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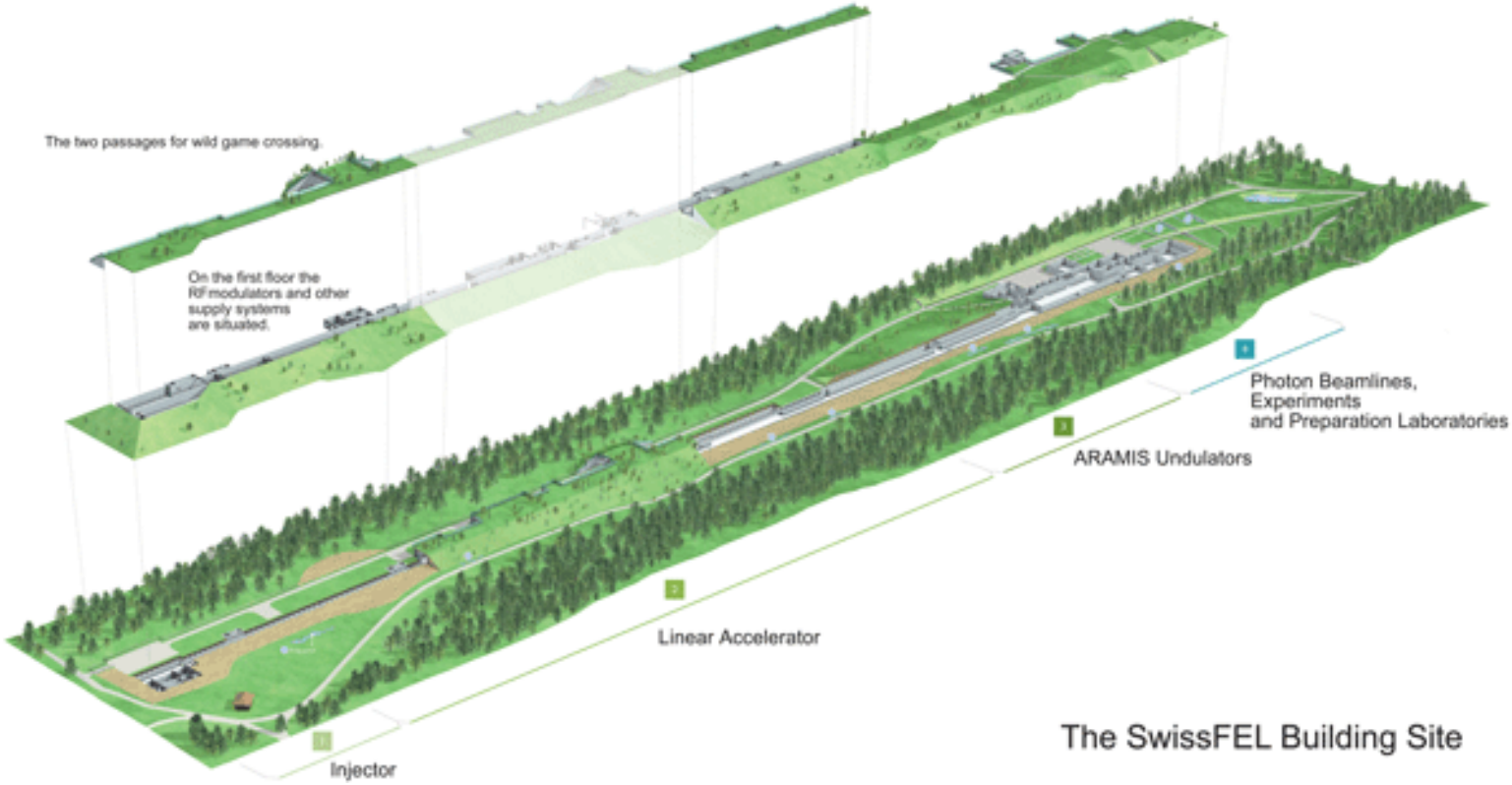
SwissFEL Motion Control Systems Experiences with DeltaTau PowerBrick

EPICS Collaboration Meeting 2016 – Lund, Sweden



The SwissFEL Building Site

Swiss Free Electron Laser SwissFEL

SwissFEL Motion Control Systems

For SwissFEL Motion Control Applications, we use Delta Tau PowerBrick to control various stepper motors (Oriental, Nanotec, Phytron, Schneider, …) with absolute and incremental encoders, both ion open and closed loop.

Experiences with DT PowerBrick at PSI

General experiences at PSI with DeltaTau PowerBrick

Good

- All options are included
- Very powerful and versatile (adding kinematics is easy, even rewriting servo/phase loops and other low level software is possible)
- Includes real-time PLC, C-programming interface and C-API for external applications
- Can connect up to 8 axes and up to 16 encoders per unit
- Works with practically any encoder (additional card may be necessary, though)
- Linux machine, can add own software as needed (i.e. EPICS and other applications)

Not so good

- All options are included – no way to optimize options/costs, overkill for simpler setups
- API and internal commands often do not entirely match, or are rather counterintuitive (for example: close loop / jog. Even (external) DT staff are not acquainted with all details
- PowerBrick itself is a Linux/Xenomai machine, yet IDE runs only on Windows
- PID tuning wizard for closed loop in DT IDE is a joke
- Faster movement with steppers often requires increased frequencies of servo/phase loops – older HW is lacking CPU power

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