

RTStand LV 124

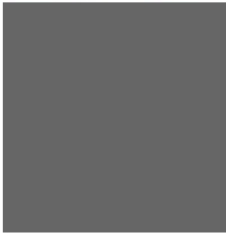
Fully-automated testing solution for LV 124
automotive norm



LV 124



WKS
Informatik
Experts in Testing



SELECT
YOUR
SOLUTION!



RF /
Radar



RTStand
HIL - TEST AND SIMULATION



Industrial
Automation



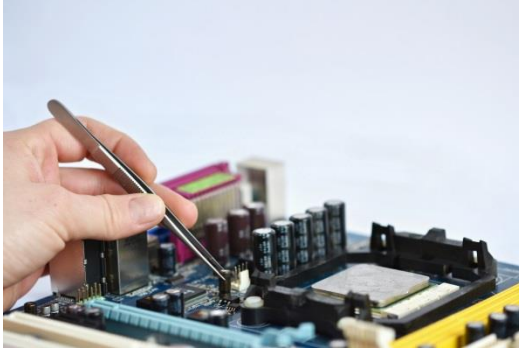
Tube
Analyzer

µfi Ultra Fast
Interrupter

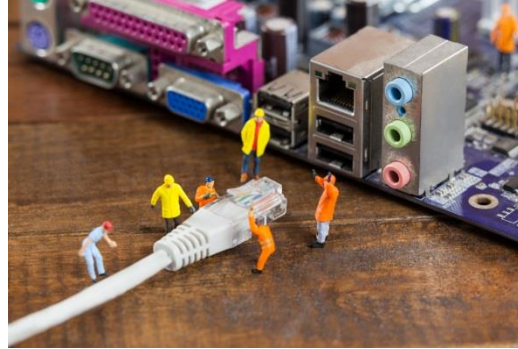
NATIONAL INSTRUMENTS™ ALLIANCE PARTNER OF 2015/2016
WINNER OF THE NATIONAL INSTRUMENTS™ TECHNICAL INNOVATION AWARD | WINNER OF THE WiR TECHNICAL INNOVATION AWARD!

1. Why automated testing?
2. RTStand LV 124 – fully-automated modular concept for LV 124
3. RTStand LV 124 – Norm coverage
4. RTStand LV 124 – Components
5. RTStand LV 124 – Workflow
6. RTStand LV 124 – Benefits
7. Automated testing system vs. Automated onboard power supply generation

Why automated testing?



<http://www.freepik.com>

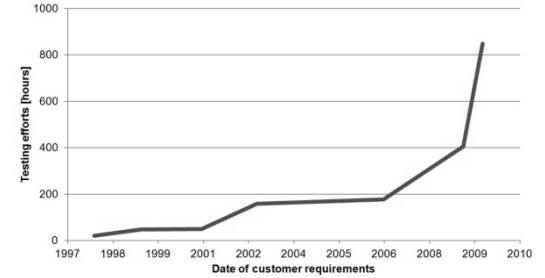


<http://www.freepik.com>

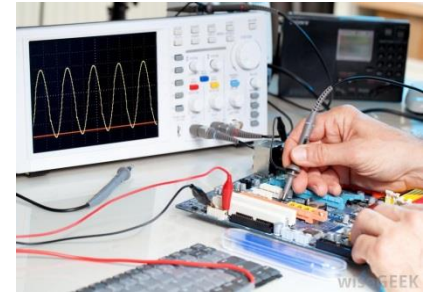
Increased ECU complexity



More complex test scenarios



Increased testing times/costs



<http://www.wisegeek.com>

Inadequate manual testing

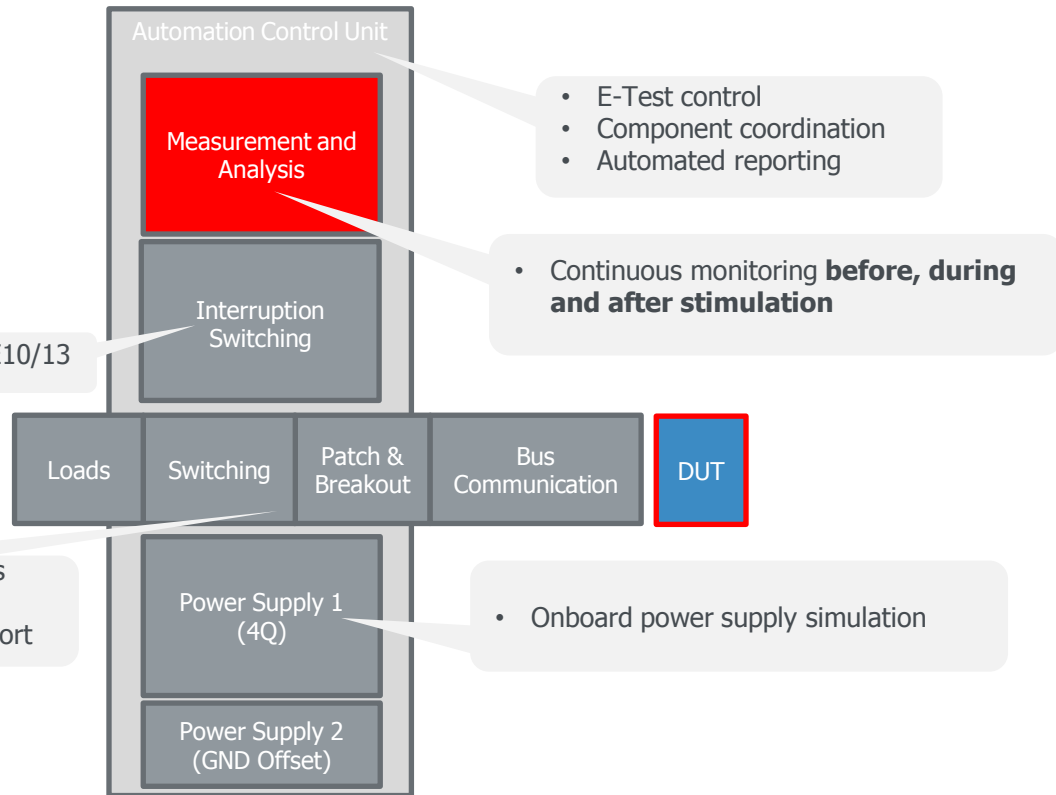
How do we build for automation?

RTStand LV 124 – Fully-automated modular concept

LV 124 Tests
E-01 Long-term overvoltage
E-02 Transient overvoltage
E-03 Transient undervoltage
E-04 Jump start
E-05 Load dump
E-06 Superimposed alternating voltage
E-07 Slow decrease and increase of the supply voltage
E-08 Slow decrease, quick increase of the supply voltage
E-09 Reset behavior
E-10 Short interruptions
E-11 Start pulses
E-12 Voltage curve with electric system control
E-13 Pin interruption
E-14 Connector interruption
E-15 Reverse polarity
E-16 Ground offset
E-17 Short circuit in signal circuit and load c
E-18 Insulation resistance
E-19 Closed-circuit current
E-20 Dielectric strength
E-21 Backfeeds
E-22 Overcurrents

- Interruption requirements E10/13

- DUT and other device connections
- Simulation of external consumers
- CAN, LIN, FlexRay, BroadRR support

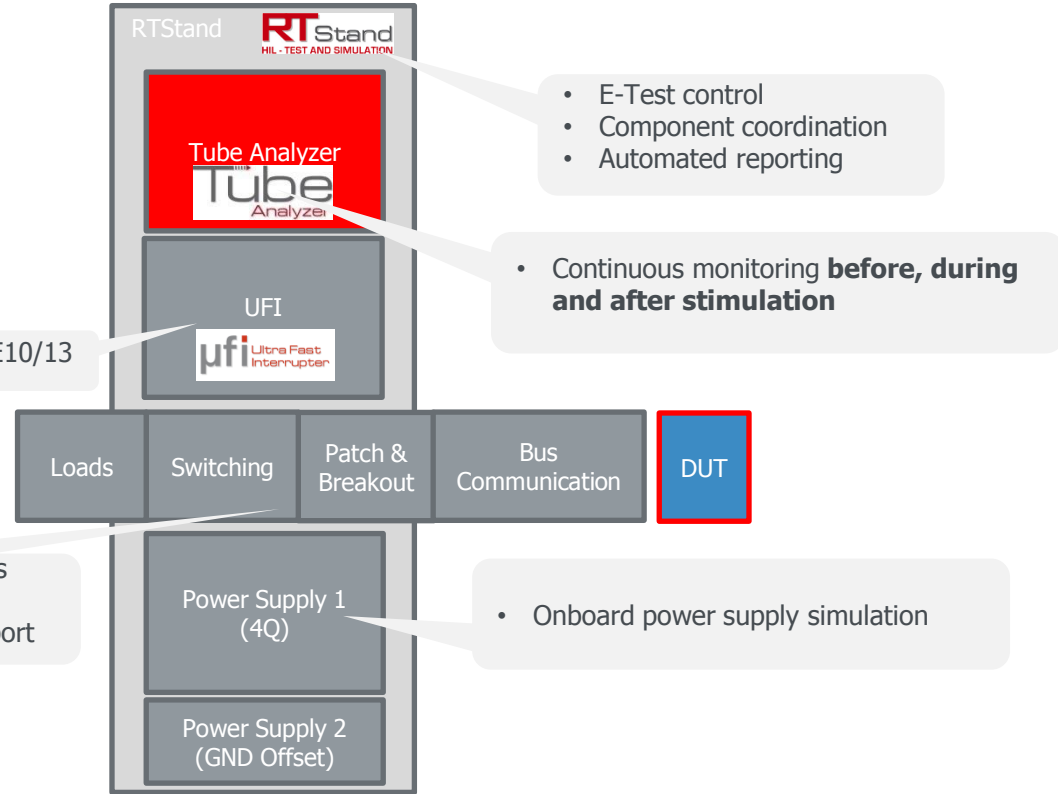


RTStand LV 124 – Fully-automated modular concept

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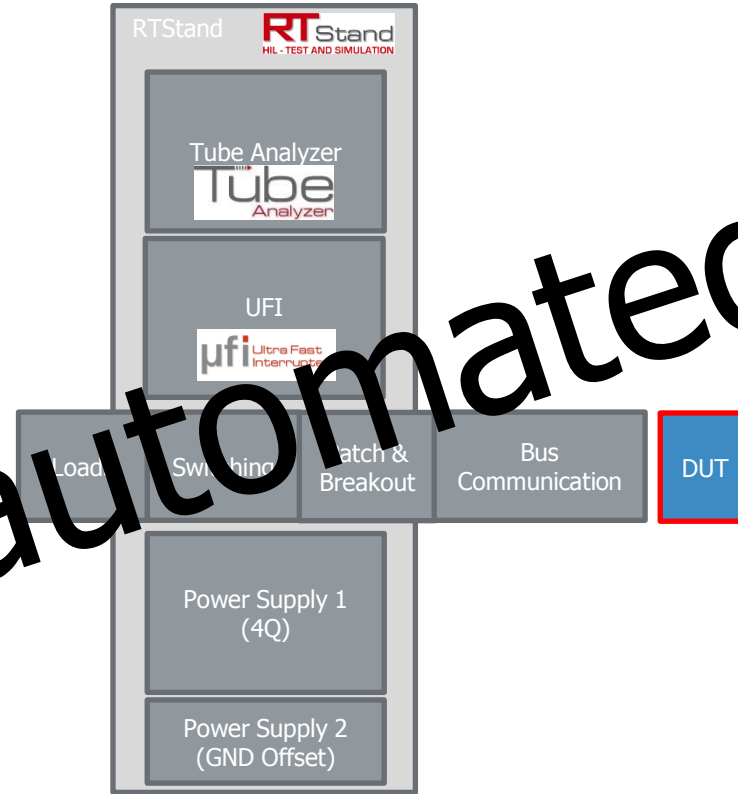
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What and how we automate?

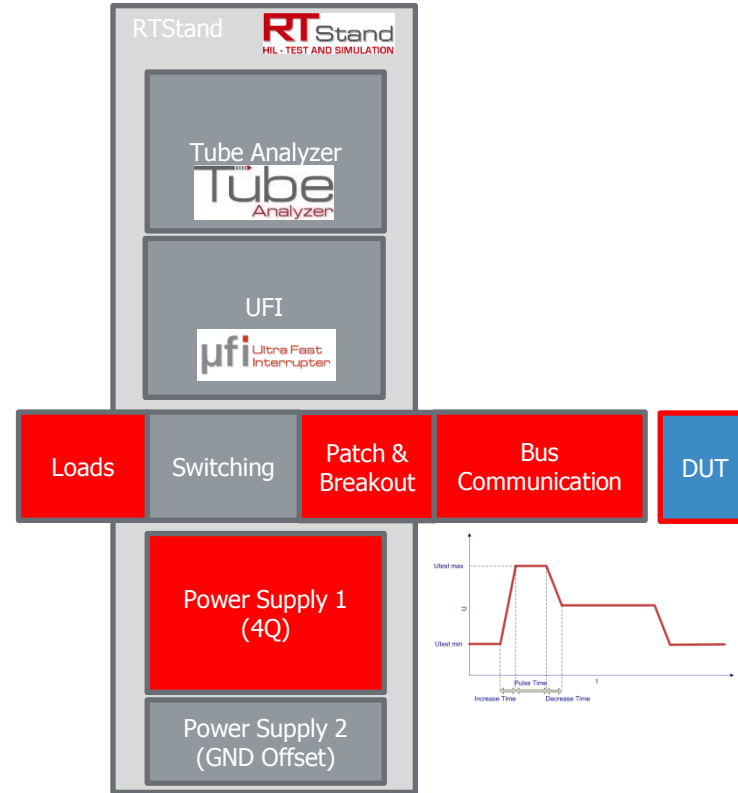
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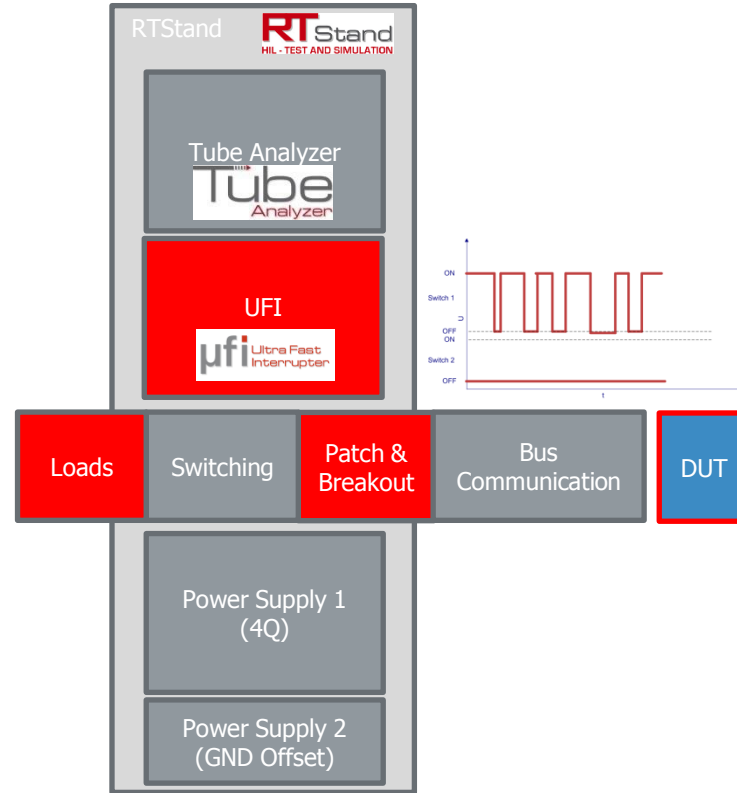
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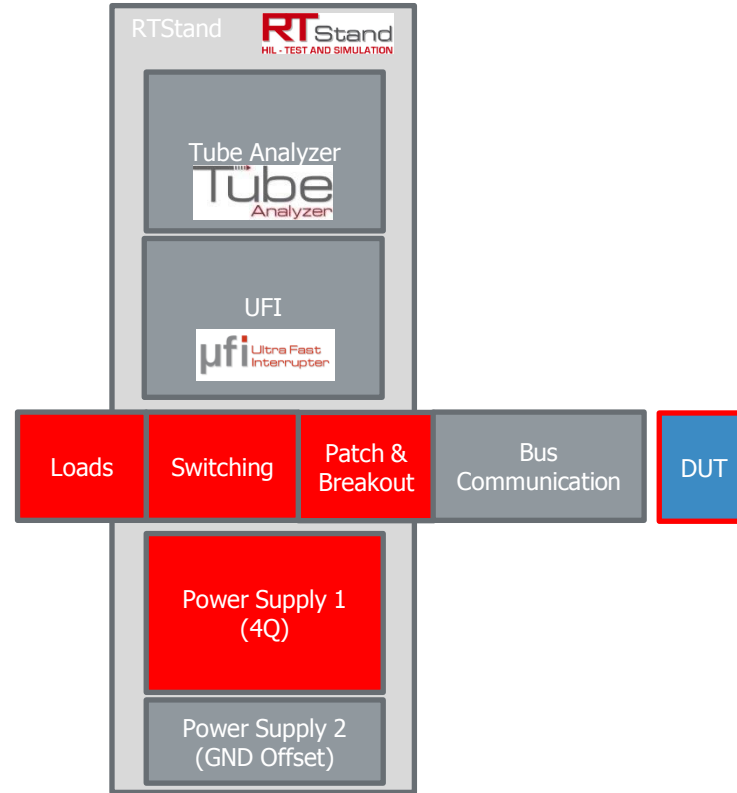
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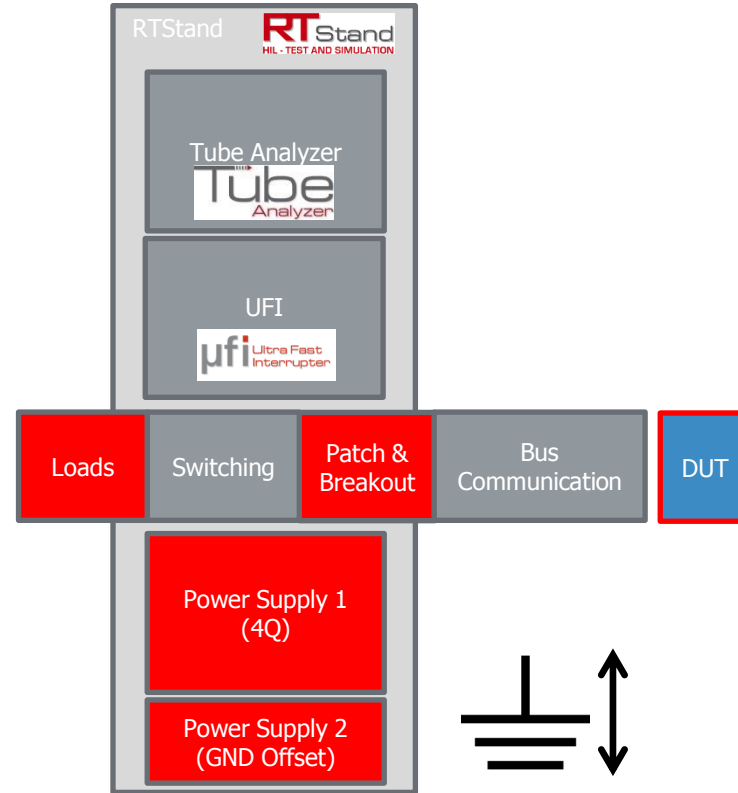
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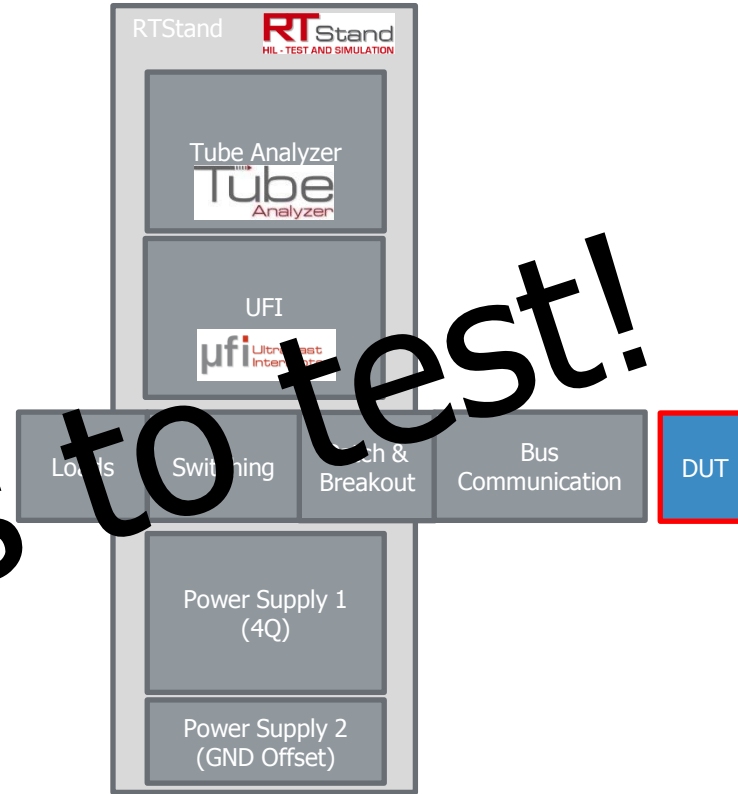
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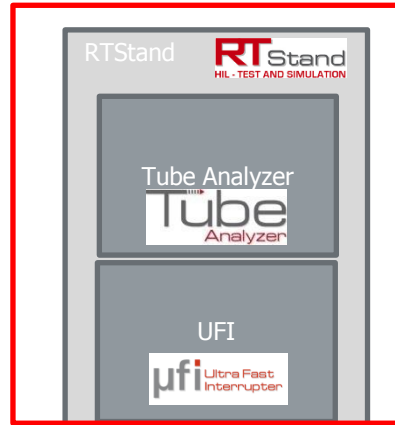
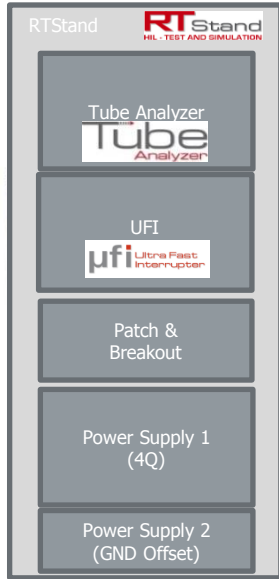
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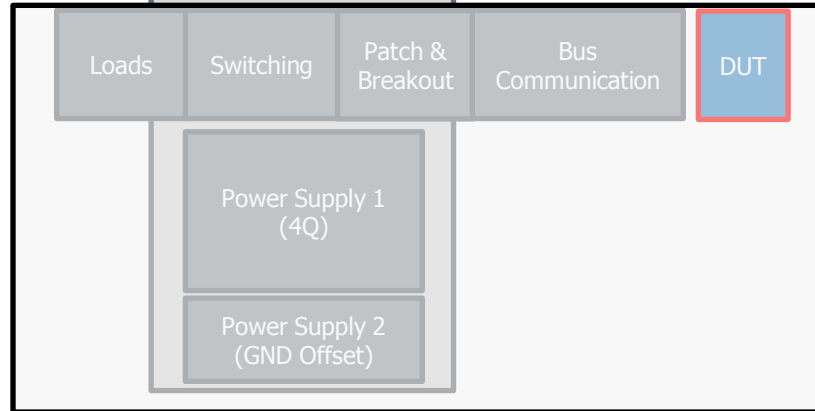
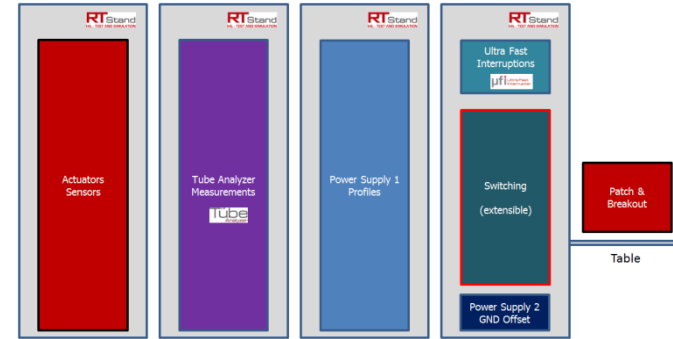


What makes it work?

RTStand LV 124 - Components



Core components



DUT-specific

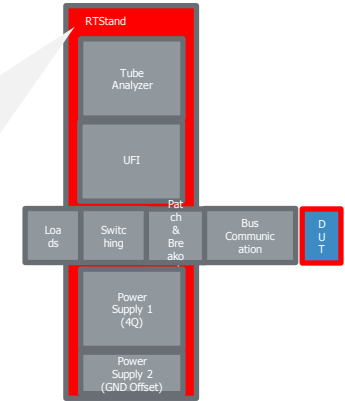
RTStand LV 124 - Components

FOR:

- E-Test control
- Component coordination
- Automated reporting

HOW:

- Open platform => independent test scenario definition
- National Instruments technology inside: NI LabVIEW, NI TestStand, NI VeriStand
- Customizable User Interface framework
- Support for fieldbuses: CAN, LIN, FlexRay, BroadR-Reach
- Support for diagnose (National Instruments, Vector)
- Support for restbus simulation (National Instruments, Vector)
- Variant handling
- Multi-DUT capability
- 3rd Party Hardware and software integration
- Database/Cloud capabilities



RTStand
HIL - TEST AND SIMULATION



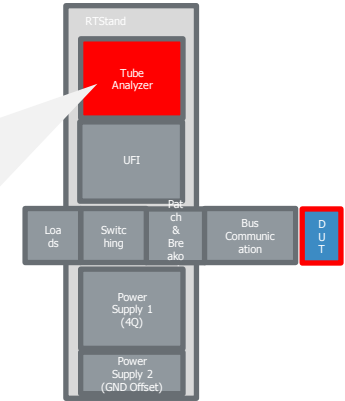
RTStand LV 124 - Components

FOR:

- Continuous monitoring **before, during and after stimulation**

HOW:

- Continuous measurement, online analysis and logging on all pins in parallel
- 100 kHz sample rate on all pins in parallel
- Precise detection of **all** short sporadic failures
- Adaptive logging
- 8/24/96 pin layouts
- Voltage (analog/PWM) and current (analog) capabilities
- Definition of **reproducible** onboard power supply scenarios
- Complete tool chain with configurator and log viewer



Tube Analyzer



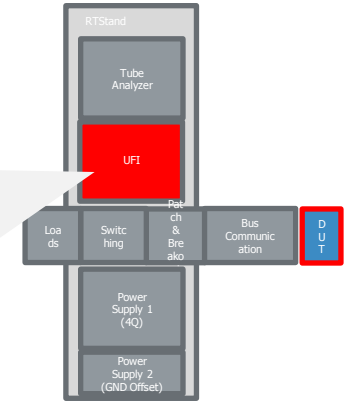
RTStand LV 124 - Components

FOR:

- Interruption requirements E10/13

HOW:

- Every switch has its own input trigger
- Every switch complies with the edge steepness and speed defined in the LV 124 test cases E10 and E13
- The power switch modes can be remotely configured (over an external hardware)
- 11A and 125A layouts

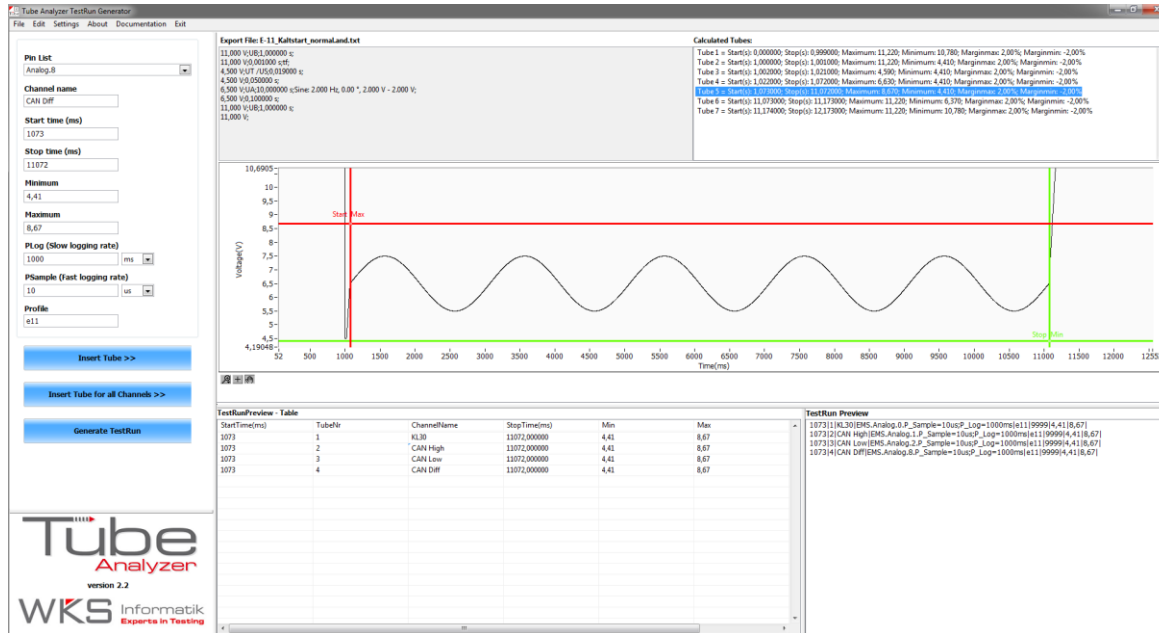


µfi Ultra Fast Interrupter



"Define it in minutes, run it for hours!"

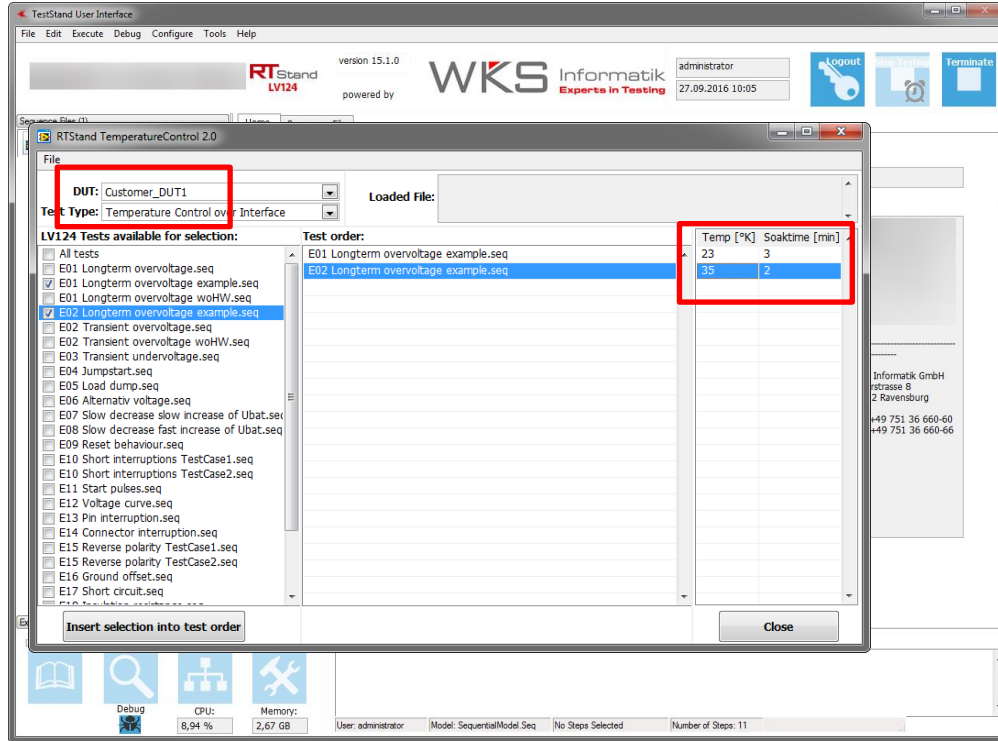
RTStand LV 124 - Workflow



1. Define limits for signal testing

- Import of onboard power supply curves with automated limit generation
- Import of TDMS files
- Free configuration for all pins

RTStand LV 124 - Workflow



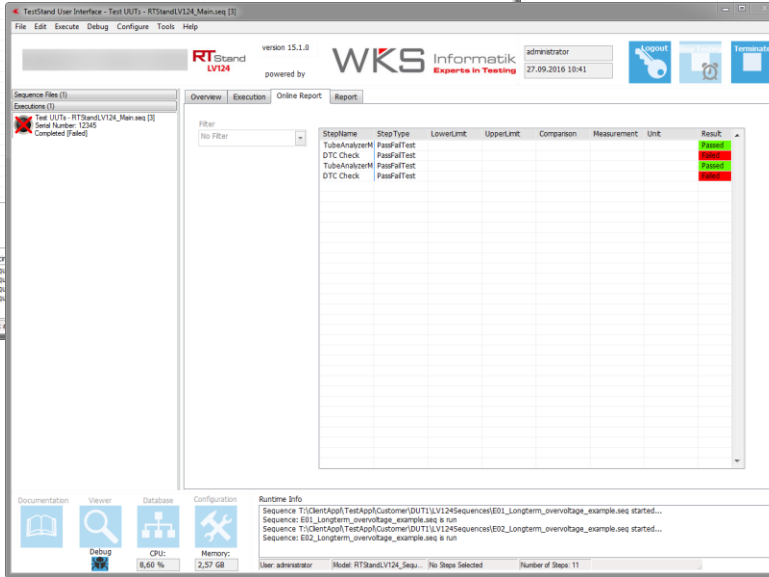
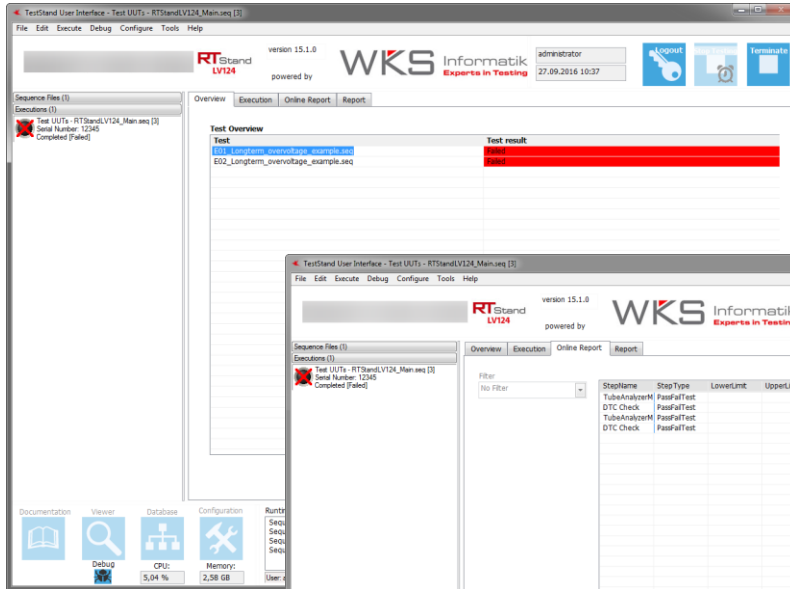
1. Define limits for signal testing

2. Start testing

3. Select E-test order

- Support of climate chamber control (LAN - active, DI - passive)
- DUT Handling

RTStand LV 124 - Workflow



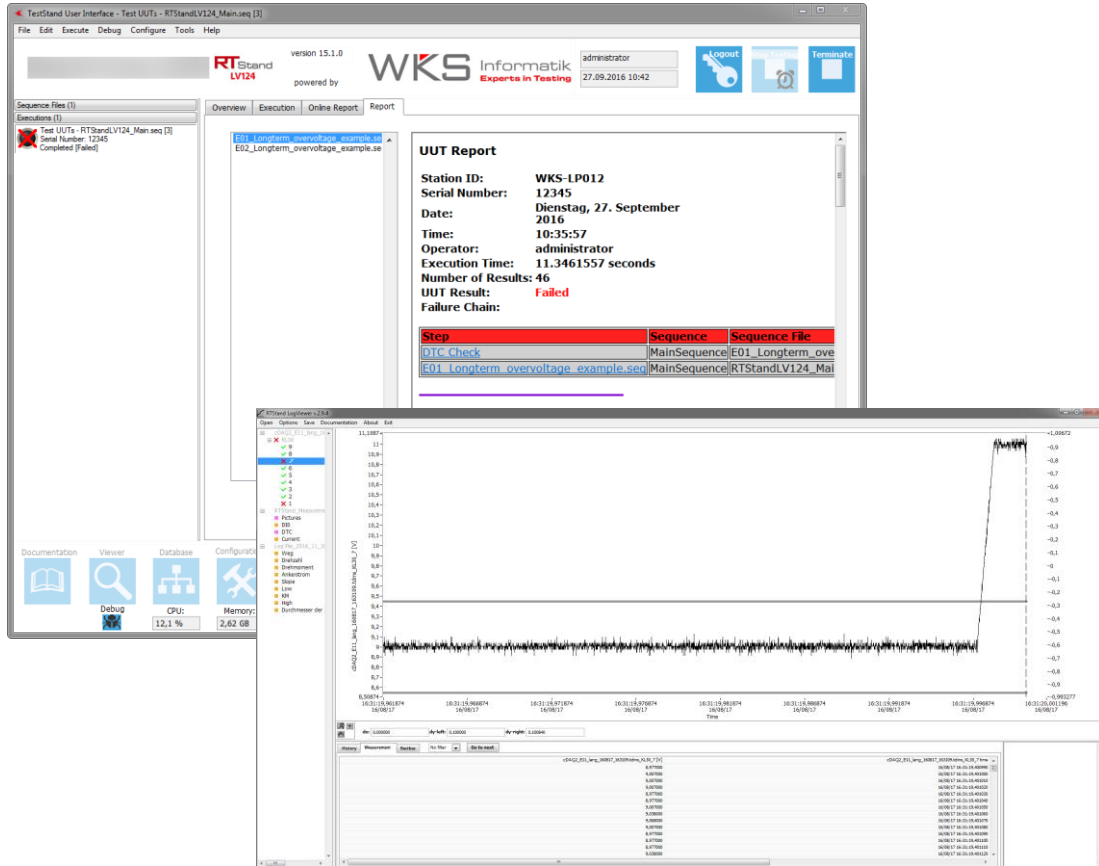
1. Define limits for signal testing

2. Start testing

3. Select E-test order

4. Monitor activity

RTStand LV 124 - Workflow



1. Define limits for signal testing

2. Start testing

3. Select E-test order

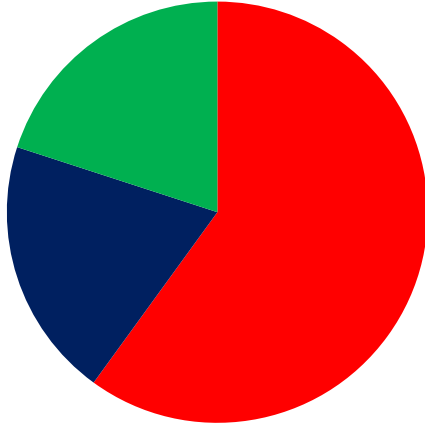
4. Monitor activity

5. View reports and logs

How you win?

Manual approach

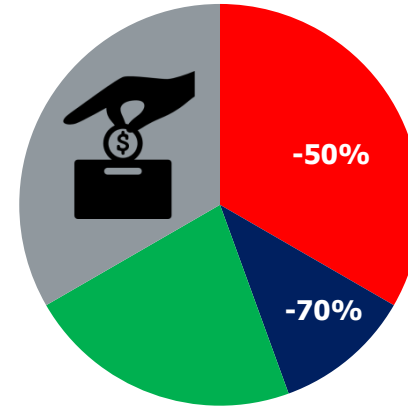
Testing times



- Test analysis
- Test execution
- Test preparation

Automated approach

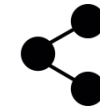
Testing times



Reproducible test environment



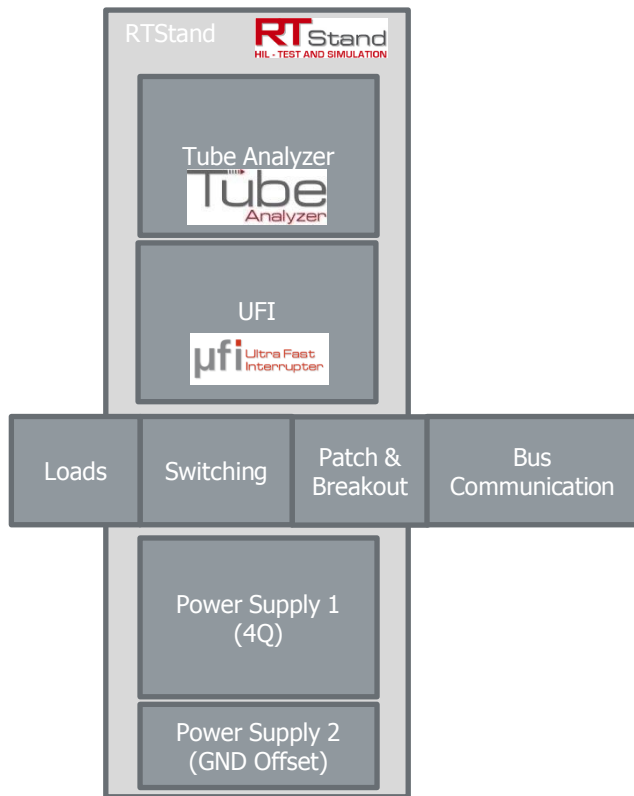
Reliable testing 24/7



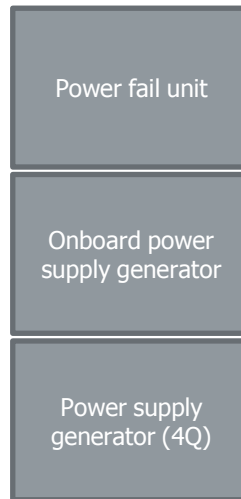
Correlated test results

Automate, don't just run!

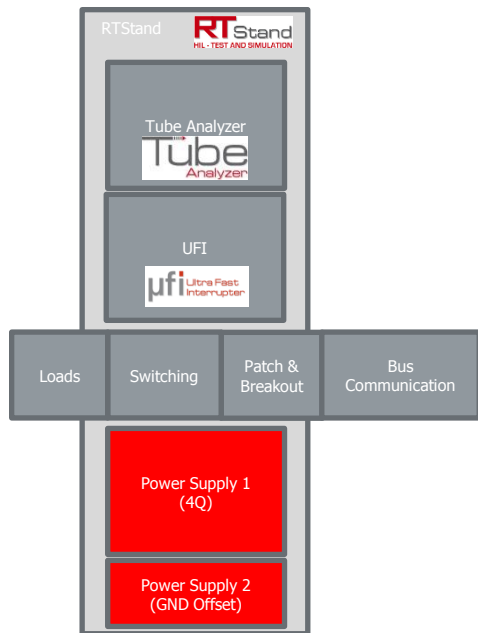
Automated testing system vs. Automated onboard power supply generation



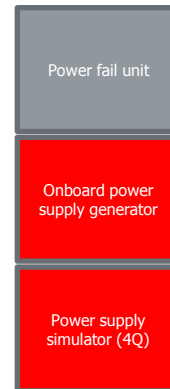
VS.



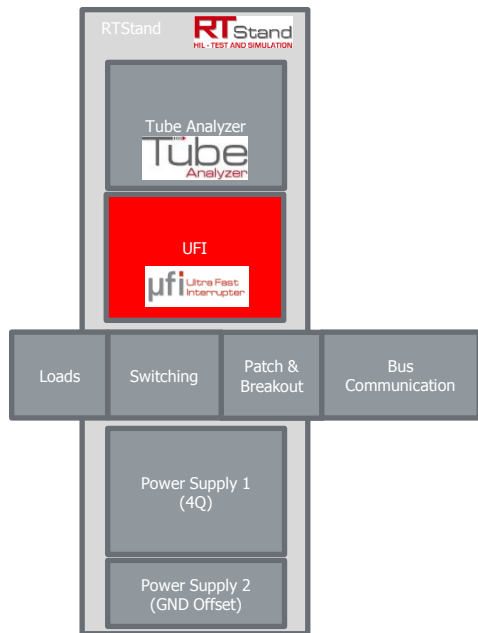
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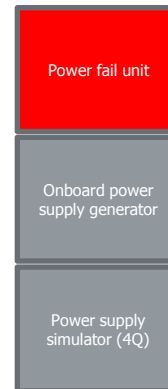
Onboard power supply generation & simulation



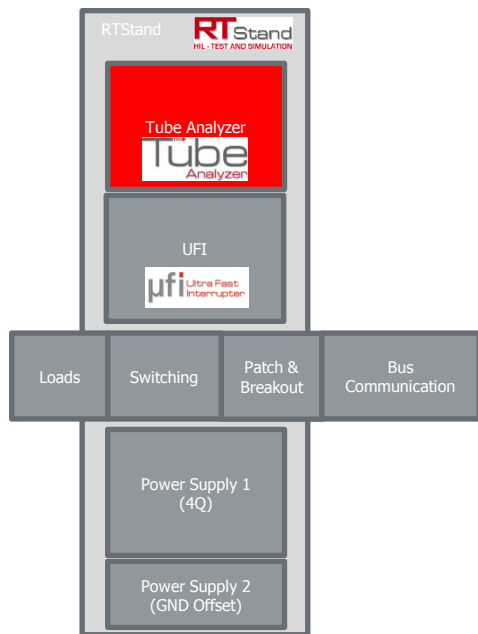
Automated testing system vs. Automated onboard power supply generation



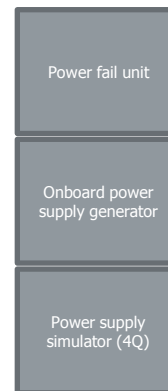
- ✓ Onboard power supply generation & simulation ✓
- ✓ Switch for fail simulations ✓



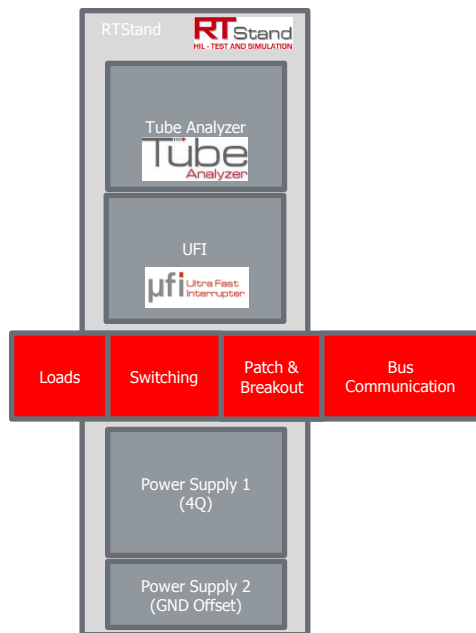
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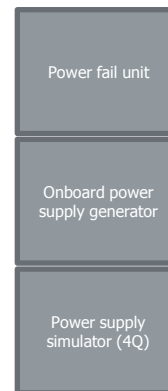
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- ✓ Continuous measurement and analysis on all pins in parallel ✗



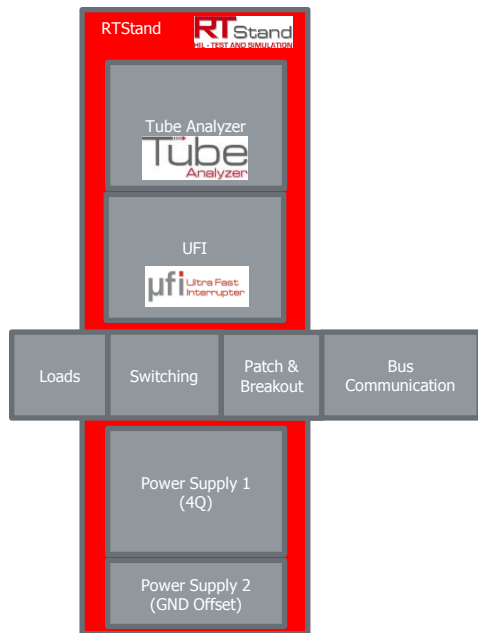
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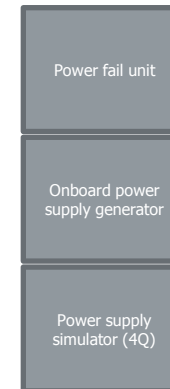
- | | | |
|---|--|---|
| ✓ | Onboard power supply generation & simulation | ✓ |
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| ✓ | Continuous measurement and analysis on all pins in parallel | ✗ |
| ✓ | Support of various DUTs, fielbuses, external devices and loads | ✗ |



Automated testing system vs. Automated onboard power supply generation



✓	Onboard power supply generation & simulation	✓
✓	Switch for fail simulations	✓
✓	Continuous measurement and analysis on all pins in parallel	✗
✓	Support of various DUTs, fielbuses, external devices and loads	✗
✓	Automated climate chamber control	✗
✓	Automated reporting	✗
✓	Flexible test scenario definition	✗



Want to learn more?

Our websites:

www.wks-informatik.de

www.rtstand.com

www.tube-analyzer.com

Our social channels:



<https://www.linkedin.com/company/wks-informatik-gmbh>

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