

SoMaRIL

(Software Maximum Reflection InterLock)

PPS 10.02.2022

# SoMaRIL

## (Software Maximum Reflection InterLock)

- Implemented by Bagrat and Grygorii
- In operation since 07.02.2022A
- Functionality:
  - The server is looking for reflected power signals (10MW, WG1,2 dir.couplers)
  - Switches FF off if  $\max \text{Refl}[\text{calc\_beg}, \text{calc\_end}] \geq \text{Threshold}$
  - Currently thresholds:
    - WG1,2  $\rightarrow$  0.75MW
    - 10MW  $\rightarrow$  1.5MW
- First experience:
  - It generally prevents from the gun trip! (exception, e.g., gun trip on 09.02 6:51)
  - But sometimes refl.power slope  $\rightarrow$  "touches" the thresholds for overheated/overcooled cavity

# SoMaRIL: howto

jddd 17.20/18.7.106 T5.2.3 kr... 38Mb/7500Mb

## PITZ Control

gun overview overview booster overview

beam inhibit system

adc modules

DAQ

diagnostic

interlock

laserbeamline

MBI Pharos

magnets

RF1 -> booster RF2 -> gun RF5 -> TDS

radiation protection

vacuum

water / temperature

other alarms / fire alarm

IBPC operating time: 22286 80229775

plasma cells climate overview

logbook PITZ gun conditioning info

timing settings to logbook

tools watchdog system

Save&Restore - Tool Snapshot to logbook PITZ

system\_main.xml /// (on pitz-bkr1.zeuthen...)

## System

operating hours meter

operating hours: 22268

status: 0  
no error

open shutdown windows

Shutdown GUI

move out all diagnostic screens

switch off laser

RPC tool

FSM/Reaction

FLAGS server

Alarm Configurator

MTCA crates

hv power supply

bits handling test

gun5 test

noise pulse counter

jddd tests B

jddd tests W

reaction.xml PITZ/ON/REACTION/RF2\_PREAMP/

## RF2\_PREAMP

RF2\_P

Mode: active

Watched address:  
PITZ\_I\_LOCK/INTERLOCK\_RF2/RF2/G4.STS

Good condition:

Remote value	Comparator	Mask	OK value
6751	and	512	512

Status:  
bad address  
not used  
not used  
event

Insistant for:  
10

e-mail/logbook body:  
RF2 interlock: feedforward and other relevant properties were switched off

e-mail subject:  
Reaction server

Send e-mail to:

Target address:	Set:	Read:
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FF.ENA	0.00	1.00
PITZ.RF/LLRF.CONTROLLER/OVC.GUN/ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/AMPL.OUT_ROTATION	1.00	1.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FFB.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FFC_LFF.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/LFF.GUN/LFF.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/SP.AMPL	5.00	51.12
PITZ.RF/LLRF.HEATING/GUN/FSM_ON	0.00	0.00

ism\_main.xml ///

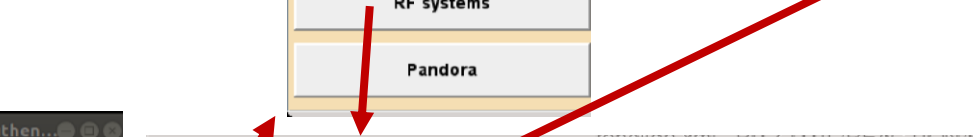
## FSM/Reaction

e-meter (nova2)

RF systems

Pandora

RF210MW\_REFLECTION



# SoMaRIL server

reaction.xml PITZ.UTIL/REACTION/RF2WG1\_REFLECTION/

RF2WG1\_REFLECTION

### RF2WG1\_REFLECTION

Mode: active

Watched address:  
PITZ.RF/RF2.SIS8300DMA/RF2.ADC0/CH05.ZM0

Good condition:

Remote value	Comparator	Threshold
84.718	>	88.75

Status:  
bad address  
not used  
not used  
event

Polypara address:  
PITZ.RF/RF2.ADCSCOPE/RF2.ADC0/CH05.TD.POLYPARA

Polypara value:  
1 - 103.39 0.0035223 0.0

Calculation start address:  
PITZ.UTIL/RF2INFO/RF2\_EDGE/CALC\_BEG

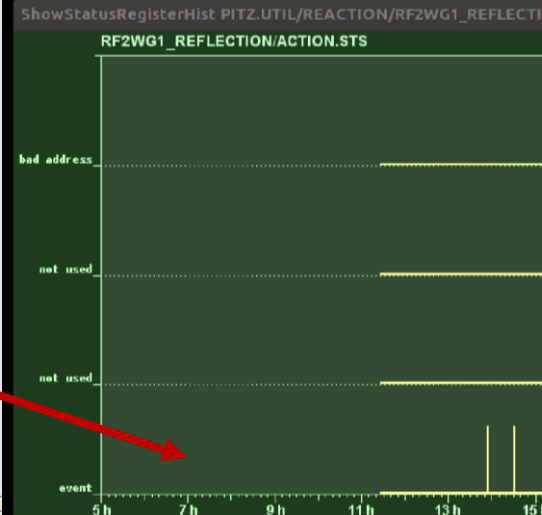
Calculation stop address:  
PITZ.UTIL/RF2INFO/RF2\_EDGE/CALC\_END

e-mail/logbook body:  
SoMaRIL event: WG1 max reflection detected

e-mail subject:  
Reaction server

Send e-mail to:

Target address:	Set:	Read:
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FF.ENA	0.00	1.00
PITZ.RF/LLRF.CONTROLLER/OVC.GUN/ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/AMPL.OUT_ROTATION	1.00	1.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FB.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/FFC_LFF.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/LFF.GUN/LFF.ENA	0.00	0.00
PITZ.RF/LLRF.CONTROLLER/CTRL.GUN/SP.AMPL	5.00	53.00
PITZ.RF/LLRF.HEATING/GUN/FSM_ON	0.00	0.00



ShowStatusRegisterHist PITZ.UTIL/REACTION/RF2WG1\_REFLECTION/ACTION.STS

RF2WG1\_REFLECTION/ACTION.STS

bad address

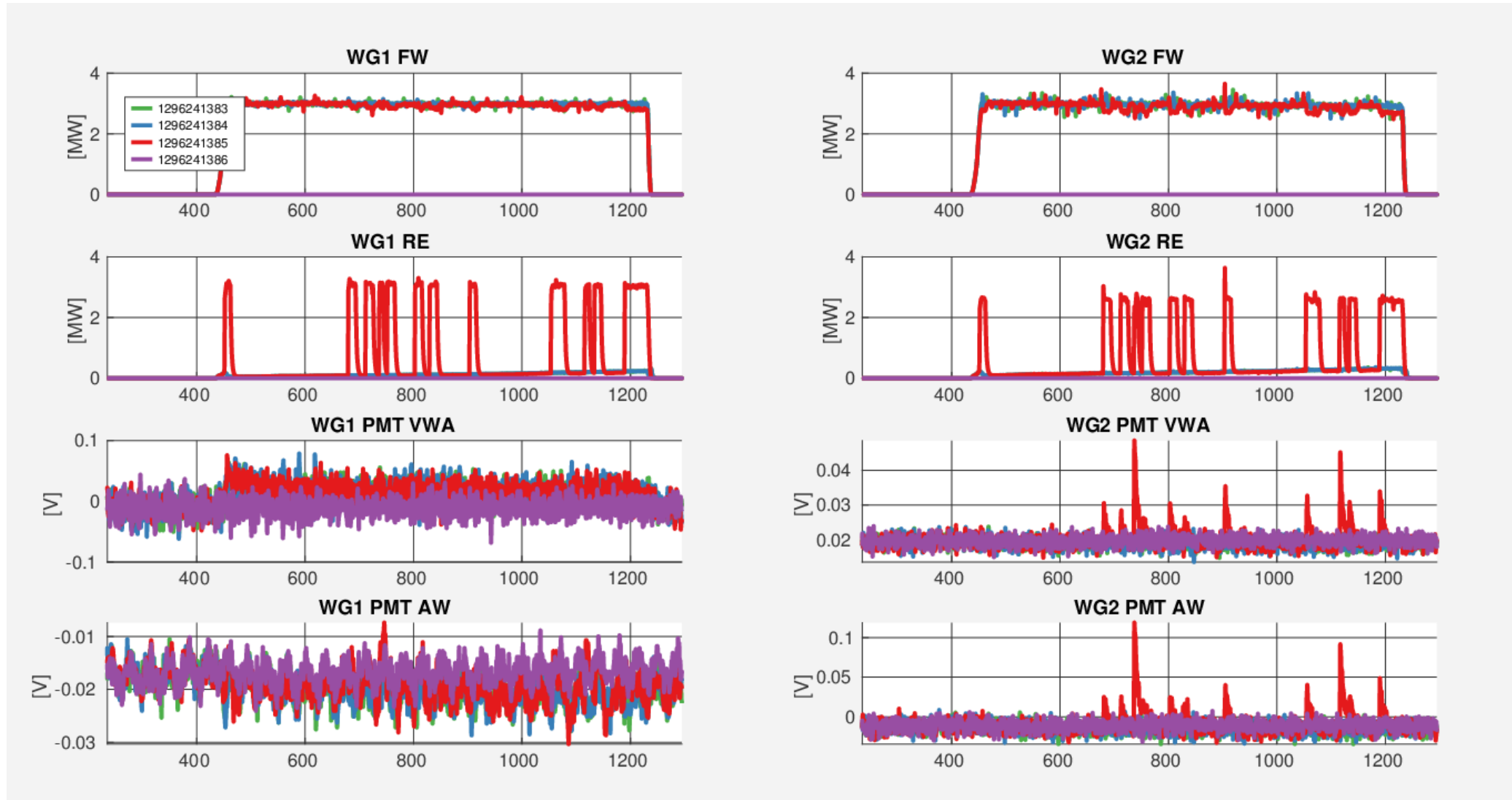
not used

not used

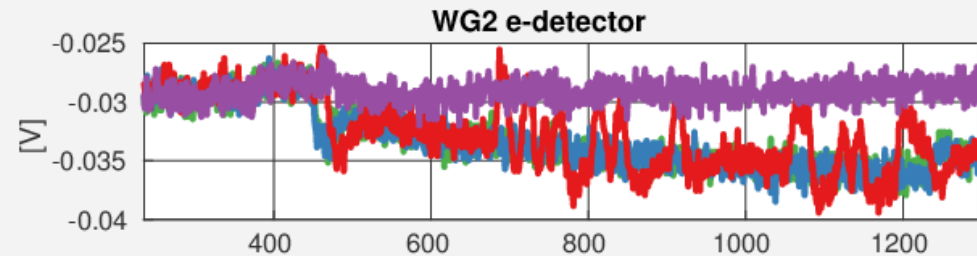
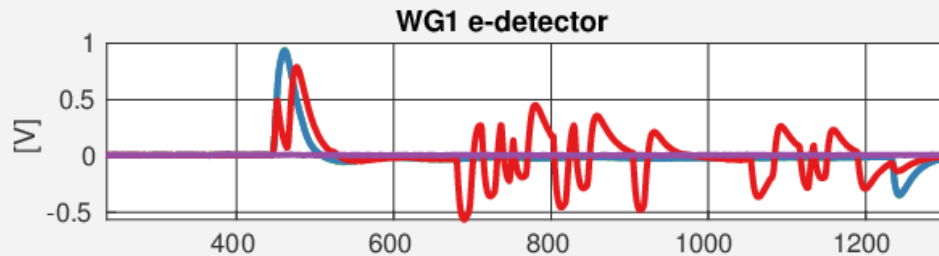
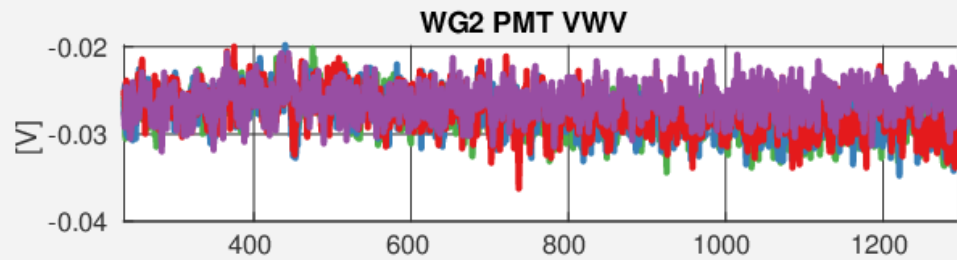
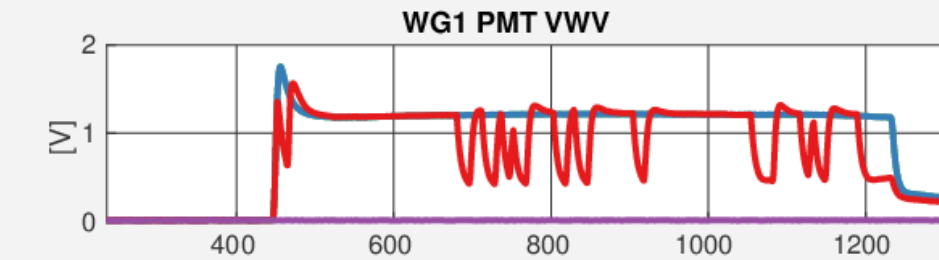
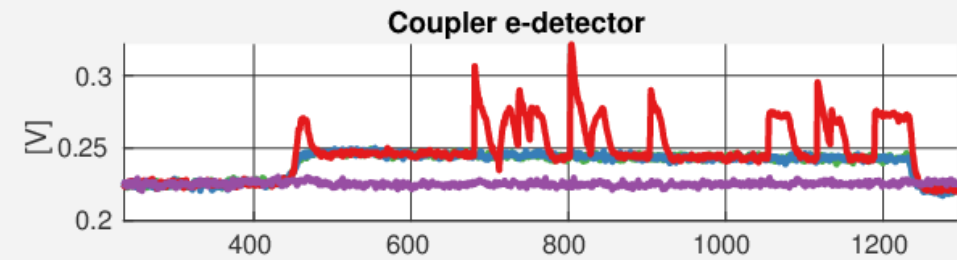
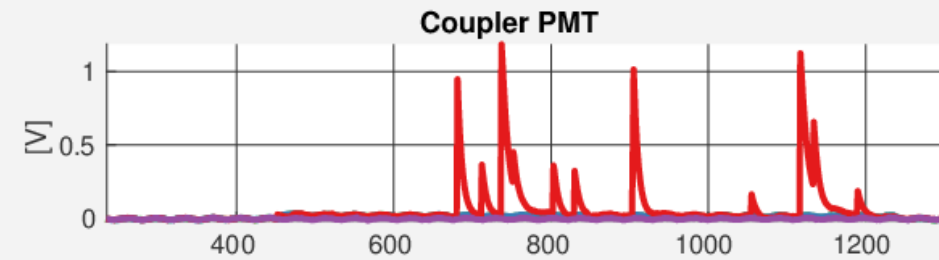
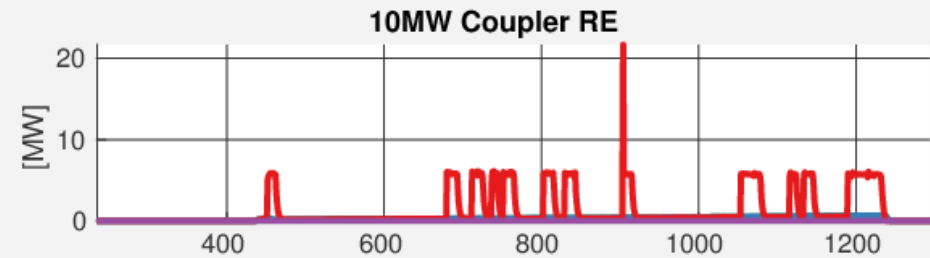
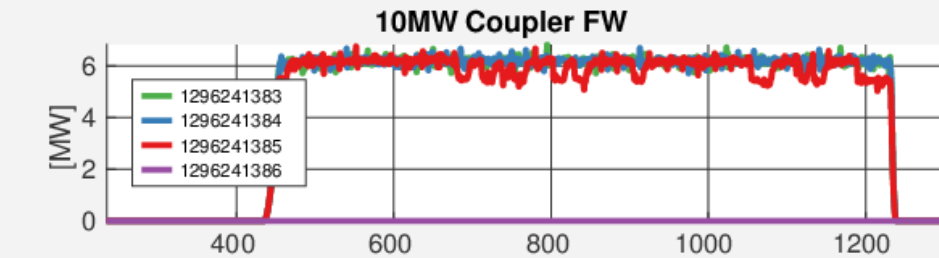
event

5 h 7 h 9 h 11 h 13 h 15 h 18 h  
9.2.2022 9.2.2022 9.2.2022 9.2.2022 9.2.2022 9.2.2022 9.2.2022

# Gun trip on 09.02 6:51 (~6MWg 770us)

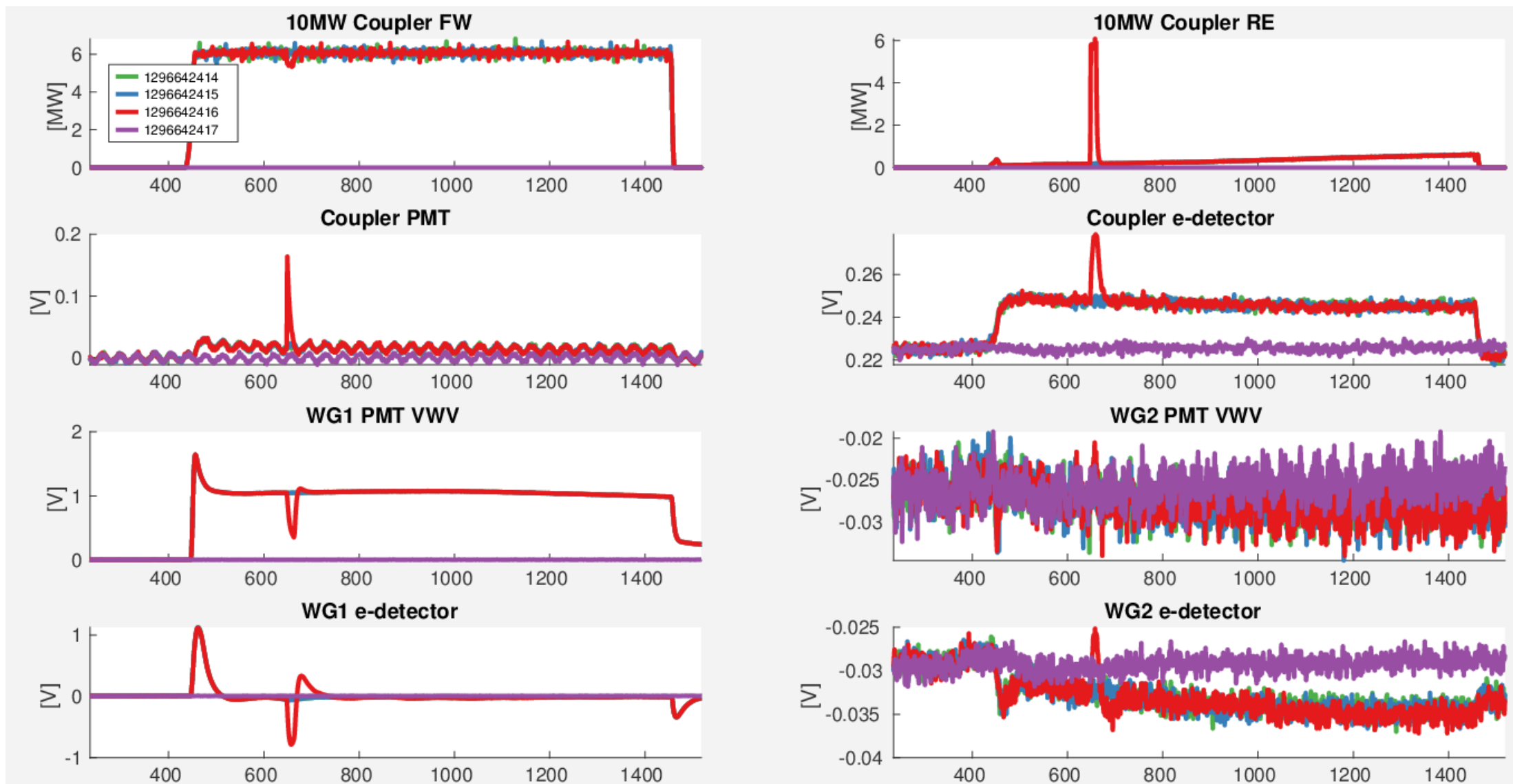


# Gun trip on 09.02 6:51 (~6MWg 770us)



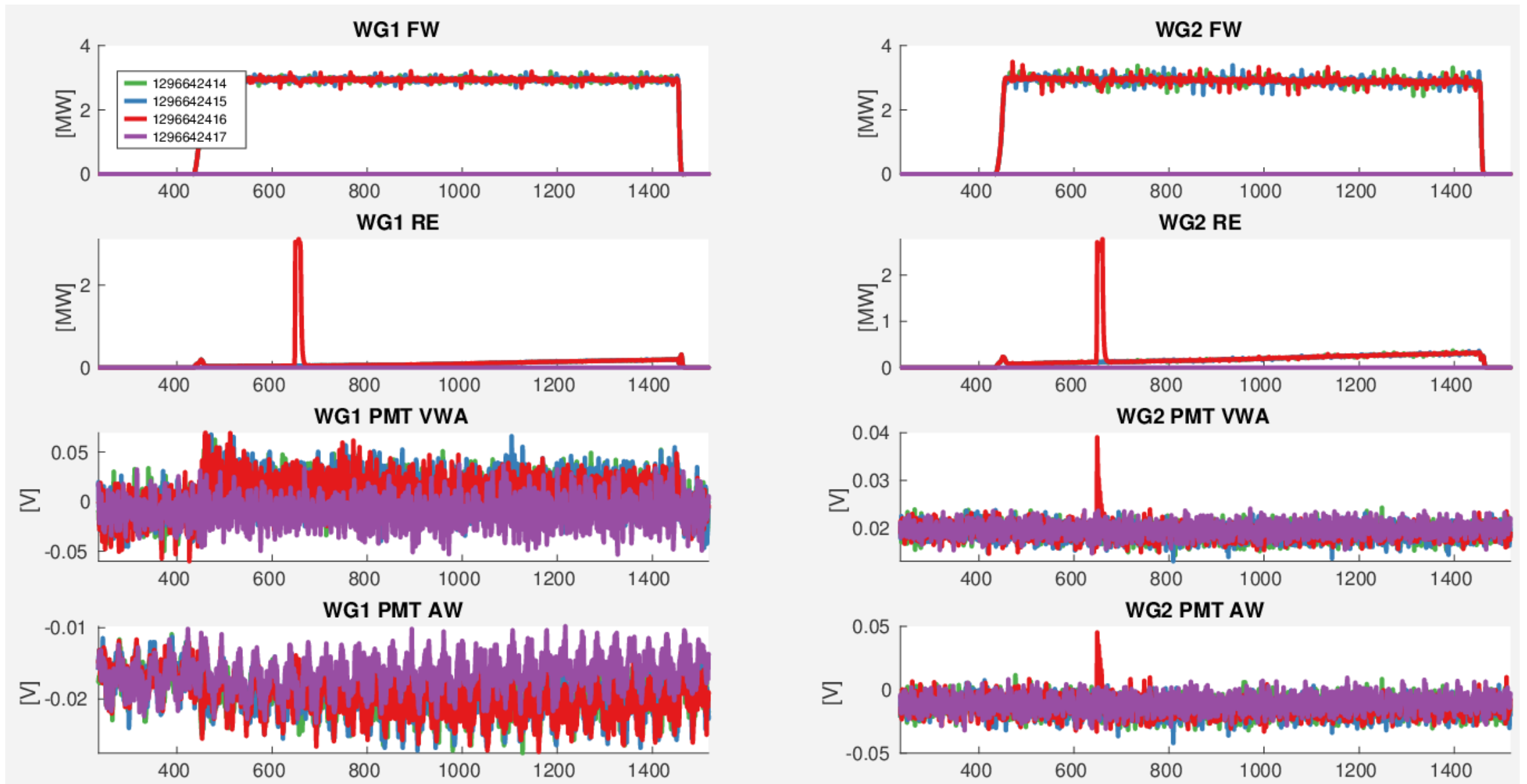
Last plotted event: 1296241386 on 09-Feb-2022 06:41:49

# event on 09.02 at 17:50:11



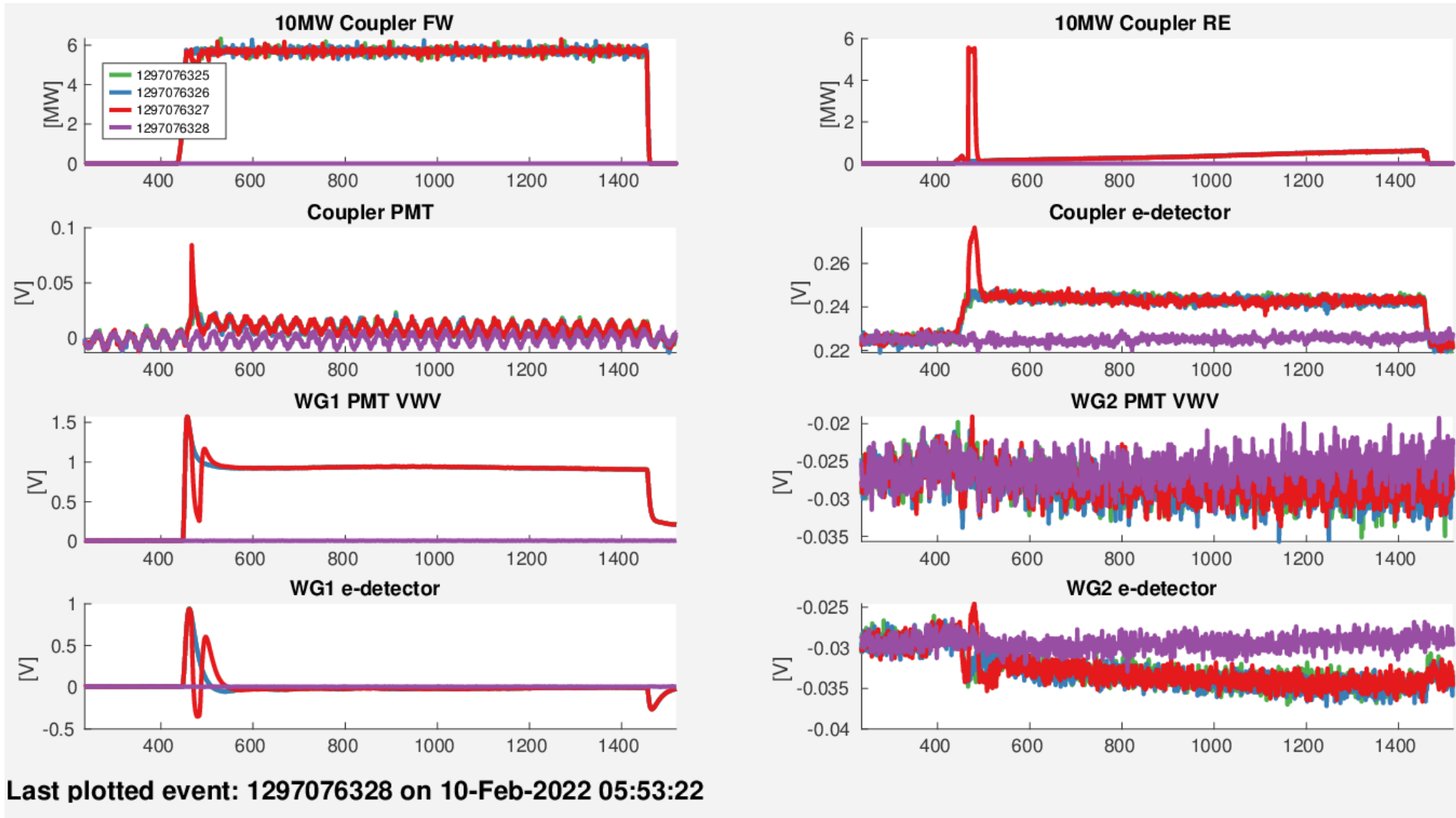
Last plotted event: 1296642417 on 09-Feb-2022 17:50:11

# event on 09.02 at 17:50:11

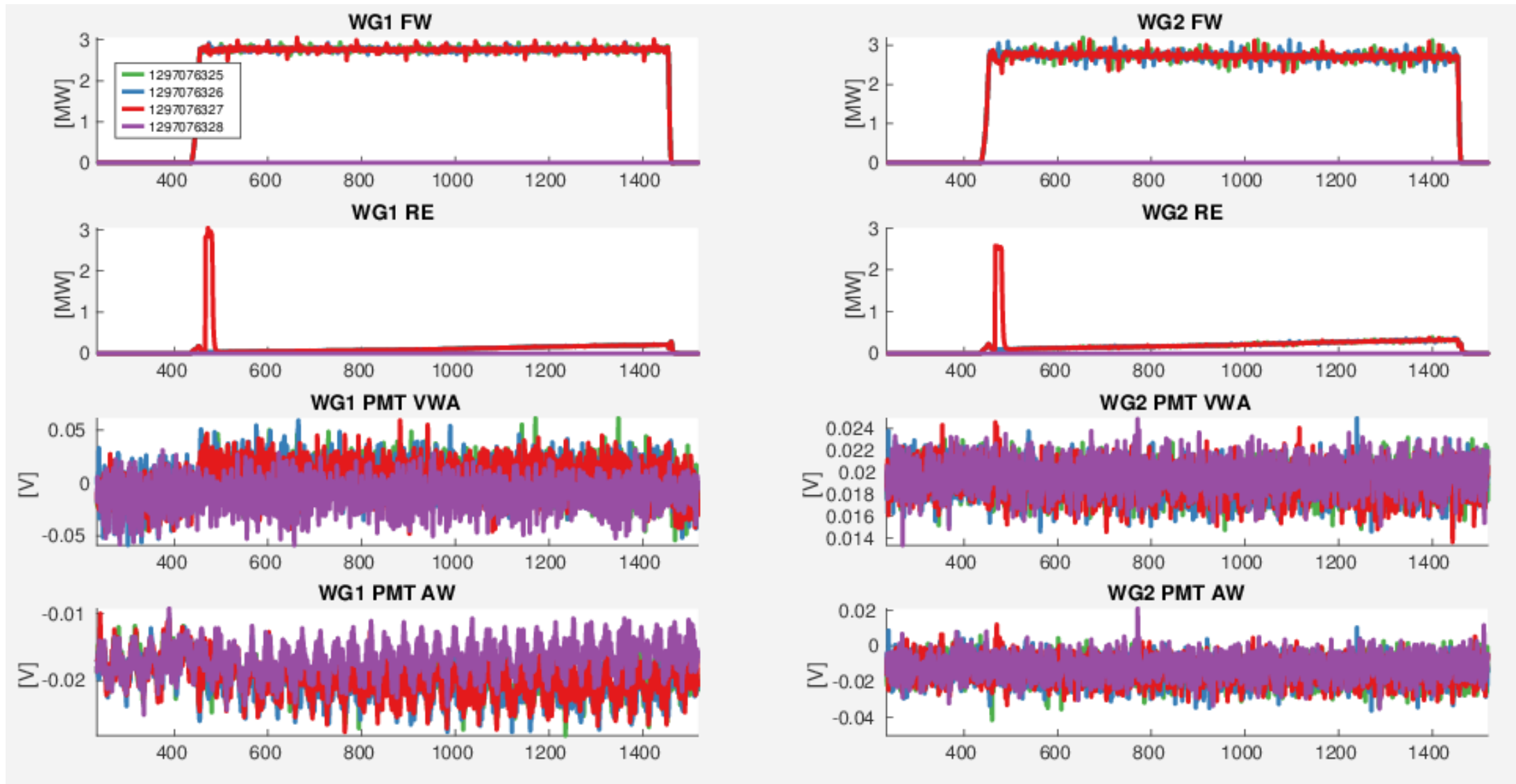




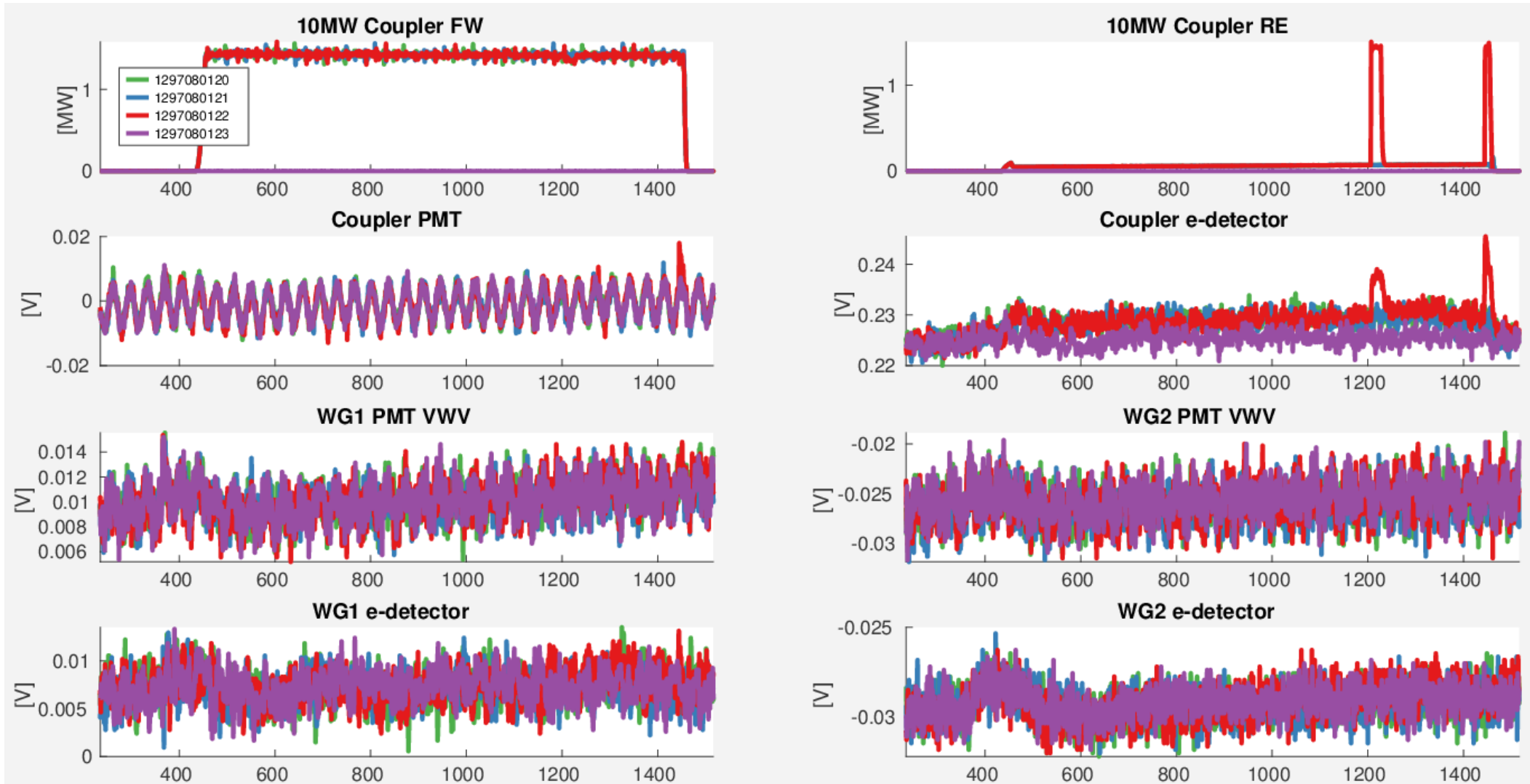
# SoMaRIL 05:53



# SoMaRIL 05:53

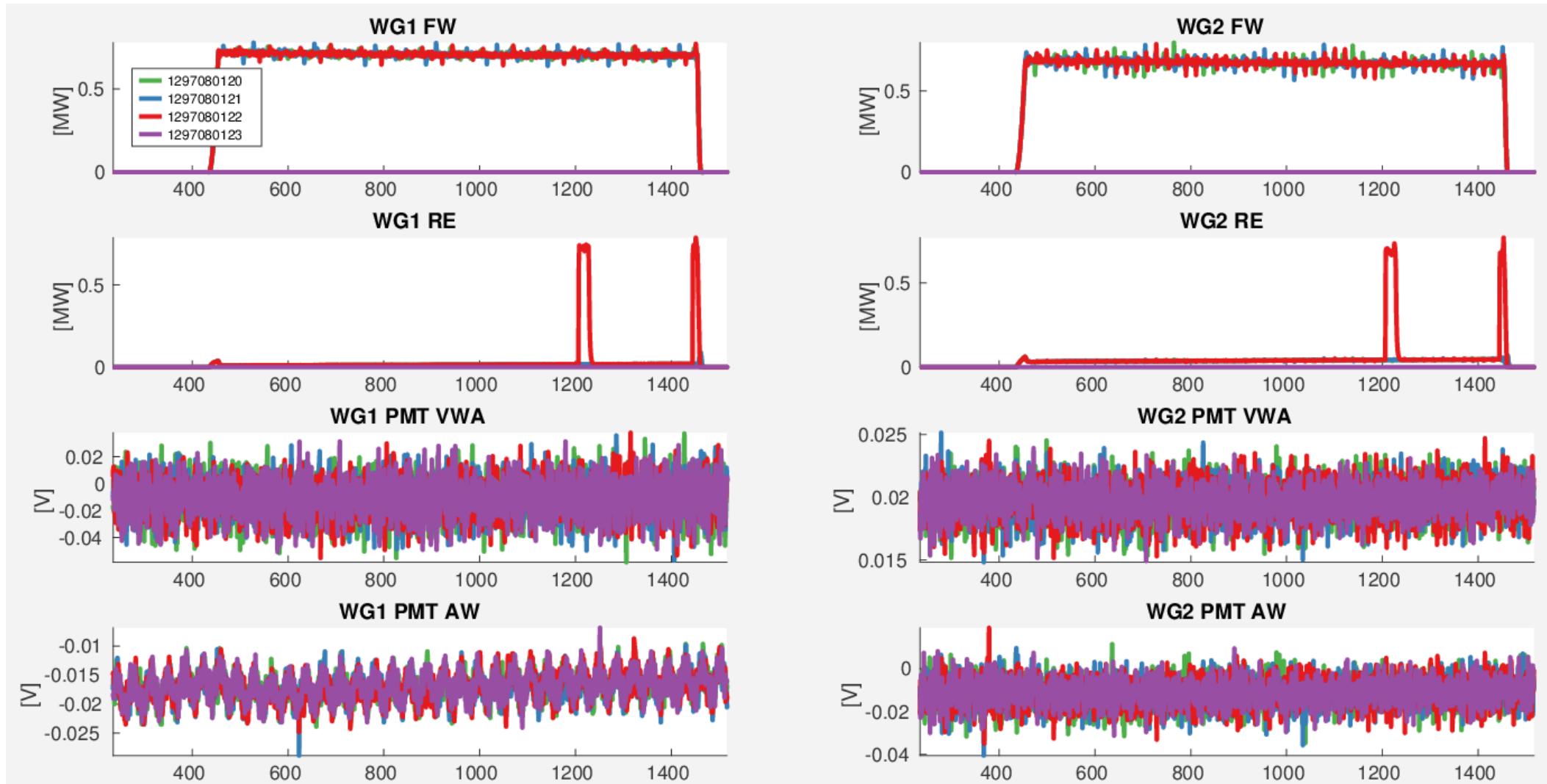


# SoMaRIL 05:59:41

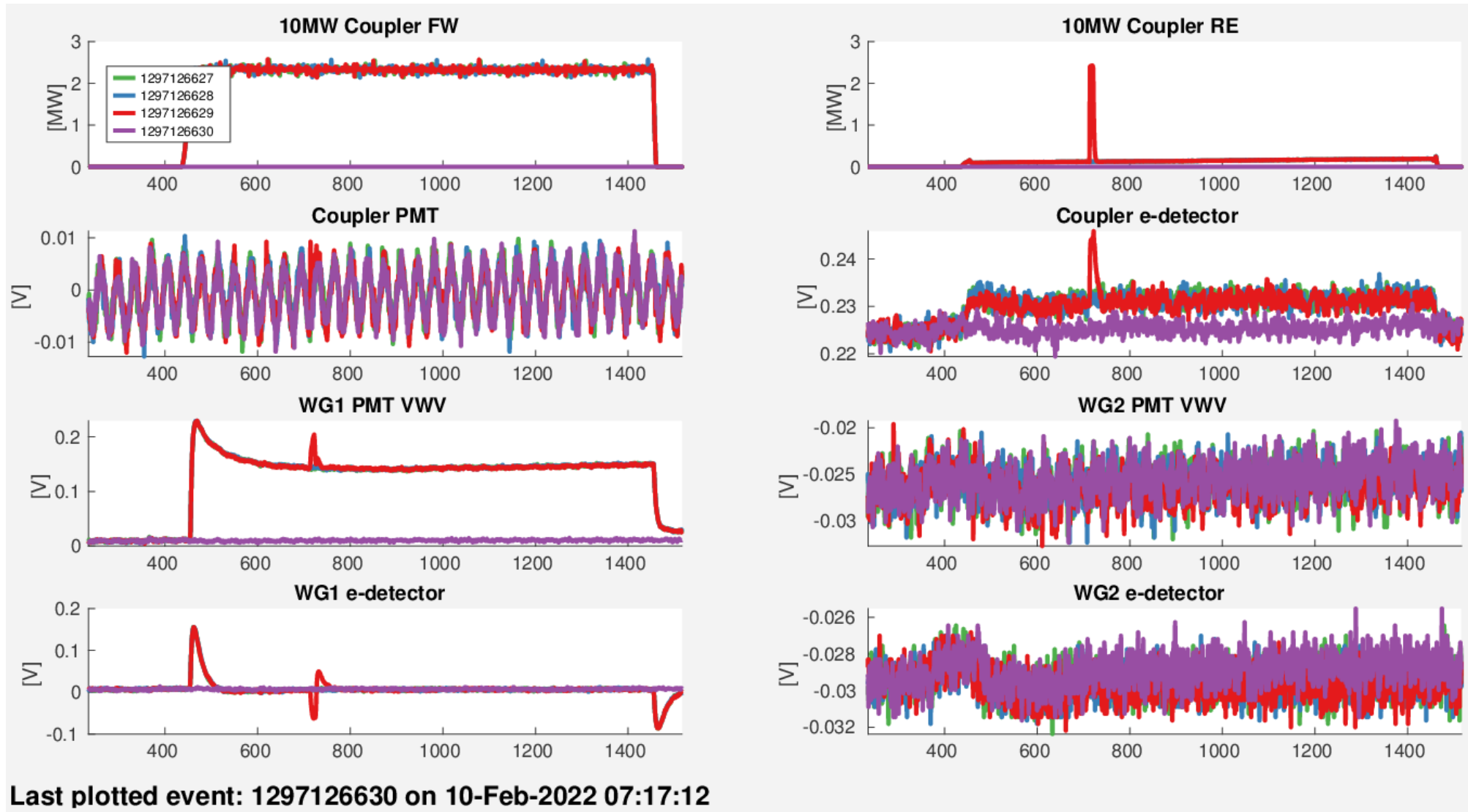


Last plotted event: 1297080123 on 10-Feb-2022 05:59:41

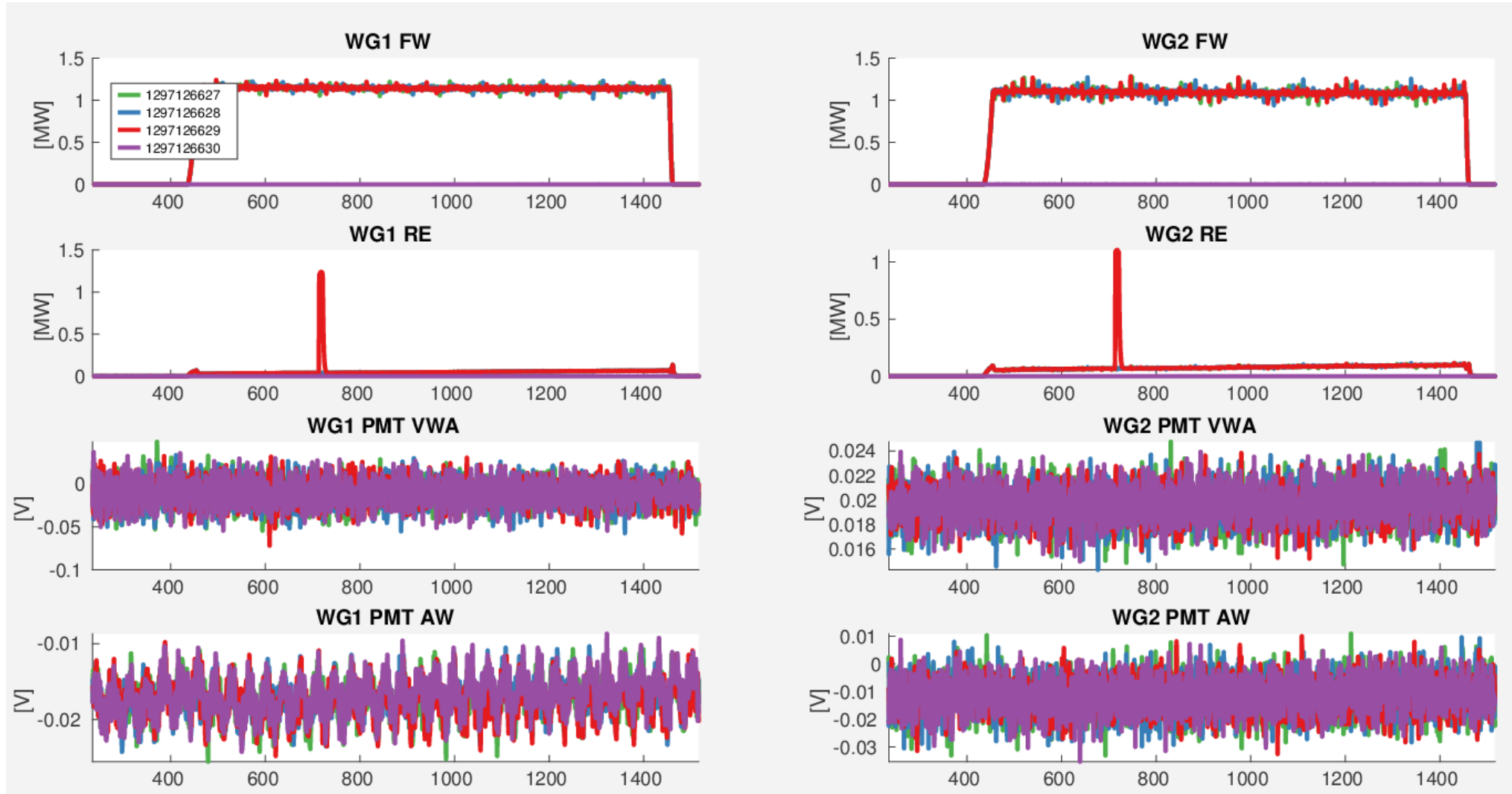
# SoMaRIL 05:59:41



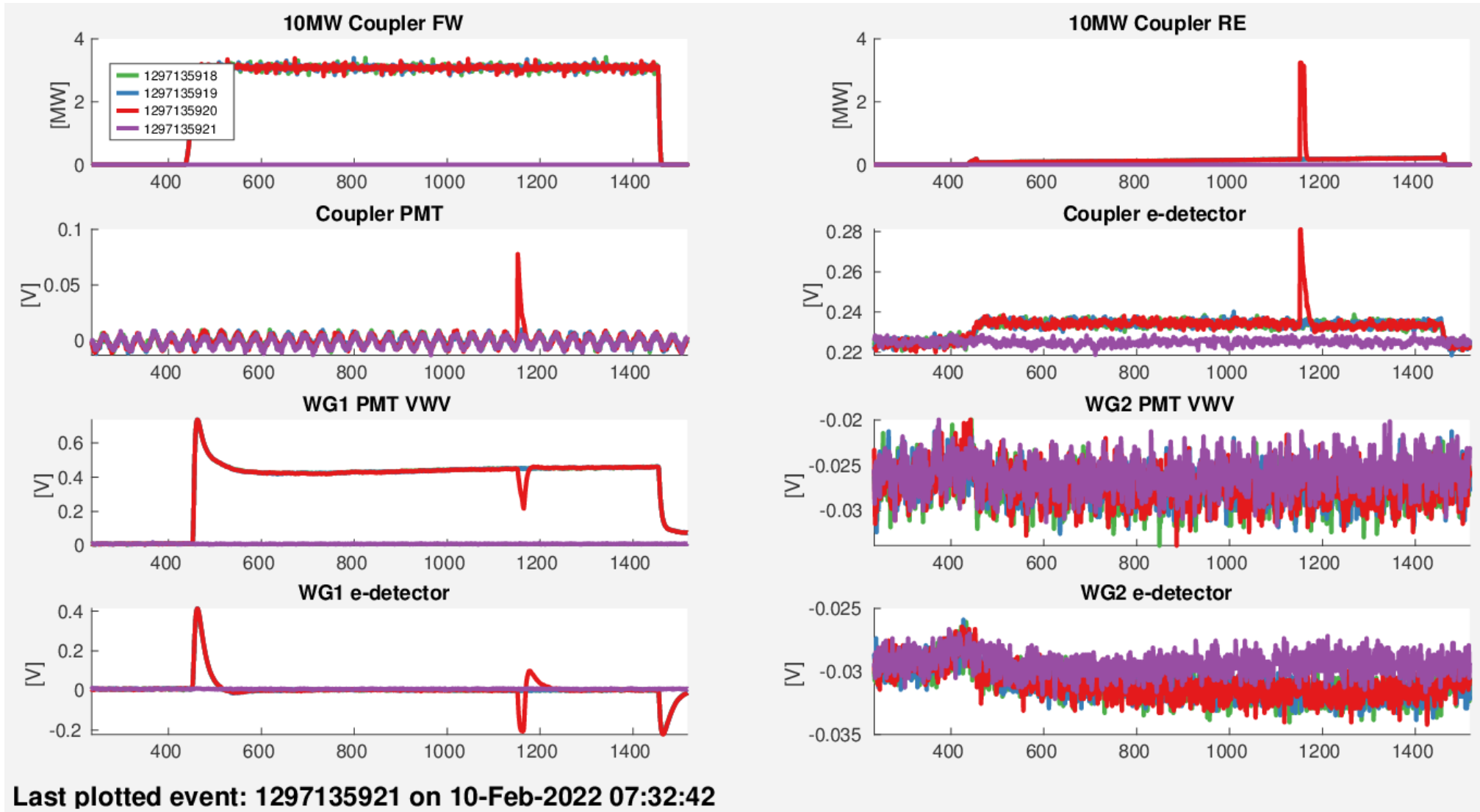
# SoMaRIL 07:17



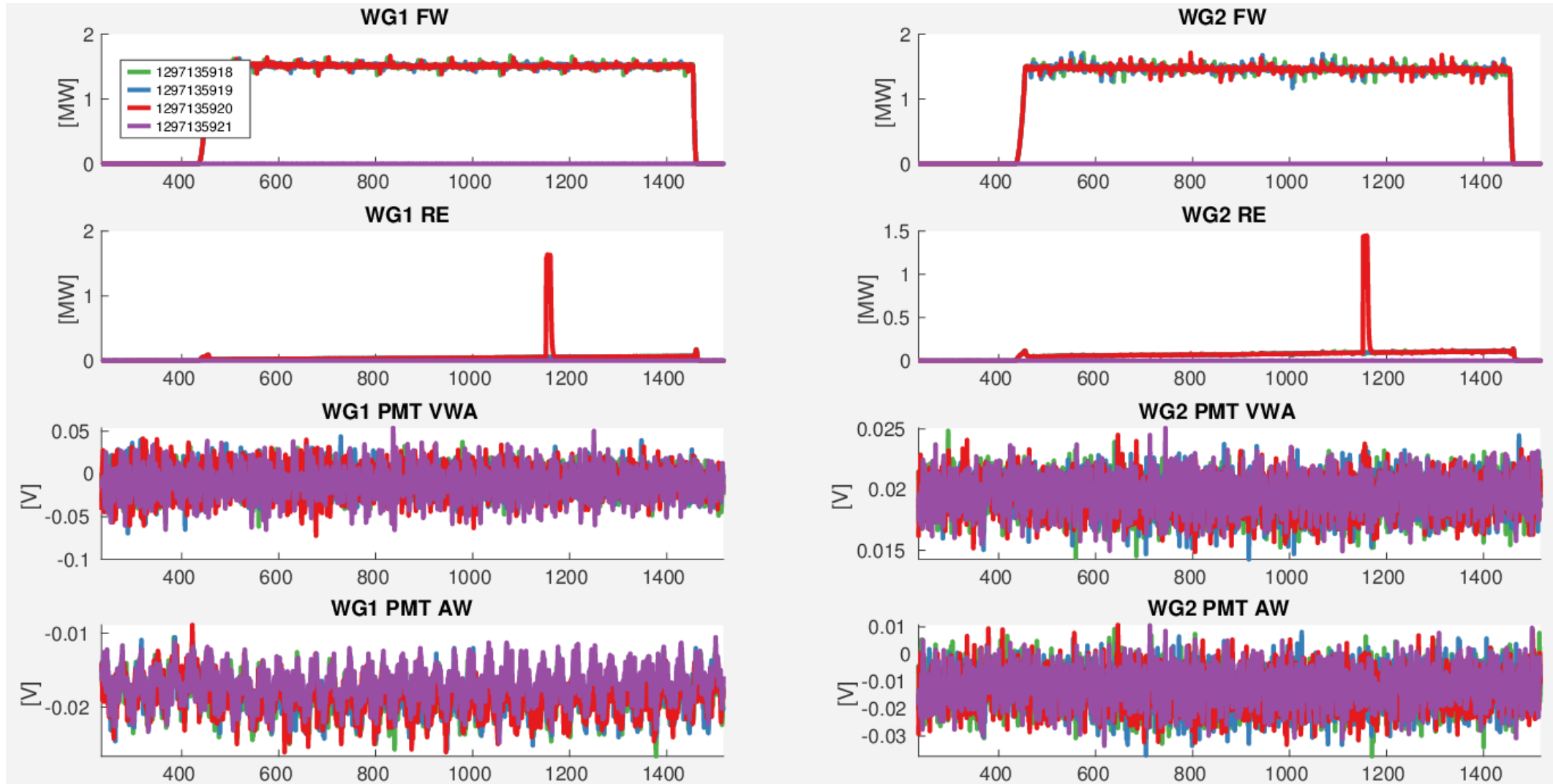
# SoMaRIL 07:17



# SoMaRIL 07:32

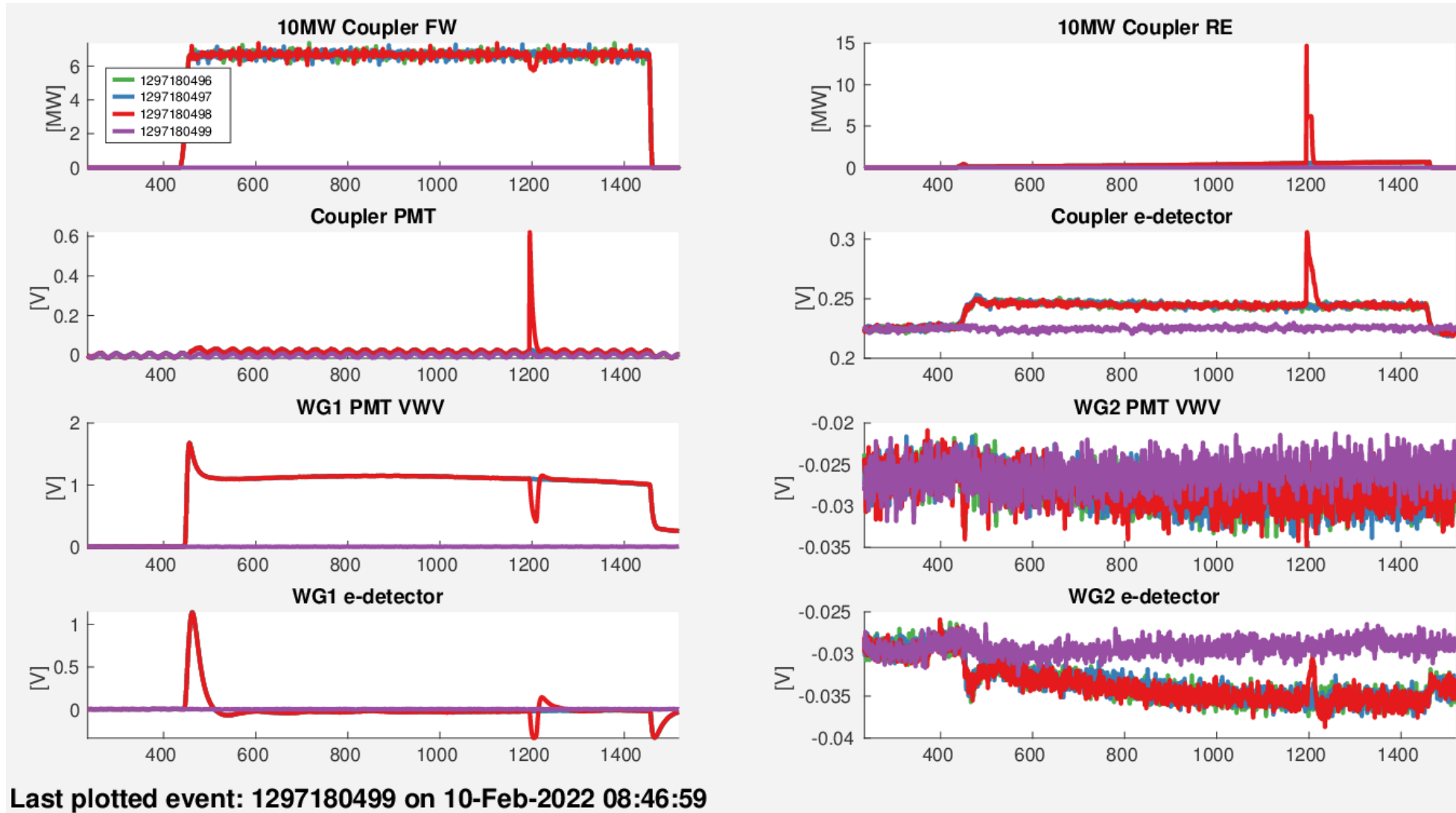


# SoMaRIL 07:32

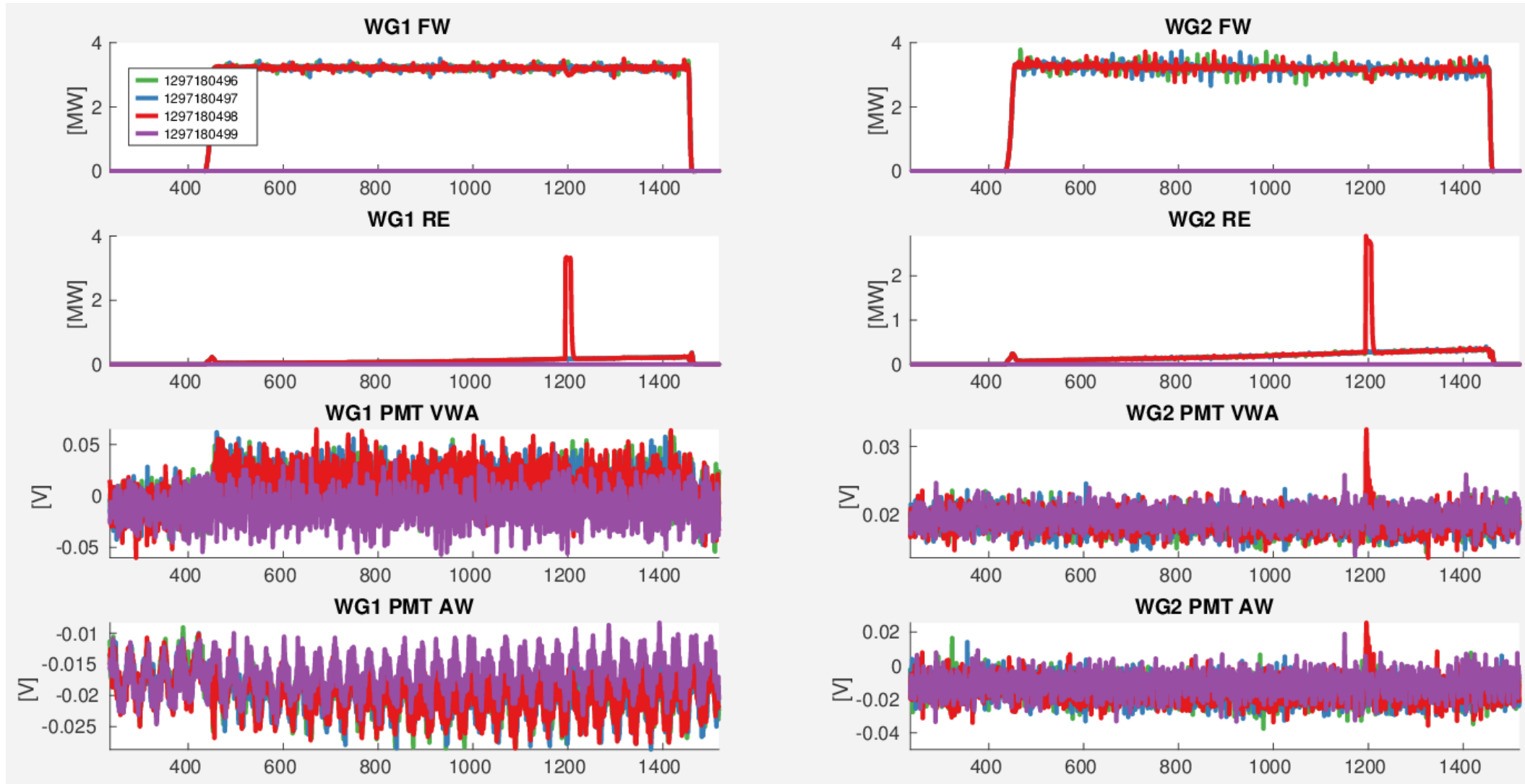




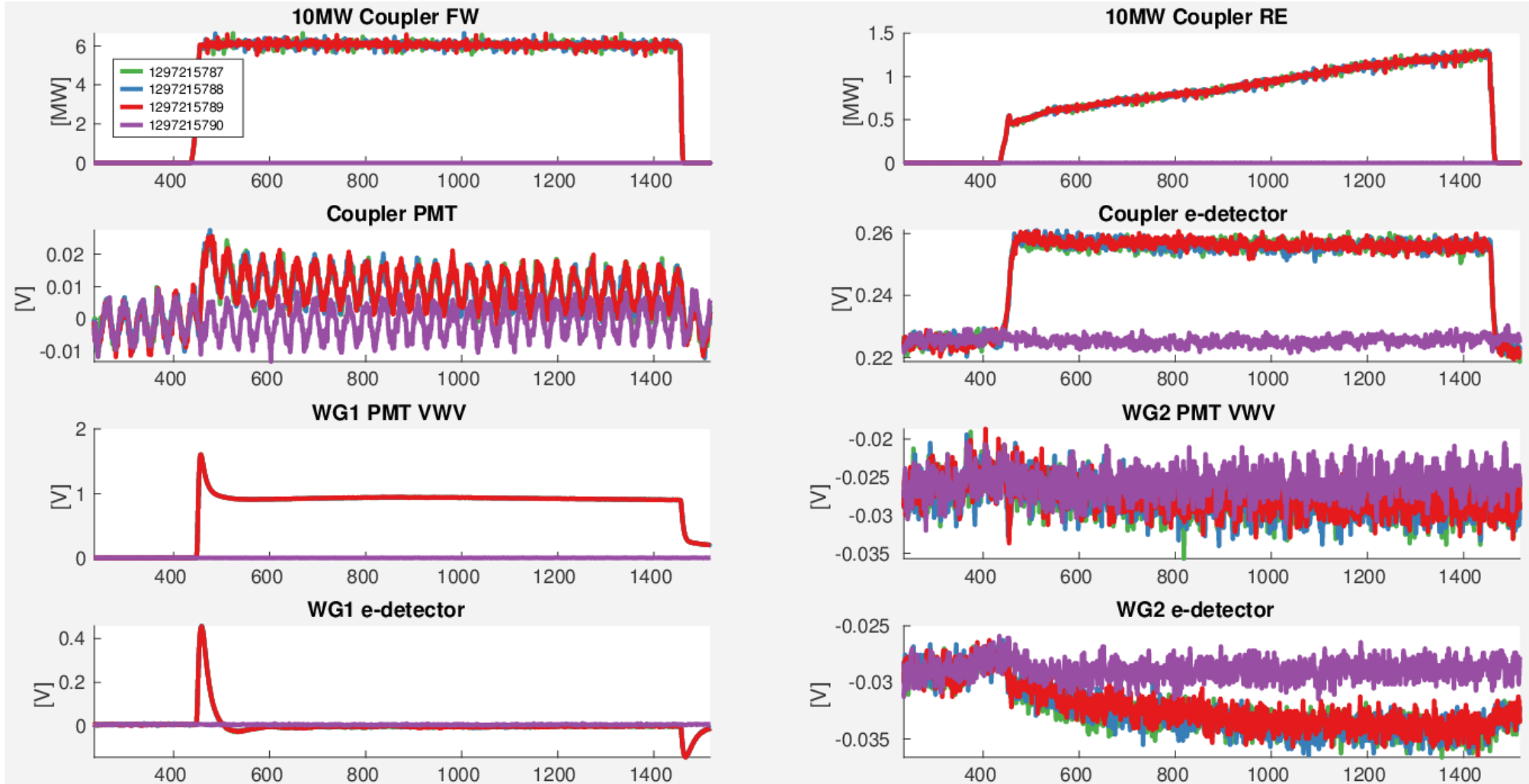
# SoMaRIL 08:46:59



# SoMaRIL 08:46:59

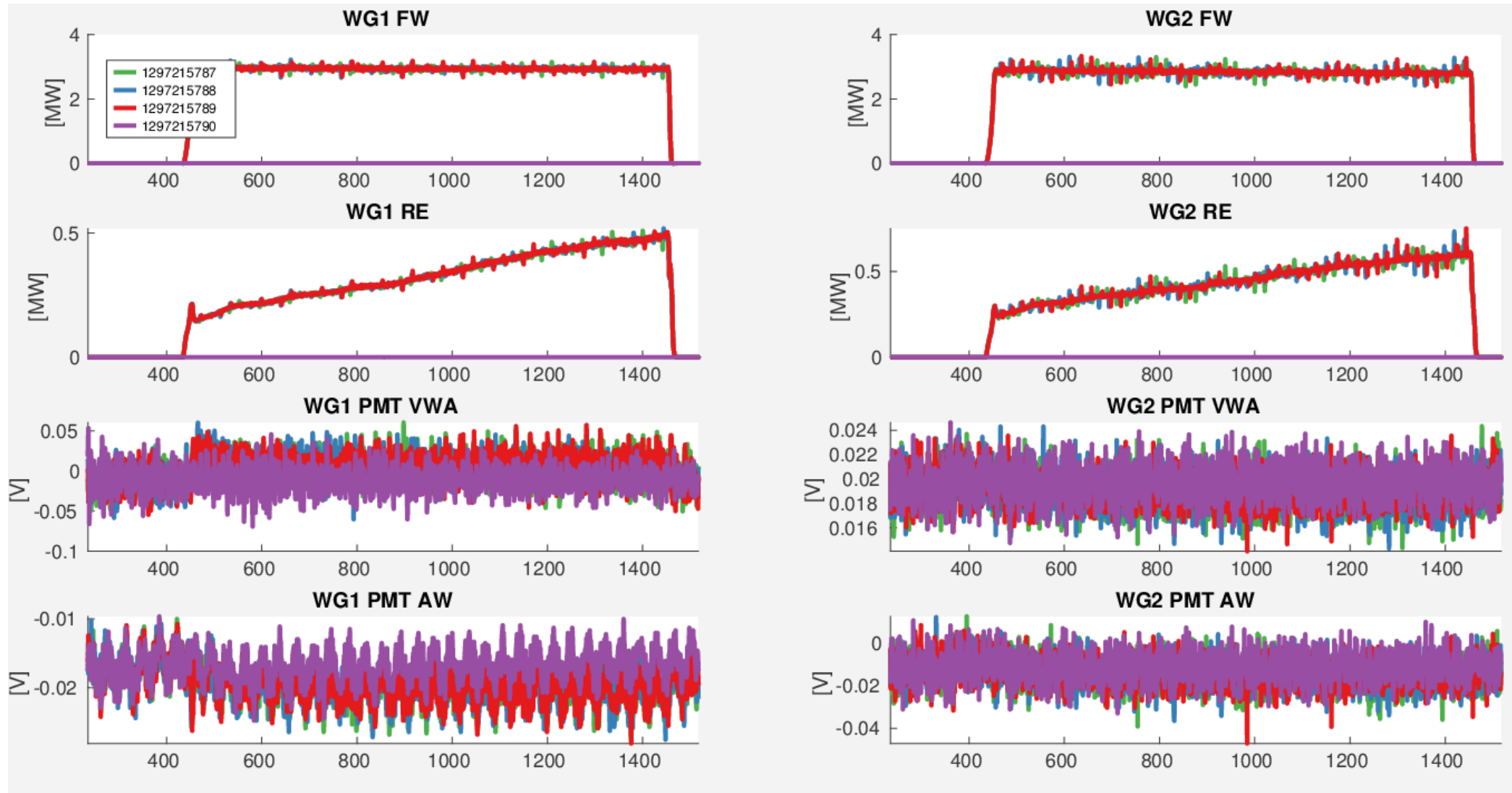


# SoMaRIL 09:45:48

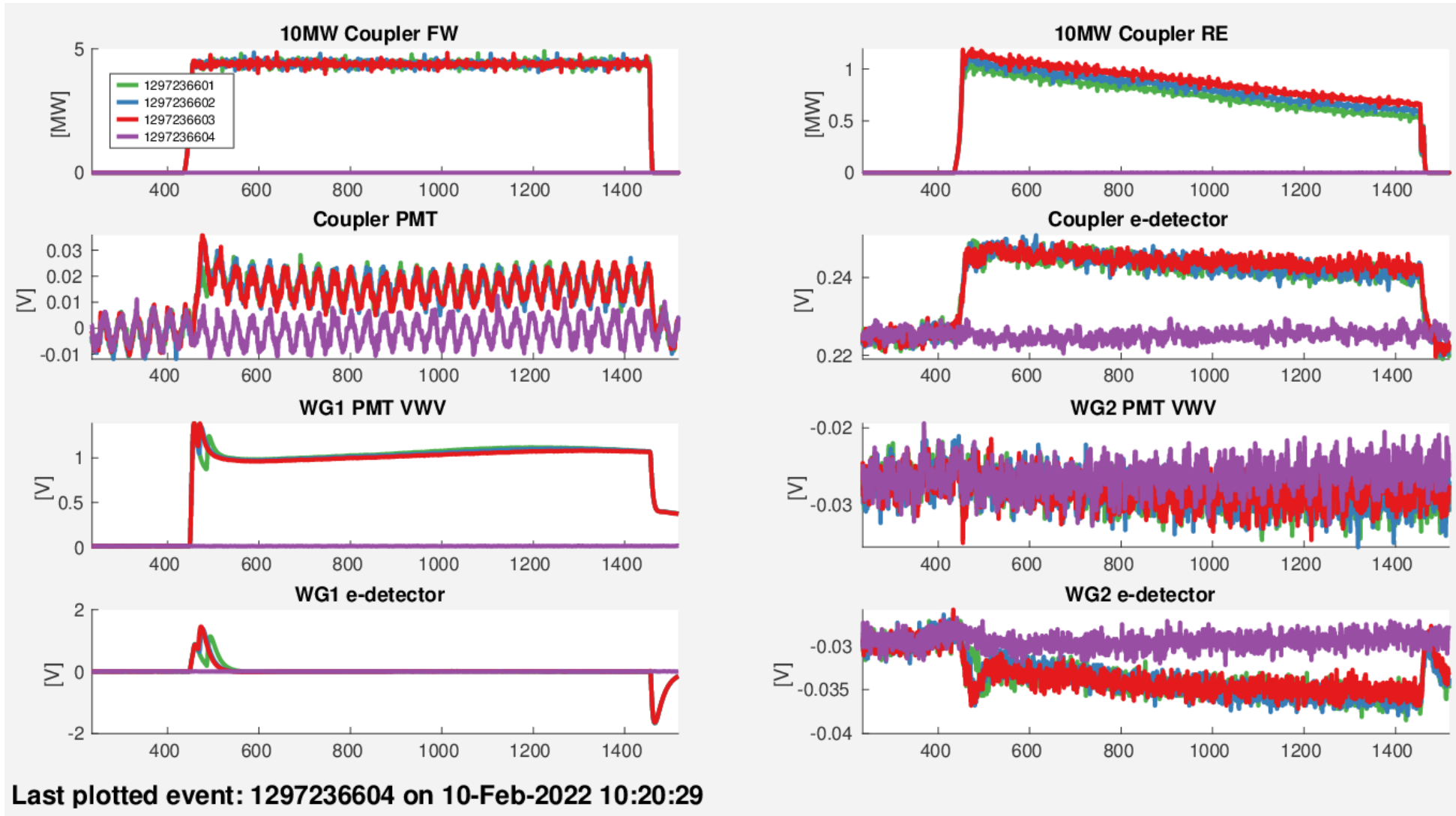


Last plotted event: 1297215790 on 10-Feb-2022 09:45:48

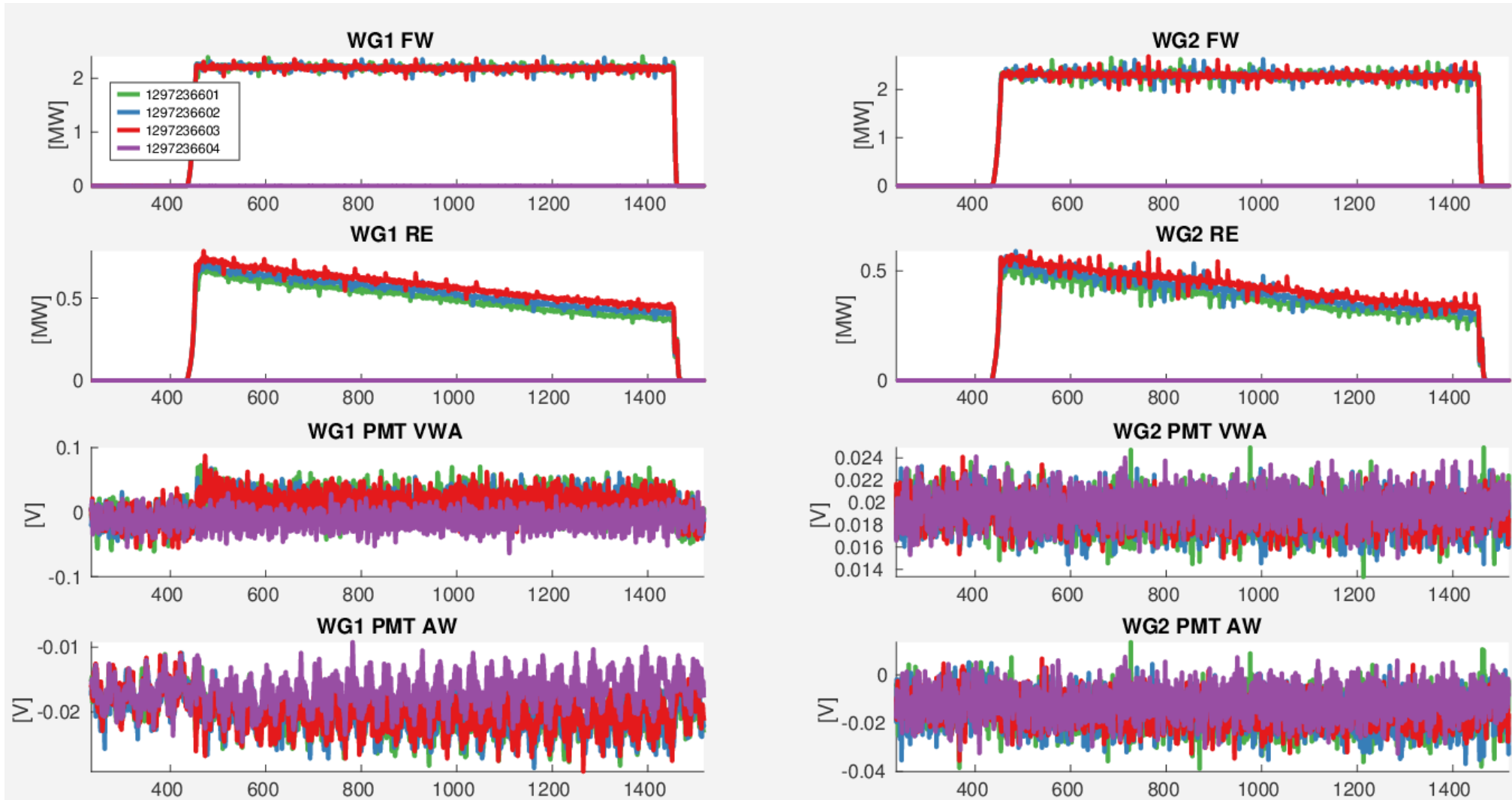
# SoMaRIL 09:45:48



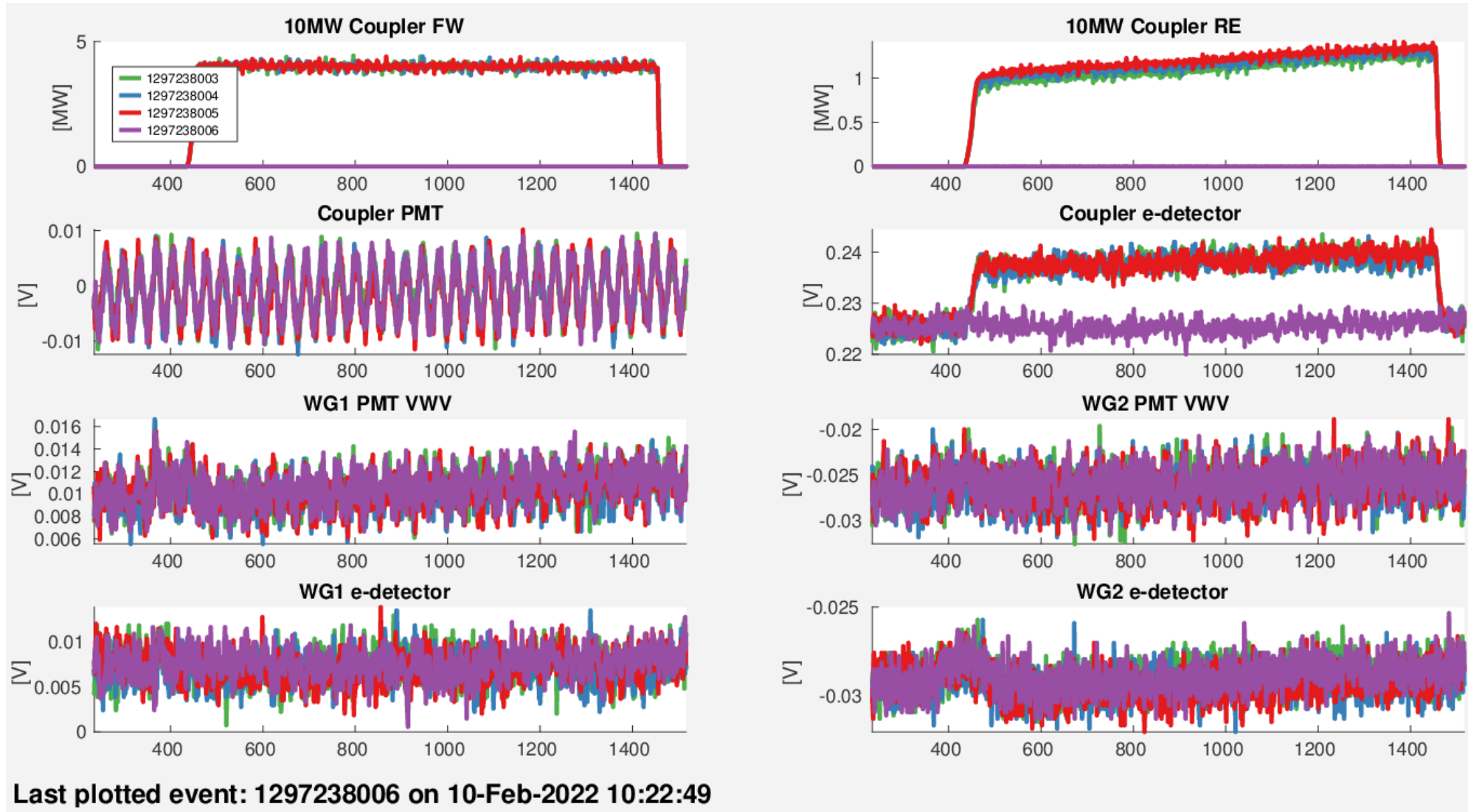
# SoMaRIL 10:20:29



# SoMaRIL 10:20:29



# SoMaRIL 10:22:49



# SoMaRIL 10:22:49

