Demanding performance and safety requirements make the dose delivery system (or scanning system) one of the key devices in a PT facility. Its development, continuous maintenance and upgrades require experience, established medical development processes and significant continuous effort.

This is why we have developed the C-DDS, a dose delivery system, which contains all the features and performance of a modern scanning system, out of the box. In addition, its modular architecture allows for easy integration into existing systems as well as customization of the C-DDS with customer-specific features.
KEY FEATURES

Beam Delivery
- **Validation of delivery instructions**: C-DDS receives and automatically validates delivery instructions for a single field of treatment.
- **Communication with External Systems**: Updates external systems with the status as the beam delivery progresses. After beam delivery, extensive clinical and service reports are available to external systems for storage and further analysis.
- **Advanced Beam Delivery Techniques**: Discrete and Quasi-Discrete Spot Scanning, Multiple Particle Types, Dynamic Beam Control, Beam Position Correction and support for Gating signals.
- **Multiple Operational Modes**: Clinical, QA, Service and Manual operational modes enable different possible actions/workflows.

Safety
- **Beam Monitors**: Integrated integral and strip ionization chambers redundantly monitor all relevant beam parameters in real time, while fast processing of beam monitor data allows delivery with high dose rates.
- **Fast Interlock**: C-DDS generates interlocks based on internal measurements and receives interlock signals from external systems requiring a fast beam stop.
- **Treatment Control Panel**: Hardware control, display and storage of all relevant beam progress information in the case of a power outage.

Service and Testing
- The Service Toolkit provides access to system configuration, logs and measurements on a GUI. All service functionality is also available remotely through a software interface.
- Service, commissioning, QA and research-oriented features, such as Breakpoint Delivery, Raw Data Logs, Manual Beam Control and Trigger Signals to synchronize operation to external devices.
- Validated simulators allow simulation of all external and internal interfaces, enabling faster development and pre-testing without a beam, and easier commissioning.

Integration and Customization
- C-DDS is delivered with a set of well-described default interfaces, designed to satisfy the functional and performance requirements of a modern PT system.
- The modular design allows customization of interfaces, custom components (e.g. beam monitors) and customer-specific functionality.
**BENEFITS**

- **All the features and performance of C-DDS is available out of the box.** The default interfaces allow integration into a PT system with minimal effort.

- **Configurability:** C-DDS supports different configurations of the treatment rooms, nozzle device configurations and geometry, and beam generation approaches.

- **Seamless integration:** The modular design of C-DDS allows easy integration with existing external interfaces or customization with customer-specific functionality.

- **Certification:** Developed according to medical standards (ISO 13485, IEC 62304, ISO 14971, IEC 60601-1 family, IEC 60601-2-64 etc.), C-DDS comes with all the required documentation.

- **Reduced time and effort to first patient:** As part of Cosylab PT Product Suite, C-DDS is compatible with C-TCS and C-ACS, allowing the least amount of time and effort to the first patient and ensuring the highest performance out of the box.

- **Faster development of new features:** The set of validated and automated simulators makes it possible to fully test the C-DDS before integration into the PT facility, which supports easier commissioning.

Delivered by the C-DDS using a proton beam
WHY COSYLAB

The development and maintenance of software for particle therapy has always been a long, costly, complex and often underestimated task. Therefore, most particle therapy machine vendors experience it as a bottle-neck in their development of a complete solution.

Our suite of installation-ready software products helps you to avoid this painful journey by giving you:

• a competitive advantage by lowering your time-to-market
• a fixed cost and delivery date,
• all the medical software documentation necessary for the certification of the whole machine.

Cosylab is a global technology company that builds and integrates state-of-the-art software and electronics for the world’s most complex, precise and advanced systems. The company was established in 2001 and has expanded its services from building control systems for the world’s largest scientific projects to developing innovative software solutions for particle treatment of cancer. By making particle therapy cancer treatment safer, more effective and affordable, we enable our partners to deliver better healthcare worldwide.