

THE DARS CONTROL SYSTEM FOR THE CALIBRATION LABORATORY



MAIN ADVANTAGES

- Comprehensive management of a metrology laboratory, 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
- Archiving of data about radiation sources and automatic half-life correction
- Creating procedures for the automated 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
- Automated reading of measured values from the calibrated instrument through various interfaces
- Printing of certificates for the calibrations and stickers for instruments

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.

In calibration laboratory, such work may be carried out in an environment with the values of activities, or dose rate

of ionising radiation, which could be life threatening, in case of direct exposure of the operator to the radiation. Thus the layout of the entire calibration laboratory is designed in a way to enable a remote instruments handling from secure areas, during the course of calibration. 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.

DARS features include:

- 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
- Using the system to create and save their own procedures for the calibration of instruments (available in the DARS Professional version)
- Semi-automatic (EASY) or fully automatic (PROFFESIONAL) 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;
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Laboratory technology control (BASIC CONTROL module) allows the manual and automatic control of all calibration laboratory 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.

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 calibration 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 database of types, producers, owners of the instruments is additionally kept.

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

The remote service support provides the Remote service module to laboratory personnel by an authorized service technician from the VF supervisory center.

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 (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-automated, using the EASY version with the integrated semi-automated setting of the calibration laboratory adjusted and started by the metrologist. 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. Calibration 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.

OPTIONAL ACCESORIES

Name	Min. requirements
Server	• processor Intel Xeon E3-1220, 3 GHz
	• RAM 8 GB
	• 2x 1 TB HDD (RAID 0)
	• operating system Microsoft Windows Server 2012
Metrologist's PC	• database Oracle version 11g or higher
	• processor 1,4 GHz, 64-bit
	• RAM 1 GB
	• 32 GB HDD
	• monitor HD 1900 x 1080
	• operating system Microsoft Windows 7 or higher
	• Czech, English and Russian



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SYSTEM VERSIONS

Function	BASIC CONTROL	EASY	PROFESSIONAL
Laboratory technology control			
Laboratory technology manual control	YES	YES	YES
Setting the desired dose rate	YES	YES	YES
Setting the defined dose irradiation	YES	YES	YES
The possibility of reading the measurement values by a camera	YES	YES	YES
The possibility of reading the measurement values by a counter	YES	YES	YES
The possibility of reading the measurement values via an intelligent interface	NO	NO	optional
Records of the ionising radiation sources			
Saving the metrology data about sources	YES	YES	YES
Records of portable sources (installed outside the irradiator)	NO	optional	YES
The module of the source loans records	NO	optional	optional
Records of the calibrated instruments			
Basic records	NO	YES	NO
Expanded records	NO	NO	YES
Customer module	NO	optional	optional
Calibrations			
The possibility to create and save calibration procedures	NO	NO	YES
The possibility of automated calibration performance	NO	YES	YES
Evaluation of the relative error	NO	YES	YES
Evaluation of the variation coefficient	NO	NO	YES
The possibility to calibrate multiple instruments at the same time	NO	YES	YES
The printing of the calibration certificates (one certificate included as standard; more customised certificates possible as an option)	optional	YES	YES
The printing of the stickers with the calibration validity (one label included as standard; more customised labels possible as an option)	optional	YES	YES
System functions			
The module for automatic updates	NO	YES	YES
The module for remote service support	YES	YES	YES



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REALTED PRODUCTS

OG-8	Gamma Irradiator
GI-06	Gamma Irradiator
IG-13	Gamma Irradiator
NI-01	Neutron Irradiator
PGI-01	Panoramic Gamma Irradiator
BC-03	Beta Calibrator
CB-50	Calibration Bench



Calibration Bench CB-50



Panoramic Irradiator PGI-01



Gamma irradiator OG-8

