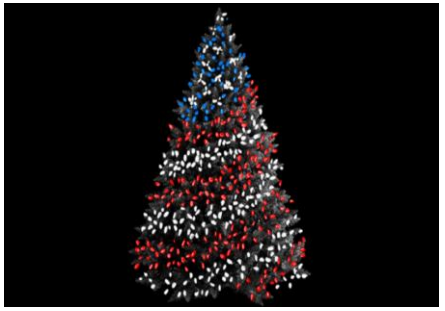
Benjamin Schlottke

RMS DIVISION – Mirion Munich
Project Manager

FUN FACTS

- Joined Mirion in 02/2015.
- Technical degree.
- 5 years NPP in Germany.
- 5 years Automotive Industry.
- Worked for the US Military.
- Lived 7 years in Johns Creek, GA.
- Driving only US cars.
- Crazy about blinking Christmas lights.
- Married.
- 1 son.



My supported markets

Switzerland

Americas

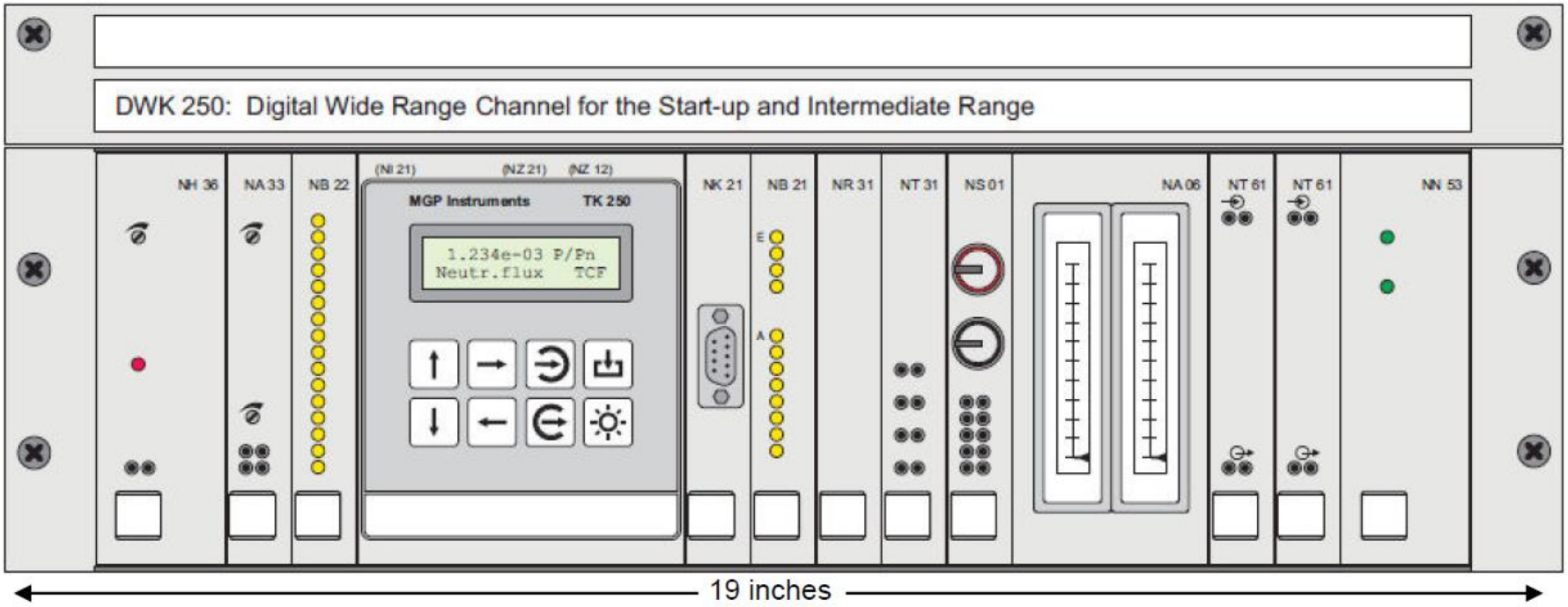
Germany

Summary

- proTK ™ 250 Overview
- Wide Range Channel and Microcontroller based signal converter
- US Projects

MIRION TECHNOLOGIES

proTK ™ DWK 250
Installed in 19" rack



proTK ™ 250 - Overview

The neutron flux monitoring system NFMS 250 combines long term experience in design and manufacturing of both detectors and signal processing electronics. These products are strictly oriented to the highest level of safety relevance and reliability and are qualified by several type tests and proven by an excellent operational experience.

The system NFMS 250 covers the requirements for measuring equipment used for the reactor protection system according to IEC 61226 cat A.

- **FEATURES**
  - **Modular construction**
  - **Versatile applications**
  - **Robust and reliable**
  - **Proven by operational experience**
- **APPLICATIONS**
  - **Operational process monitoring**
  - **Measurement & monitoring of the neutron flux density from start-up range to the power range for research reactors**

proTK ™ DWK 250
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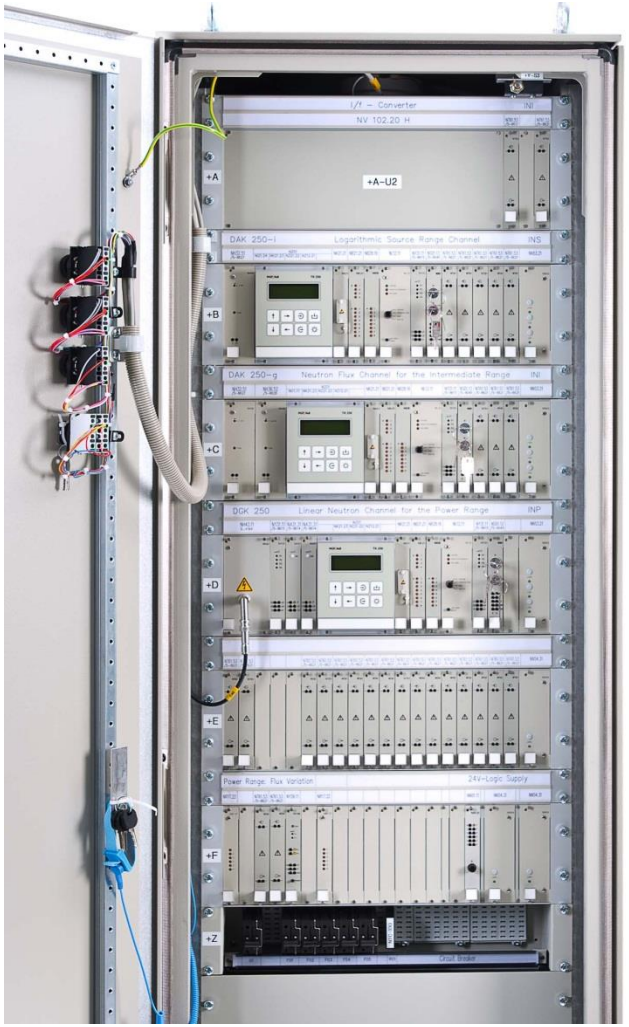
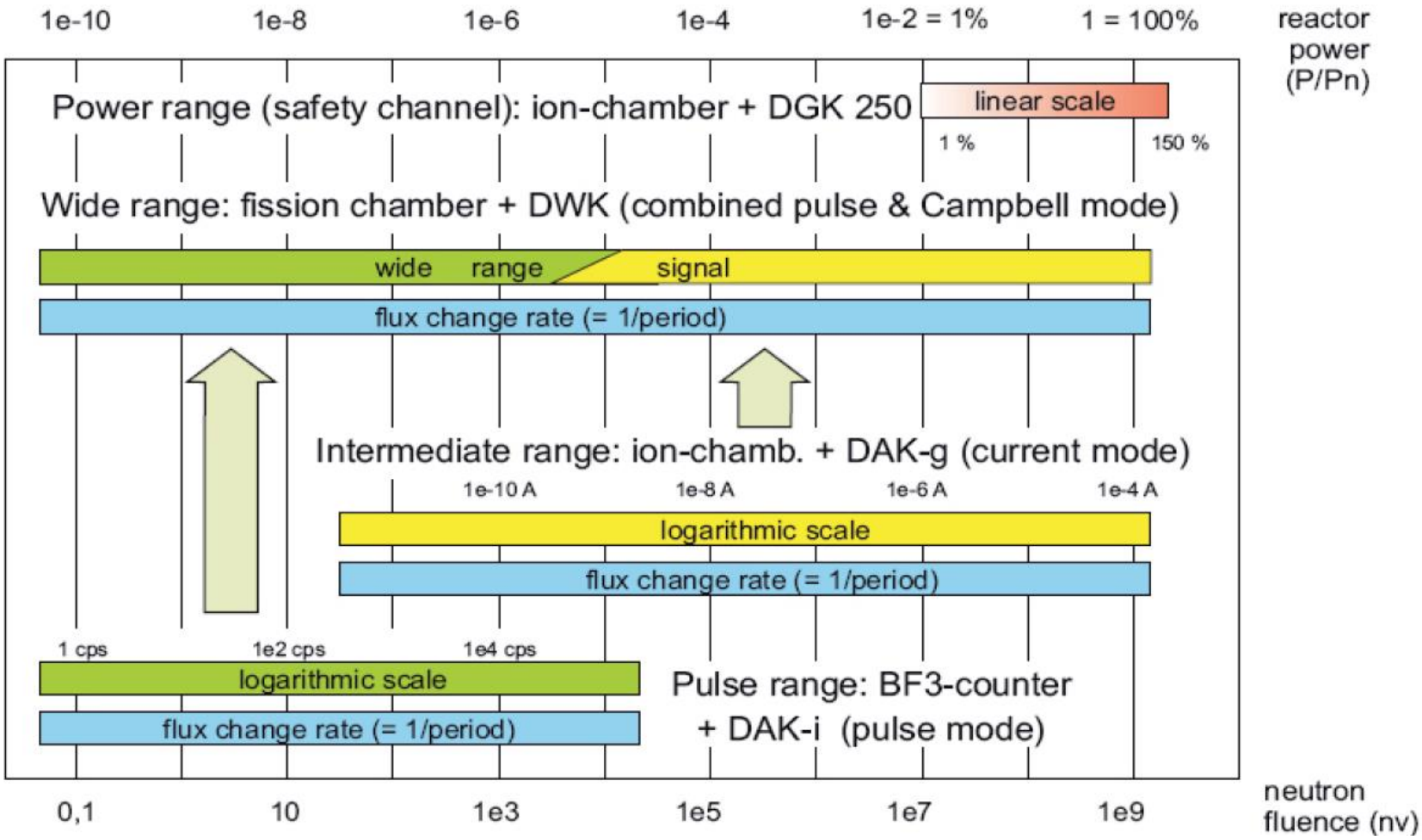
proTK ™ 250 – channel types for PWR and RR

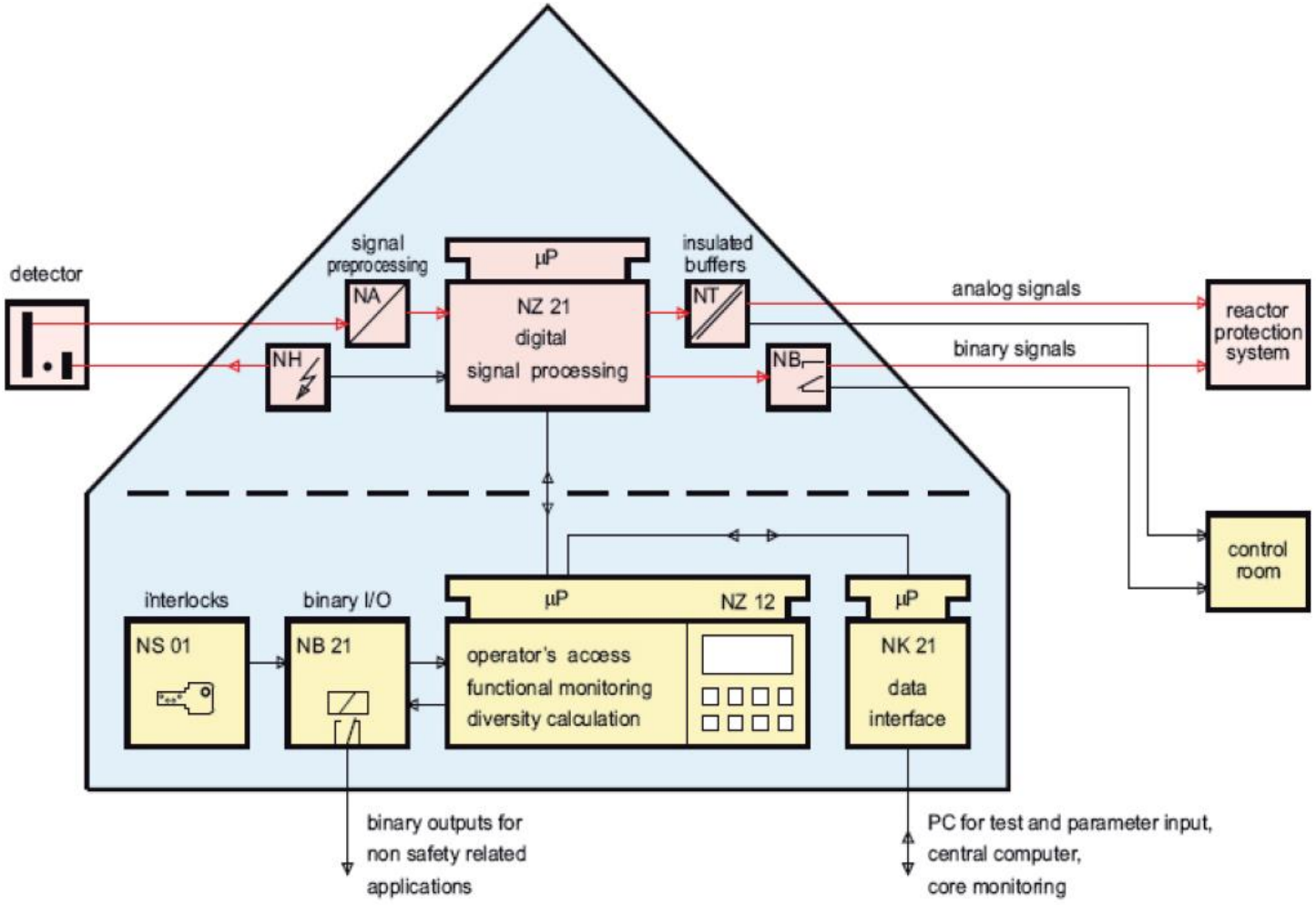
DAK 250	**Source range or intermediate range monitoring** **With pulse processing or DC signal processing; reactimeter optional** **also used for N-16 monitoring with e.g. gamma ionization chamber**
DWK 250	**Wide range monitoring** **With combined pulse processing and Campbell signal processing for in-core & out-core fission chambers**
DGK 250	**Power range monitoring** **With 1 or 2 signal paths for neutron ionization chambers or fission chambers**



proTK ™ 250 – channel measurement ranges



proTK ™ DWK 250 – system architecture



proTK ™ 250 – Extensive Operational Experience

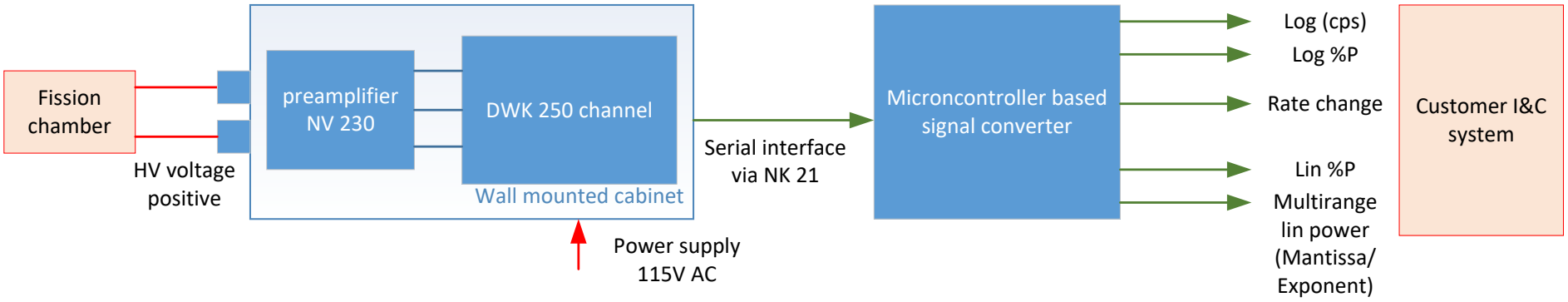
Electronics channels in operation	> 300
Cumulated years of operation	> 3,000 years
Average MTBF of electronic boards	> 4,000,000 hours
Total number of **software faults**	0

Task description

Customer specifications

1. **2 MW** open pool, light water moderated and cooled reactor of the TRIGA conversion type
2. **Keep existing** detectors (e.g. fission chamber)
3. **Replace** the existing electronic system (e.g. NM-1000)
4. **Keep existing** cabinets
5. **Keep existing** cables to the detectors and to the control room
6. **Data exchange** with customer special I&C system
7. **All functionality** of the current operating system should remain in place

Scope of Supply / Setup



Technical solution

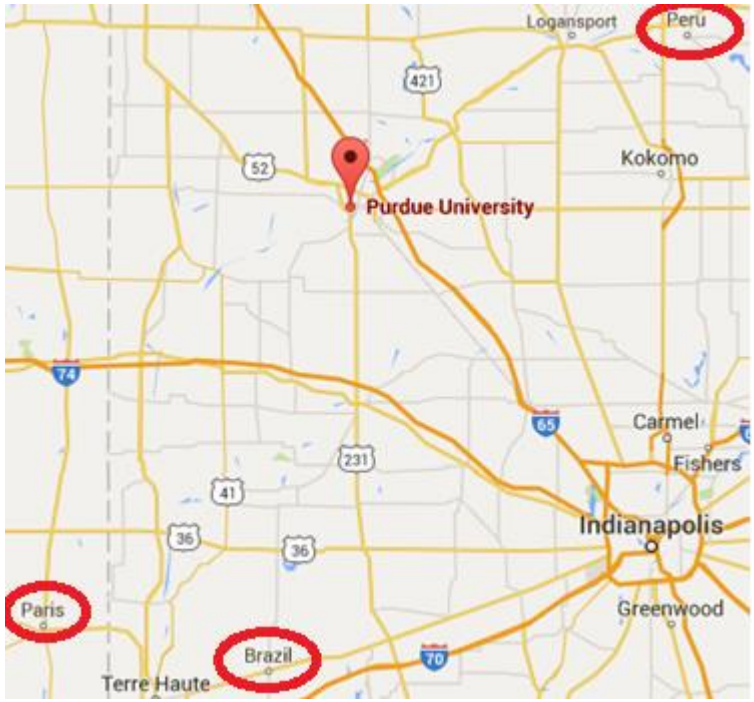
Digital Wide-Range Channel DWK 250 measures the neutron flux density, beginning from start-up level up to power range.

Optional interface card with RS 485 (or RS 232) interface to provide measured data from the DWK 250 channel to an external microcontroller based signal converter.

Microcontroller based signal converter processes these data and provides them to the customers special I&C system.

North America - Purdue

PUR-1 research reactor is built at the Purdue University in the city West Lafayette, Indiana



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