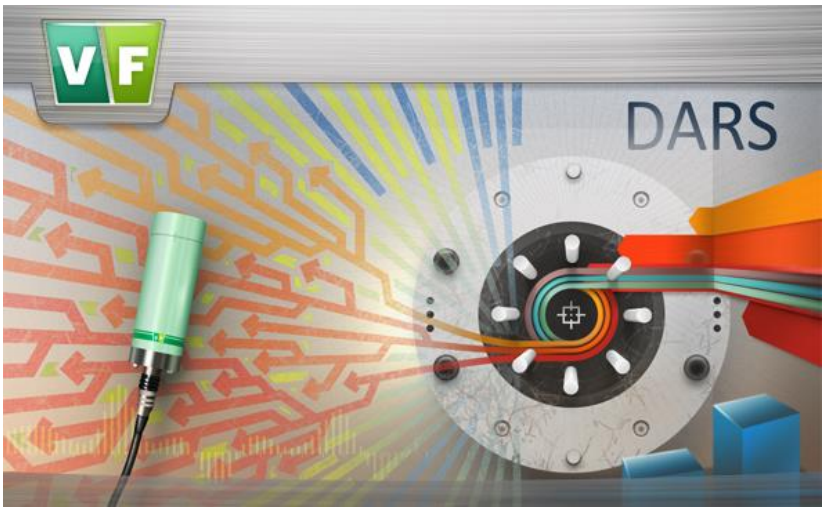
The DARS Control System for the Calibration Laboratory



A unique control system for the calibration laboratories that provide ionising radiation (IR) instrument calibration comprehensively addresses the agenda of the laboratory — from the radiation sources through the calibration procedures for different types of instruments, to databases of instruments and certificates for the calibrations performed on them.

Purpose

The DARS control system for the calibration laboratory is a complete system designed for the overall operational provision of calibration laboratories that provide ionising radiation (IR) instrument calibration. The DARS system includes the application software and supporting hardware. It is offered in three different configurations: BASIC CONTROL, EASY and PROFESSIONAL. These differ mainly in the degree of the implemented automation of the calibration. The system can also be expanded with various additional modules.

The features of the DARS system include the following:

- Automated control of the calibration laboratory technology;
- Records of all used IR sources, including detailed metrological information and the validity of their certificates;
- Automatic evaluation of the performed calibration results;
- Users have the option of using the system to create and save their own procedures for the calibration of instruments (available in the DARS Professional version);
- Semi-automatic or fully automatic execution of the calibration;
- Records of instruments and certificates for the calibration performed;
- The printing of reports, certificates and labels for instruments;
- Laboratory personnel records, permitting the user setting of hierarchical access to the DARS system;
- The possibility of connecting with other information systems;
- The possibility of launching the system from multiple workstations at the same time.

Main Advantages

- The system provides complete administration of calibration laboratories; other applications or databases are not necessary
- It complies with the standard EN ISO/IEC 17025 Conformity assessment—the general requirements for the competence of testing and calibration laboratories according to which laboratories may be accredited by the national accreditation authority
- It is a modular system, the basic version can be expanded by different functions
- Archiving of data about radiation sources and automatic half-life correction
- The possibility of creating procedures for the automatic calibration of instruments increases the laboratories' capacity and reduces the possibility of error
- Automatic saving of all information in a single database provides the archiving of all calibrations performed
- The possibility of automated reading of measured values from the calibrated instrument through various interfaces
- The printing of certificates for the calibrations and stickers for instruments

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Description

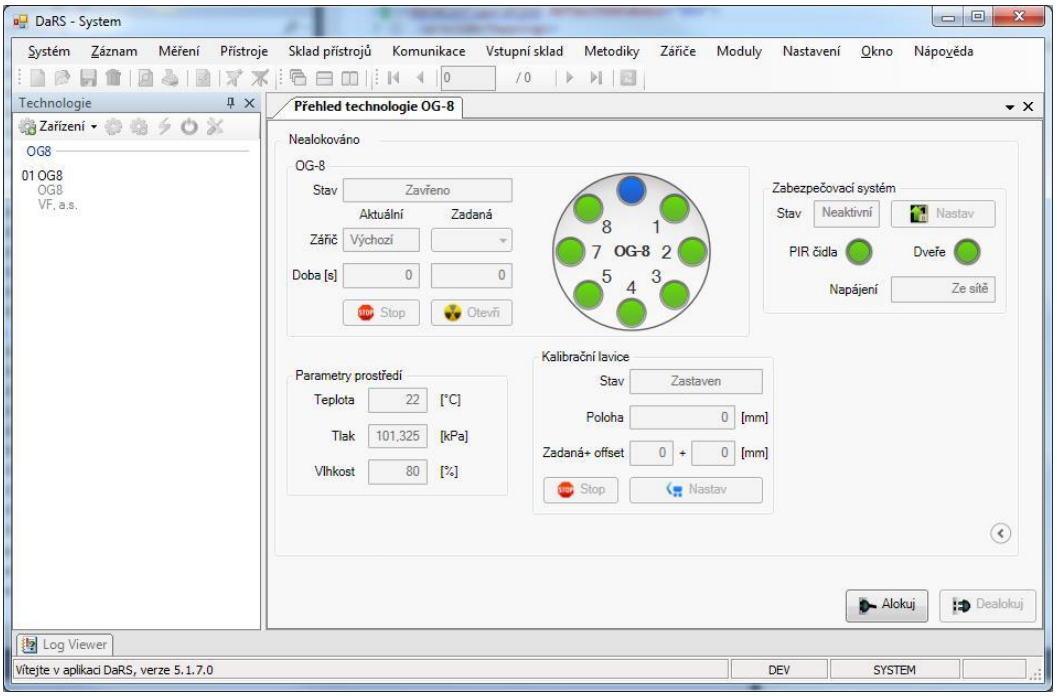
The VF solution for IR calibration laboratories consists mainly of the ionising radiation sources, which irradiate the calibrated measurement instruments, the means for reading the values from the calibrated instruments and the DARS system for the management and automation of the work in the calibration laboratory. The high degree of automation implemented in DARS helps to ensure easy reproducibility of the calibrations, eliminates operator errors and, therefore, ensures the high-quality implementation of calibrations.
The application software of the DARS system uses the Microsoft Windows operating system.
The means for reading the measurement results from the tested instruments and the DARS system allows the performing of calibrations from remote areas, unattended, thereby ensuring laboratory personnel's safety from irradiation.
The DARS system is available in three basic versions — BASIC CONTROL, EASY and PROFESSIONAL, which differ in their range of functions:

■ included □ optional **N/A** not available

Function	BASIC CONTROL	EASY	PROFESSIONAL
Laboratory technology control			
Laboratory technology manual control	■	■	■
Setting the desired dose rate	■	■	■
Setting the defined dose irradiation	■	■	■
The possibility of reading the measurement values by a camera	■	■	■
The possibility of reading the measurement values by a counter	■	■	■
The possibility of reading the measurement values via an intelligent interface	**N/A**	**N/A**	□
Records of the ionising radiation sources			
Saving the metrology data about sources	■	■	■
Records of portable sources (installed outside the irradiator)	**N/A**	□	■
The module of the source loans records	**N/A**	□	□
Records of the calibrated instruments			
Basic records	**N/A**	■	**N/A**
Expanded records	**N/A**	**N/A**	■
Workflow	**N/A**	**N/A**	■
Customer module	**N/A**	**N/A**	□
Calibrations			
The possibility to create and save calibration procedures	**N/A**	**N/A**	■
The possibility of automated calibration performance	**N/A**	■	■
Evaluation of the relative error	**N/A**	■	■
Evaluation of the variation coefficient	**N/A**	■	■
The possibility to calibrate multiple instruments at the same time	**N/A**	**N/A**	■
The printing of the calibration certificates (one certificate included as standard; more customised certificates possible as an option)	**N/A**	■	■
The printing of the stickers with the calibration validity (one label included as standard; more customised labels possible as an option)	**N/A**	■	■
System functions			
The module for automatic updates	**N/A**	■	■
The module for remote service support	■	■	■

Description of Selected Functions

- **Laboratory technology control** (BASIC CONTROL module) allows the manual and automatic control of all calibration laboratory technology components. It commands the installed irradiator and exposes sources, arranges the position of the instrument under calibration towards the radiation source using the calibration bench, it displays laboratory environment measurement values and the status of the safety system elements, etc.
  When the information about IR sources is entered into the system database, the system will secure the positioning of the instrument under calibration to the place of the required dose rate, or will directly irradiate the instrument with a pre-set dose.
  Values from the calibrated instruments can be read in three basic ways:
  - By the camera focused on the display of the instrument under calibration when the image is transmitted to the screen in the operator room;
  - By the counter that counts the pulse count from the instrument during the time interval specified the metrologist;
  - By the intelligent interfaces, such as Ethernet, RS-485, RS-232, where the DARS system communicates directly with the instrument and reads from it the response to irradiation. This function is only available as an option for certain types of the instruments after consultation with the seller of the DARS system. Communication protocols for these instruments must be available to the manufacturer of the DARS system.



- **Records of the sources of ionising radiation** archive the metrological parameters of the IR sources (including the uncertainty of the source) that are necessary for the automated implementation of the metrology performance. Records may be optionally extended with portable sources that are not installed directly in the technology, such as irradiators, but are used as portable radiation sources (e.g., sources of surface contamination). This record can also be completed with the module of loans of sources to other subjects.

- **Records of the instruments** can be performed at two levels:
  - Basic, when only basic information is stored for every instrument, namely the type and the serial number.
  - Advanced, when a complete database of metrological parameters of various types of the instruments is additionally kept, as well as details about the owner of the meter.

  Records may be optionally extended with the Customer module, which enables the customer of the laboratory to specify the requirements for the calibration online.

- **Calibrations** in the DARS system can be performed in three different ways:
  - Manual: using the BASIC CONTROL version, when the operator manually controls the calibration laboratory technology (i.e. exposes the instruments to radiation at the required amount) and processes the values and evaluates them in his/her own calibration certificate.
  - Semi-automatic: using the EASY version with the integrated semi-automatic setting of the technology adjusted and started by the user. The values of the instrument calibration are saved in the database, and the system automatically evaluates the success of the calibration performed and generates certificates on calibration along with its values. Measurement procedures cannot be saved.
  - Automatic: using the PROFESSIONAL version, when the metrologist independently pre-generates calibration procedures (i.e. calibration procedures for various types of the instruments). After their creation and storage in the database, according to these procedures, automatic calibration can be run. The values of the instrument calibration are saved in the database, and the system automatically evaluates the success of the calibration performed and generates certificates for calibration along with its values.

- **System functions** include, in particular, the Module for automatic updates, which provides the update and installation of new versions of DARS and its modules on all PCs on which the system is installed within the calibration laboratory. Another important function is the Remote service support module, which allows the providing of the laboratory personnel with remote service support by an authorised service technician from the VF supervisory centre.

Models and Accessories

Type	Description
S1111	DARS–control system for the calibration laboratory
Related products	
N/A	Gamma calibration laboratory with OG-8 irradiator
N/A	Gamma calibration laboratory with IG-13 irradiator
N/A	Neutron calibration laboratory
N/A	Beta calibration laboratory
K0125	Low activity calibrator KMNA
K141X	PGI-01 Panoramic gamma irradiator
K1500	TERABALT T100 High Level Irradiator

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Manufacturer's' contacts:		Your supplier
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