PSI

PAU Workshop

Particle Accelerator Upgrade - Removal and Installation (PAU R&I)

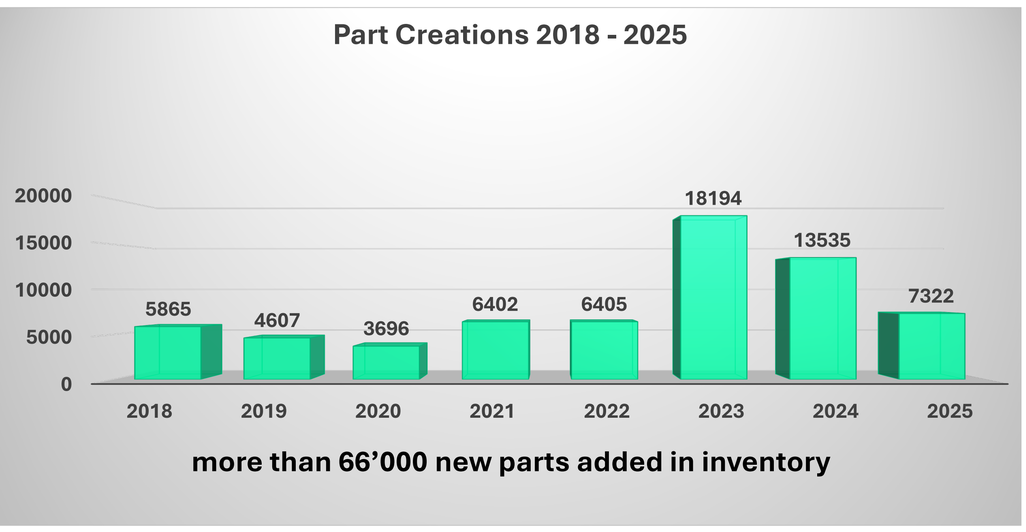
2026

PSI Centralized HW Database: facts, figures, and feedback

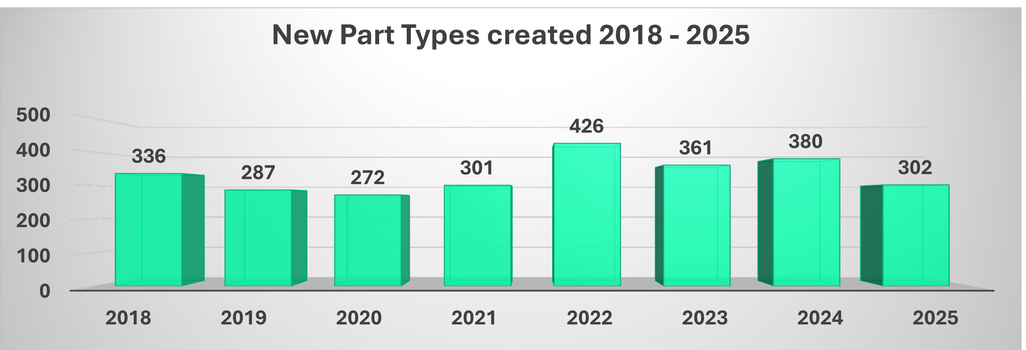
K.Bitterli, A.Bertrand

History

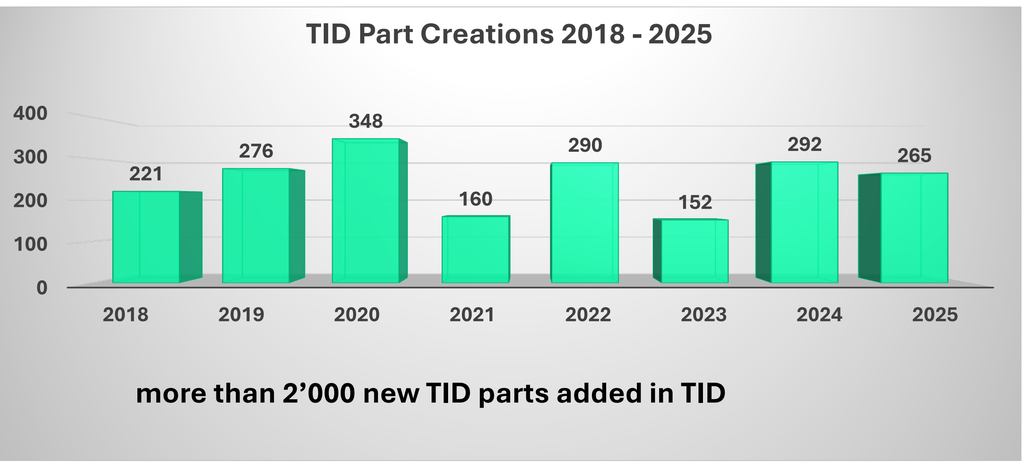
- 1997 - Excel Spreadsheet
- 2001 – Movelog
- 2004 – CIDB
- 2007 - City Inventory
- 2011 Inventory IV3
- 2016 Inventory IV4
- 2027 Inventory IV5 upcoming



more than 66’000 new parts added in inventory



more than 2’600 new parts types added in inventory



more than 2’000 new TID parts added in TID

Facts and Numbers to HW Database

- 4 Facilities – SLS, SwissFEL, HIPA, PROSCAN
- 3 Generations of HW (CAMAC, VME, CPCI)
- ~ 680 running VME IOC’s, ~ 200 WAGO Systems and ~ 350 Beckhoff Systems
- Adding **~1000** HW components **every month**
- more than **150’000 HW components** in database
- 300 – 400 users
- more than **5500 Locations**
- up 400 **Cameras** registered, PCO Edges, Basler, Manta..)
- > 4’000 SFP modules
- > 6’000 **cables** from around 250 various types
- > 3’000 **magnets**, SLS magnets including Testprotocols
- ~ 2’000 **network components**, Switches, Servers, network cards…
- ~ 2’000 Power Supplies, Puls, ISEG HV, Knill…
- ~ 2’000 Vacuum components, Pump Controllers, various chambers
- Several millions attributes
- Integrated various generations of HW from different sources and databases in last 30 years from facilities which are around 50 years old

Pros and cons for HW Database

In - House solution	Standard solution
+ flexibility + quick changes + cheaper + easier integration	+ Support + more specialist
- One man show	- Licencse costs - Customization - Migration process

User Statements

Inventory is the only way to find any information about PSI accelerators. You get a fast overview about hardware, installations, positions, **cabling** and **interconnections**. Especially when you are **on call duty** is not possible without it. This is from my perspective one reason for the **high availability** of our machines.
Helge Brands, OE Com Systems Integr.

I find it to be a very useful feature at PSI and the ability to know exactly **what devices** are used in **which system**, see what we have for **replacement** parts and know what version of **FW** needs to be updated.
Pavle Juranic, OE Electron beam instrumentation

For the **magnet section** of PSI, the database was extremely useful during the installation of the SLS2 machine (keeping track where the magnets were,…) and is now also extensively used by the **beam dynamics** who have easy access to all the data they need. Without the inventory database, we will be back to searching for information on magnets in a few years on servers and in folder structures and rely on the experience of people who might not work at PSI anymore.
Carolin Zoller, OE Mechanical Engineering and Infrastructure

One of the key features is the **fast UI response** to queries, queries without login and **encoded** in the **URL** – can quickly share with others. Bringing **EXCEL** sheets from various groups in a central database where all can see.
Roger Kalt, OE RF Power Amplifiers 2

A centralized database at PSI (Inventory) has played a **key role** in **dismounting** and **installation** of SLS-2.0 and SwissFEL. It enables **tracking** and locating components, facilitates knowledge transfer andindividual **maintains** an accurate overview of the status accross various facilities.
Cigdem Ozkan, OE Electron beam instrumentation

The HW database is the only **reliable** source to find the **MAC address** of devices. This information is often needed, with packet fence and **network** issues.
The HW database is used in various **IOC configs**. With that we can search for many relevant information and **automatically** build IOCs. This reduces obsolete, wrong and missing EPICS PVs and IOCs. It is crucial for reliable mapping of the SwissFEL hardware to the users.
This is heavily used for GUDE, ISEG devices, Powerbricks, Schneider motors and many other device types. It is very **important** to have this information at **one central place** in a common format for all devices.
Thierry Zamofing, OE Integr. and Support – PSD

The HW database is the **only source** for support and **duty on call** for **finding locations** and suitable replacemen devices.
Beat Ronner, OE Power Electronics Engineering

- When building electronic systems it is nice get component references for specific parts e.g. SFP OF
- To get to know what **exists** and how it is built with its **dependency**
- Locate the device either in the facility either in the storage depot
- To get to know the **remaining stock** and **availability**
- To get to know the **status** of a specific component
- Link to datasheet and IOC name

Benoit Stef, OE Digital Signal Processing

As one of few responsible for the **BPM devices** in various machines, I have the task to manage many different systems. The inventory is the **only source** for tracking the devices in terms of installation location, **calibration** files, **history** and **status**. Without the inventory I would loose the ability to manage all these systems efficiently and answer management requests for stock, installation, **costs**, and delivered systems.
Goran Marinkovic, OE Acc. Feedbacks and Measuring Systems