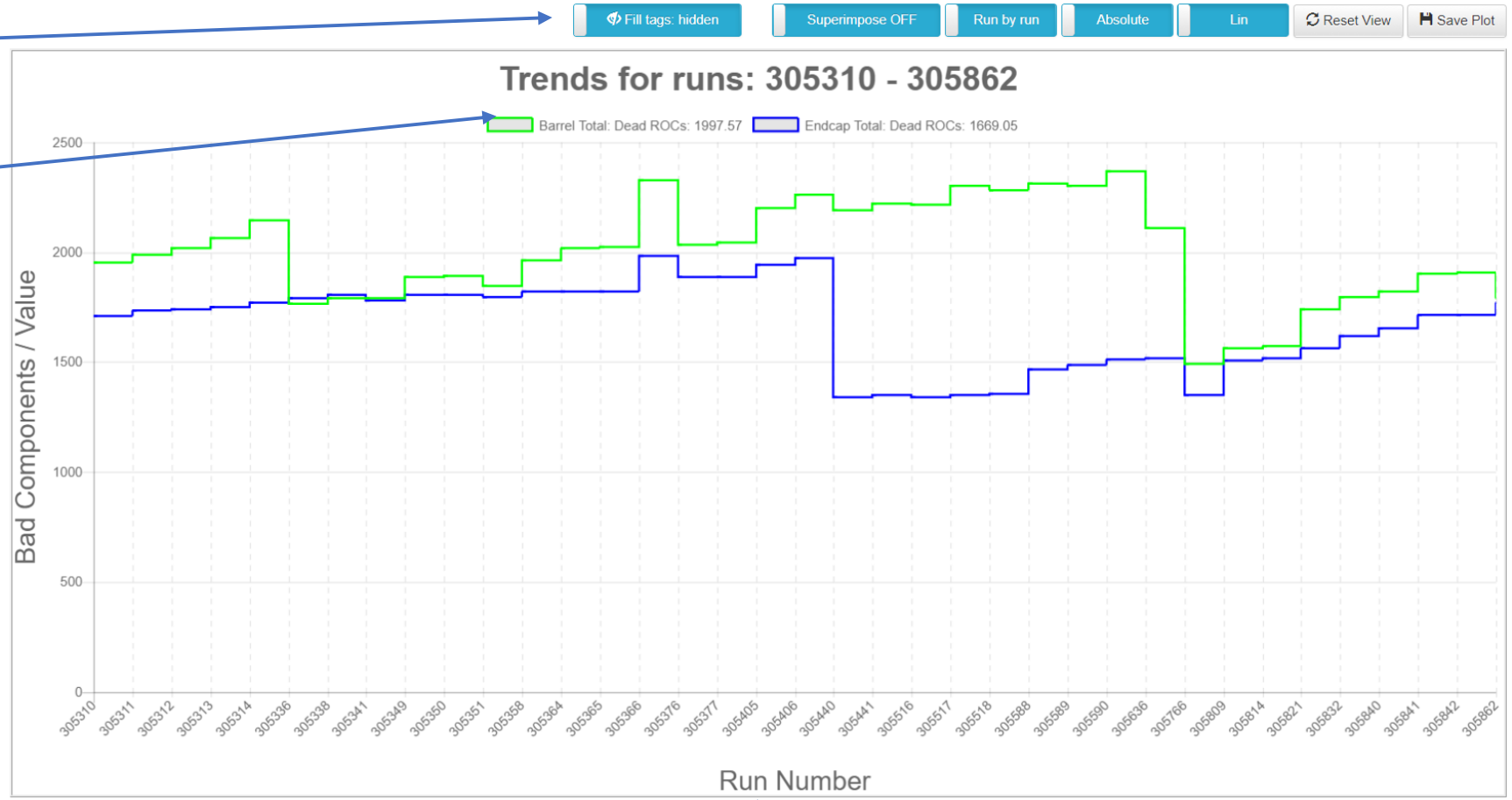




The Trend – the simples view

Plot switches and buttons

Data series



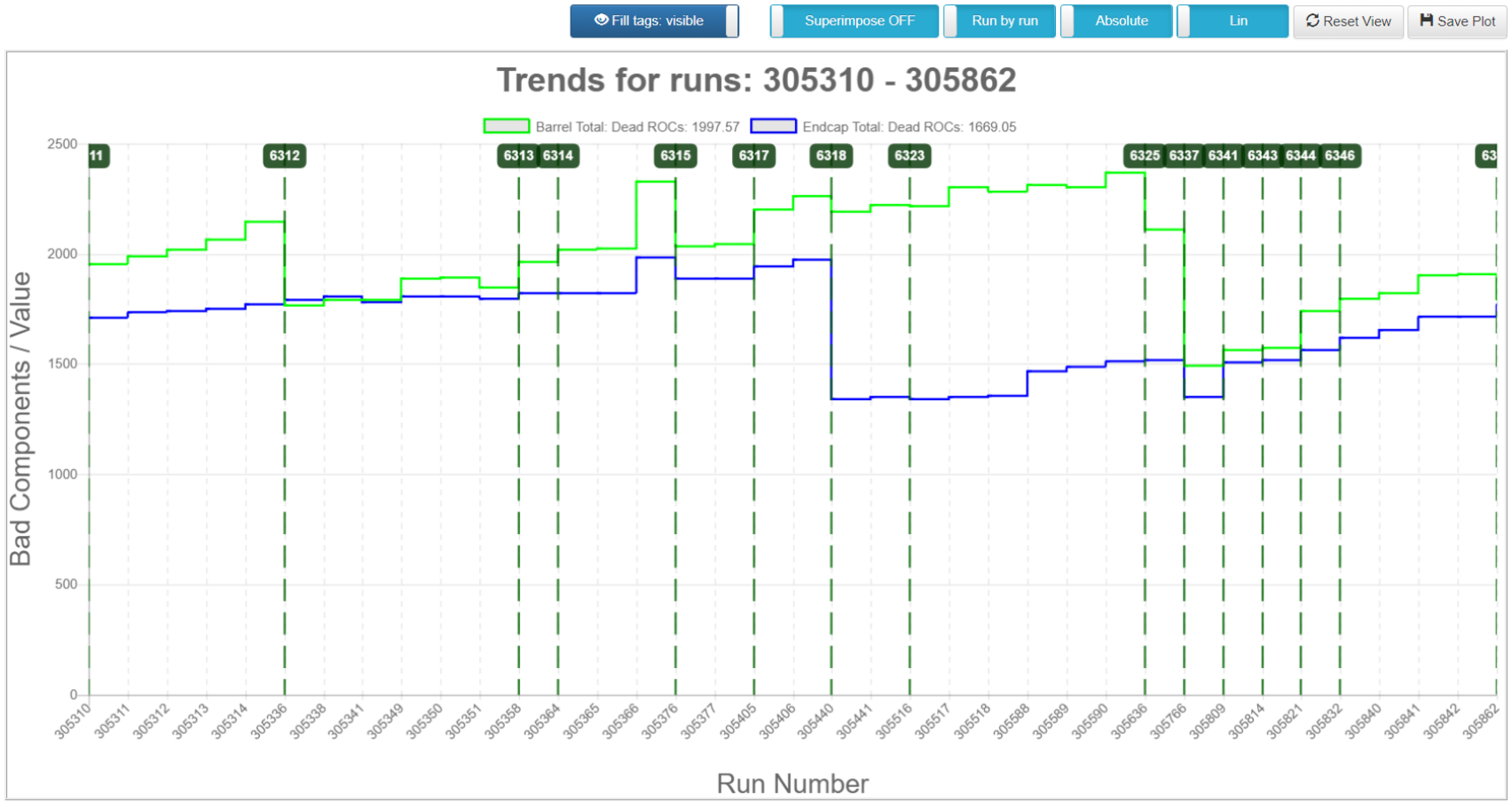
Plot Area

The Trend

- Basics:
  - Switches allow you to add more information to the plot, change how it looks like
  - You can mix switches as you need
- Data series:
  - Click on the data series box to hide the trend on the plot
  - The value next to the name is the mean of dataset in chosen run range

The Trend – Fill Tags

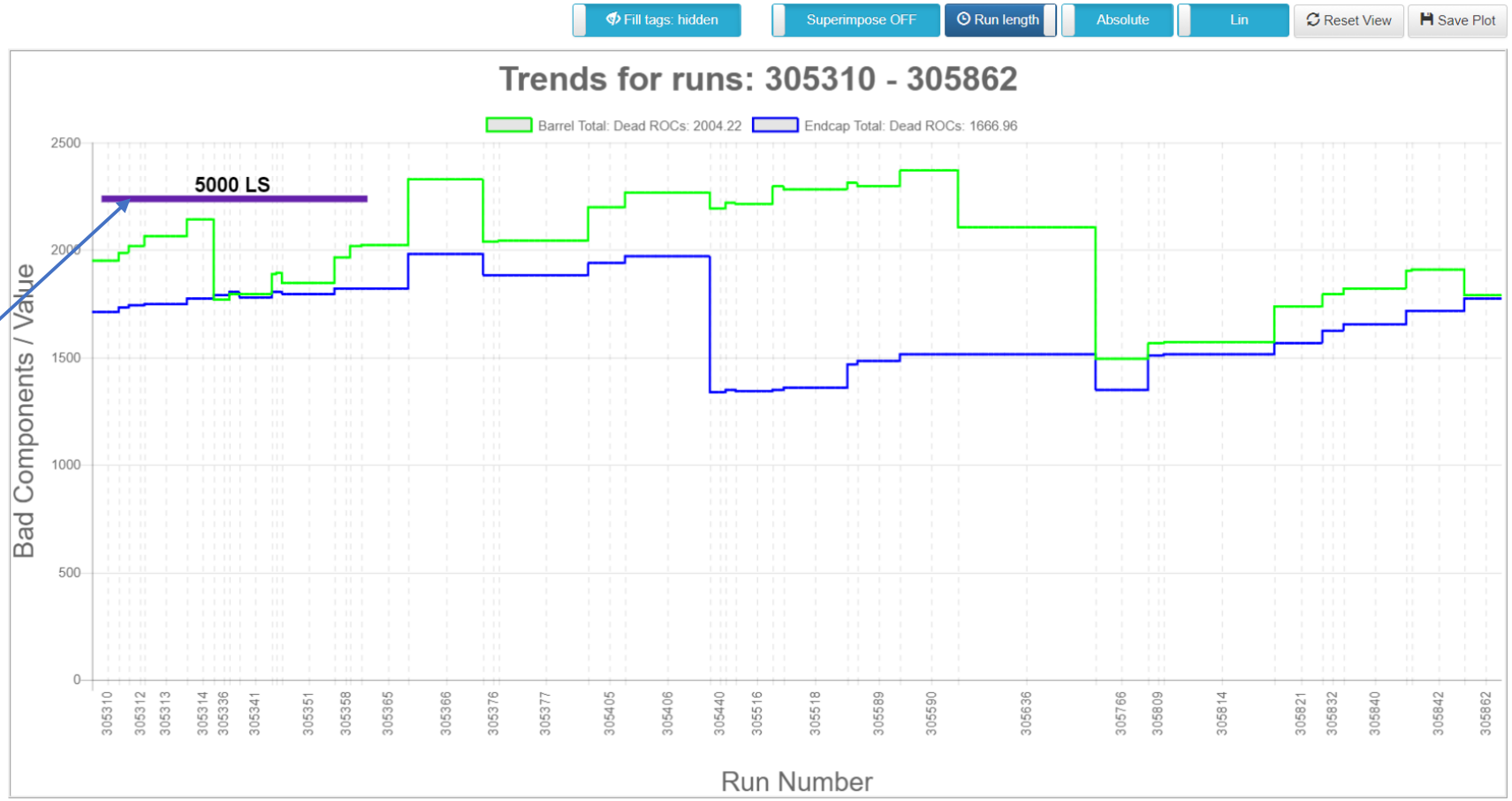
Put begin fill tag on the plot



The Trend – Run Length

If on, single run data is not a single bin anymore. The number of bins corresponds to the length of the run.

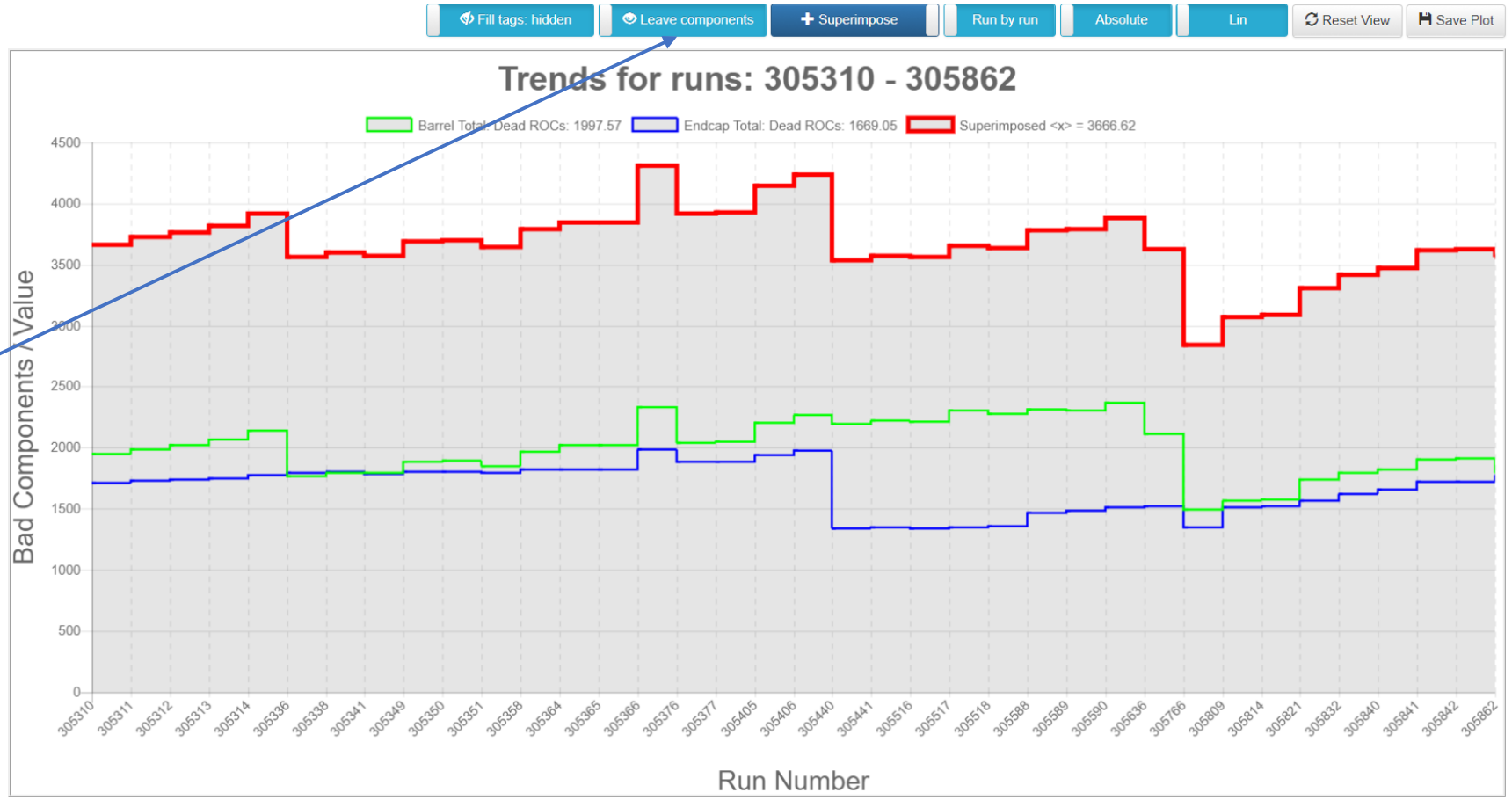
Time scale indicator



The Trend - Superimpose

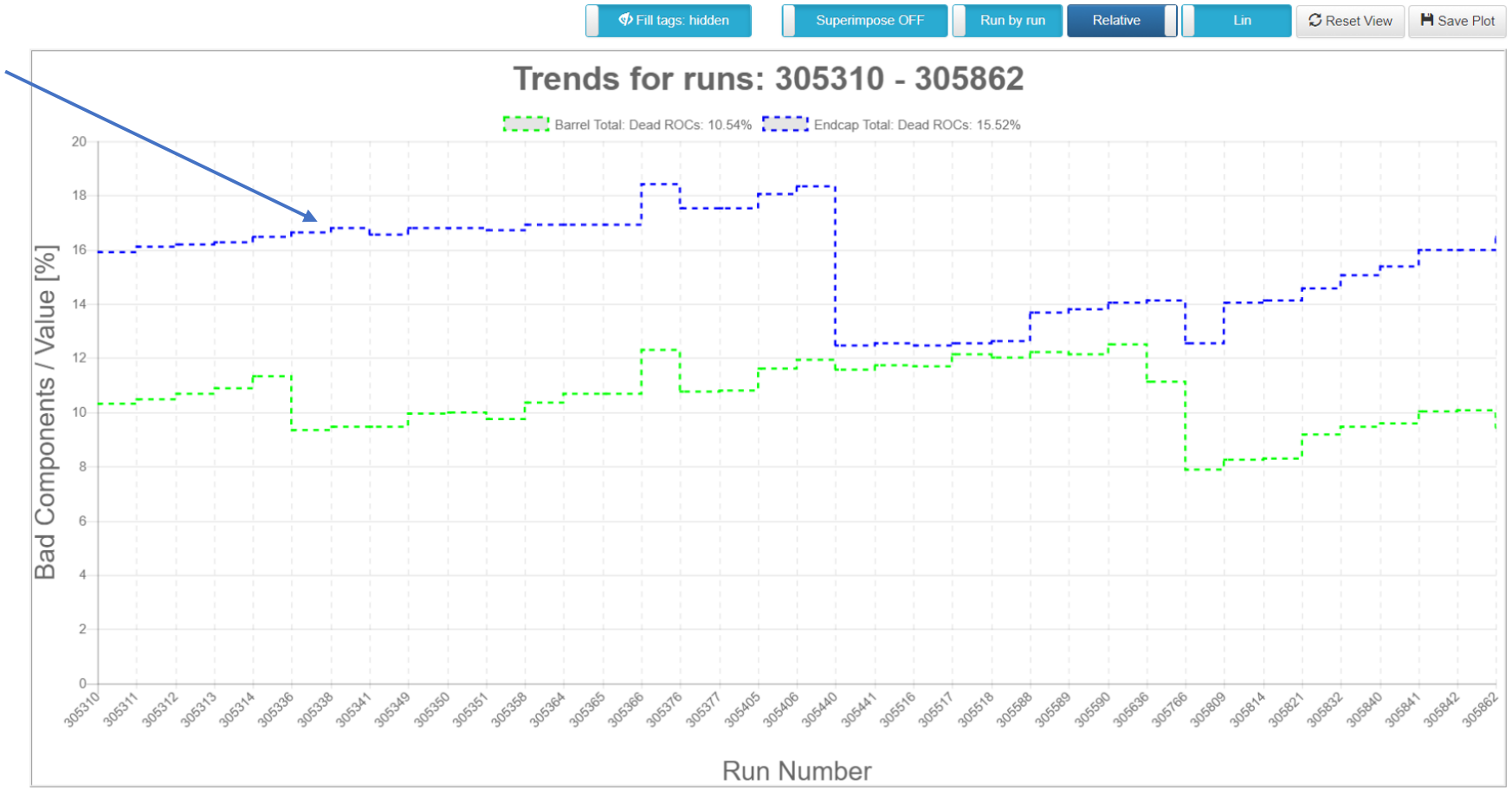
Content aware superimposition of all trends. Always drawn with red line

You can decide to collectively hide all trends but the superimposed



The Trend - Relative

Relative plots are drawn with masked line

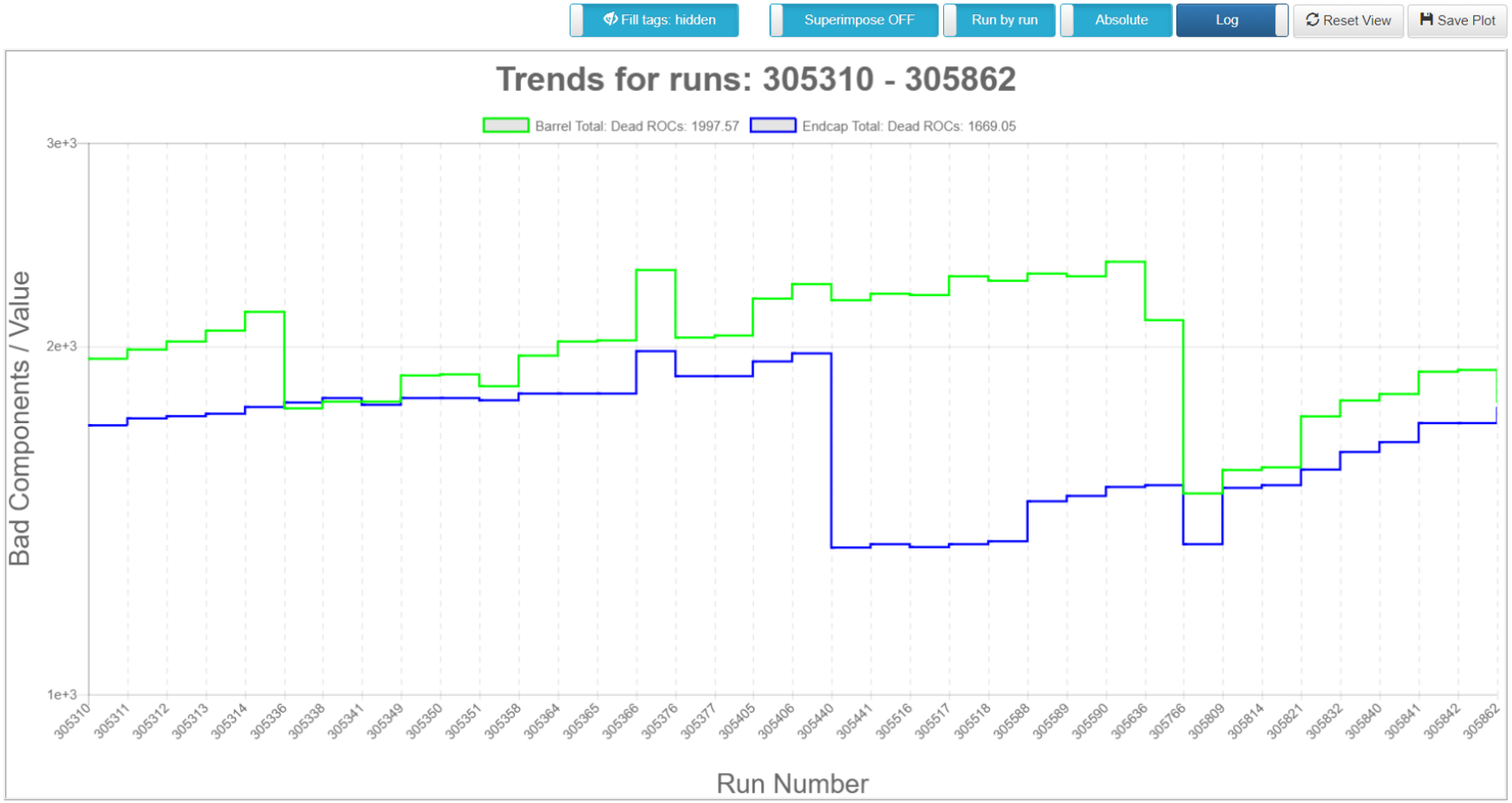


The Trend - Relative

- Trends will be turned to relative only if it is possible to know the total number of something:
  - In particular Min/Max plots can not be converted to the relative plots
- If initially there was a trend that does not have a relative representation it will not be shown
- You can superimpose trends fearlessly because this operation is content-aware
  - It is not simple summing up of %

The Trend – Lin/Log switch

Changes Y-axis data representation to linear or logarythmic



The Trend - Buttons

- Reset View
  - If the plot started to look akward or you just want to switch to the fresh plot click on this button
- Save Plot
  - Save current canvas to the drive as png

Final notes

- **NOTE:** It may happen that the tool looks strange and is not responding:
  - If you have chosen long run range (> 2000) wait for your results, or
  - Run Registry server is down or it is other Run Registry-related problem

- If you experience problems using this tool or have some suggestions write an email: pawel.jurgielewicz@cern.ch