

# DIMATE PRODUCT DESCRIPTION

## DIMATE PACS & CCM

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## **DIMATE**

The modern image and data management platform for materials testing, inspection and maintenance

DIMATE is an integrated software system that digitizes the processes of non-destructive testing and structures the data relating to the test object into a digital component, plant or vehicle file.

The solutions DIMATE PACS (Picture Archiving and Communication System) and DIMATE CCM (Component Content Management) cover different requirement profiles.

DIMATE PACS digitizes NDT processes between the inspection order system (ERP, RBI, Excel lists, ...) and the inspection department or between a client and an inspection service provider. In addition, specialized functions in the DIMATE viewer at the inspection workstation support the fast and precise evaluation of the inspection data. All data is stored in DICONDE format in a manufacturer-independent and audit-proof manner and can be distributed digitally in the network. Access to the data in the DIMATE system is protected and is only made available to authorized persons.

The DIMATE CCM brings test data and the accompanying documentation, such as reports, drawings, certificates, from different sources/systems into a filing structure specified by the customer. Thus, the DIMATE Component Content Management provides a consolidated database, which is necessary for the realization of a true digital component or plant file.

DIMATE PACS and CCM can be installed and used individually or in combination.

The core of both systems is the DIMATE Communication Server as the central software module.

Various project-specific modules can be activated in the DIMATE Communication Server in order to connect and integrate test equipment, viewers, gateways and other IT systems.

The exact range of functions of the individual DIMATE software modules, which can be individually combined to form a PACS or a CCM, is described within this document.

## **DIMATE Server**

Customized communication and networking

### **DIMATE Communication Server**

The DIMATE Communication Server is the central communication hub for your digital testing processes. It establishes all connections to the test equipment and to the leading IT systems and enables the secure retrieval and archiving of test data and documents.

The DIMATE Communication Server can be easily connected to any data source as well as to all compliant test equipment devices. For example, digital radiography or ultrasound systems can be connected via the DICONDE interface and endoscopy or thermography systems via the video interface. Further import interfaces enable the integration of files, photos and other test information, such as signal data. This means that all data relating to a component or object tested can be transferred to the integrated database and stored securely.

The DIMATE system can be excellently integrated into an existing system infrastructure due to its flexible interfaces, and the simple connection of several DIMATE servers enables the creation of a flexible DICONDE communication platform. For example, company and customer sites can be networked with each other.

### **DIMATE Communication Server GO**

In contrast to the DIMATE Communication Server, not all interfaces are available in the licensed version of the Communication Server GO. It can be extended with the following DIMATE modules:

- DIMATE Viewer Pro (max. 2)
- DIMATE Analog Modality Gateway or DICONDE Modality Gateway (total max. 2)

### **DIMATE CCM Basis**

The DIMATE Component Content Management (CCM) basic package is the foundation for a digital component, plant or vehicle file. It combines all necessary DIMATE software modules for central storage and automated filing of test data, drawings, certificates, approval documents, etc. in a customer-specific file structure. In addition, the web based DIMATE viewer licenses for specific viewing of data for an entire customer site are also included.

The DIMATE Component Content Management (CCM) basic package consists of the software modules listed below and can be extended by further DIMATE modules at any time:

- DIMATE Communication Server
- DIMATE CCM Data Manager
- DIMATE CCM Viewer Web (Campus License Package)

## **Audit-proof long-term storage of test data**

Archive module for the DIMATE server

### **DIMATE Archive Manager**

The DIMATE Archive Manager is responsible for storage and data replication. Multiple storage units can be managed and functionally grouped (SAN, NAS, Cloud). For example, different storage locations on distributed storage systems can be accessed for archiving. The integrated database provides an overview of the entire data inventory, the storage location and the archive status at any time.

For highly sensitive data, a data encryption which works completely independently of the underlying storage technology can be implemented.

In short, DIMATE Archive Manager is an important building block for audit security and revision safety and supports the IT manager with well-known integration options in the in-house IT systems or in a cloud infrastructure.

### Device interfaces

DIMATE - independent and flexible

The DIMATE Modality Gateways establish the connection between the DIMATE Server and the test devices (modalities). The DIMATE system offers interfaces for a wide variety of image, video and signal data sources and can thus be connected to almost any test equipment - digital or analog. No matter whether digital radiography, ultrasound, thermography, video endoscopy or photography: with DIMATE you archive your NDT test data.

Communication and data storage are based on the open and vendor-independent NDT IT standard DICONDE (Digital Imaging and Communication in Non-Destructive Evaluation). The various DIMATE gateways help with the connection.

#### Modality Gateways for the DIMATE Communication Server

##### **DIMATE DICONDE Modality Gateway**

Via the DIMATE DICONDE Modality Gateway, all test devices that have a DICONDE interface and comply with the standard are connected via the network. This is the usual communication between test instrument and DICONDE archive. With this gateway, for instance, image and signal data can be sent directly from the test devices to the DIMATE Communication Server via the DICONDE Storage service.

##### **DIMATE File Import Gateway**

The DIMATE File Import Gateway provides functions for the automated import of TIFF, JPEG or PDF files. In this way, test reports, photos, drawings, documents or radiographic images can also be transferred into the DICONDE format and sent to the DIMATE Communication Server via the DICONDE storage service or assigned as test data to an inspection order. These data is thus permanently integrated into the inspection processes and can be retrieved from the DIMATE database at any time.

##### **DIMATE Analog Modality Gateway AV**

With the DIMATE Analog Modality Gateway, images or movies from e.g. endoscope, microscope, camera, drone, etc. can be acquired via a graphical user interface, complemented with inspection information and sent to the DIMATE Communication Server or another DICONDE archive. Data acquisition is done directly via the video device interface or via file transfer and supports almost all formats.

## **NDT Workflow Management**

### **DIMATE – True process digitization and NDT 4.0**

Decisive advantages of the DIMATE platform are the optimal support and simplification of essential workflows in materials testing, inspection and maintenance through integration into the systems involved in the process such as ERP, RBI, IDMS, etc.

Continuous and secure work procedures in DIMATE guarantee the reproducibility and traceability of tests required by normative standards and the integrity of your data with networked systems.

### **Workflow-Modules for the DIMATE Communication Server**

#### **DIMATE Server Sync Manager**

The DIMATE Server Sync Manager can be used to consolidate data pools from different locations and to synchronize changes within the DIMATE network.

The main purpose is the central evaluation and long-term archiving of test data generated at different locations. A central DIMATE server receives changes in test data from the external or customer sites via a DIMATE Server Sync Manager. This saves time, travel costs and hardware investments at the external locations, because the evaluation and archiving of all data only has to be done at one location, namely at the central office.

#### **DIMATE Order Manager**

The DIMATE Order Manager is an important component for structured quality assurance.

It provides the work lists of test orders for test devices with a corresponding input interface. This eliminates the need for manual input at the device and avoids incorrect assignments.

After receiving the test data from the devices, a consistency check of the data on the DIMATE server as well as a comparison with the order data from the ERP, RBI, IDMS, etc. is also carried out.

Specifically, the DIMATE Order Manager can acquire inspection order data e.g. via the message interface from management systems and transfer it as a DICONDE/XML work list to standard-compliant inspection devices, e.g. digital radiographic systems. In this way, each unique inspection job can be retrieved directly at the device and the generated inspection images and documents can be assigned to it.

When the test data is received in the archive, the DIMATE Order Manager also offers the option of using the Study Verification Service to compare incoming image examinations against the initial order input from a leading system (e.g. SAP). This is to ensure that only test images and documents that can be clearly assigned are stored in the DIMATE archive. Incorrect or incomplete data is marked and can be corrected manually.

### **DIMATE PDF Print Gateway**

With the DIMATE PDF Print Gateway you can transfer documents from any application like MS-Excel, MS-Word, SAP, etc. in DICONDE format to the DIMATE Communication Server. The generated document can be directly linked to the test data. In this way, test reports and other relevant documents can also be easily supplied for (audit-proof) long-term archiving.

### **DIMATE DICONDE Mail Gateway**

The DIMATE DICONDE Mail Gateway enables the DIMATE server to securely send and receive examinations with images and test reports in DICONDE format by e-mail. It realizes point-to-point communication of DICONDE data in situations where direct network connections or a VPN cannot be realized. The system was specially designed for the smooth and secure communication of large amounts of data via e-mail. Here, the examination data is encrypted "end-to-end" in accordance with BSI recommendations. Typical application scenarios are the transmission of examinations to customers, external test engineers, experts and specialized testing institutions.

### **DIMATE LDAP Gateway**

The DIMATE LDAP Gateway supports you in the integration of your DIMATE system into your existing user and rights management. Through the LDAP Gateway you can access user accounts of an AD server and manage the DIMATE users there. The logon to the DIMATE system is then done by authentication via LDAP against the AD server. A double maintenance of access IDs and passwords is thus avoided.

### **DIMATE Study Access Manager**

The DIMATE Study Access Manager checks which test data are or have been opened by which user. In case of access by another user, a message is displayed indicating that an examination is being viewed more than once. On the one hand, this module can actively prevent unwanted duplicate examinations, especially across sites. On the other hand, the inspection status of your images can be tracked in the worklists.

### **DIMATE CCM Data Manager**

The DIMATE CCM Data Manager enables structured storage of all test data and associated documents of various types and origins. Through an individually programmable combination of categories, a system-wide unique cataloging is provided, which is then applied to incoming data. This way, data is stored in the archive in a structured manner and categorized at the same time. Clients, such as the DIMATE CCM Viewer Web, can later use the structure to call up and filter the data.



## Workplace systems

### Individuality and efficiency

The DIMATE platform has a scalable, modular system structure and can be extended via different viewers for evaluation and viewing. The DIMATE Server, the core of the system, centrally manages all data and makes it available to the workstation systems depending on the user's functional requirements.

The DIMATE viewer software modules for image distribution with the DIMATE Viewer Web are based on current HTML5 technologies. The DIMATE Viewer Pro is based on Java.

The DIMATE Viewers do not make high demands on the computer hardware and can be easily distributed in the network.

### DIMATE Viewer Pro

This viewing system has been developed for professional evaluation and provides the full range of analysis and measurement functions. The DIMATE Viewer Pro optimally supports you in the display and processing of data from various test methods.

Optionally, the Viewer Pro integrates and automates your work steps when creating and signing test reports.

Requirements from normative standards, e.g. in radiographic testing with regard to image quality assessment and calibration, are implemented in by the software. The Viewer Pro also supports the full range of DICONDE functionality required by Nadcap auditing.

The most important functions at a glance

- Secure data access (login and user rights)
- Study manager
  - Preview of inspection study contents
  - Searching and sorting of studies
  - Status management, e.g. test status, release, work process, etc.
- Individual work lists
- Image display and optimization
  - zoom, move, rotate, flip, invert, etc.
  - Brightness, contrast, sharpening, smoothing, etc.
  - color palettes, e.g. for UT and TT
  - dedicated RT image filters

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- Calibration and quality determination
  - Automatic double wire block evaluation
  - Image calibration via test specimen, ruler, pipe outer wall (nominal diameter)
  - Determination of SNR, SRb
  - Monitor test according to standard
- Measurement and annotation functions
  - Lengths, distances, areas, angles
  - Determination of gray values: point, profile, ROI
  - Automated determination of residual wall thickness
  - Texts, shapes, etc.
  - Labelling/classification for artificial intelligence
- Work support
  - Individual work step protocols
  - Context-related toolbars
  - Comparison with prior images and other data and documents of the test object
- Display of documents (PDF), reports, drawings, etc.
- Playback of videos and image sequences, e.g. from endoscope, drone, camera, ultrasound
- Support for CT data
  - Multiplanar reconstruction
  - 3D VRT
  - 3D Cursor
- Free layout and filling of the monitor matrix
- Automated data transfer into Excel templates
- Digital signature of PDFs, e.g. on completed inspection reports

### **DIMATE Viewer Web**

The DIMATE Viewer Web provides secure and fast access to all data in the DIMATE Communication Server. The Viewer Web can be operated in the browser or on mobile devices and establishes a simple, company-wide distribution and viewing of test data. Optionally, it can also be integrated into your process software (ERP, RBI) without much effort.

The Viewer Web is also your tool for connecting customers/authorities: Examinations can be explicitly and securely shared for remote viewing, to be called up externally via protected web access.

The most important functions at a glance

- Secure data access (login and user rights)
- Study manager
  - Preview of inspection study contents
  - Search and sort studies
- Display of data of different test methods
- Display of documents (PDF)
- Image display
  - zoom, shift, rotate, mirror, invert, etc.
  - brightness, contrast, etc.
  - adjustable rendering quality from lossy to lossless
  - lossless display of 16bit grayscale data
- Measuring and annotation functions
  - lengths, angles
  - display of all measurements (presentation states)
- Comparison with prior images and further data and documents of the test object
- Playback of videos and image sequences, e.g. from endoscope, drone, camera, ultrasound
- Run through image stacks (CT)

### **DIMATE CCM Viewer Web**

The DIMATE CCM Viewer Web enables the user to quickly access all inspection data and other process-relevant documents from his workstation, for example for company-wide viewing of component, plant or vehicle data.

The HTML-based viewer is intuitive to use and takes into account the different requirements of different departments for the availability and presentation of information. The DIMATE CCM Viewer Web provides the user with the essential functions of the Viewer Web and thus also supports the employees from quality assurance, inspection and maintenance in the management of test results.

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