

## Technical Data (2)

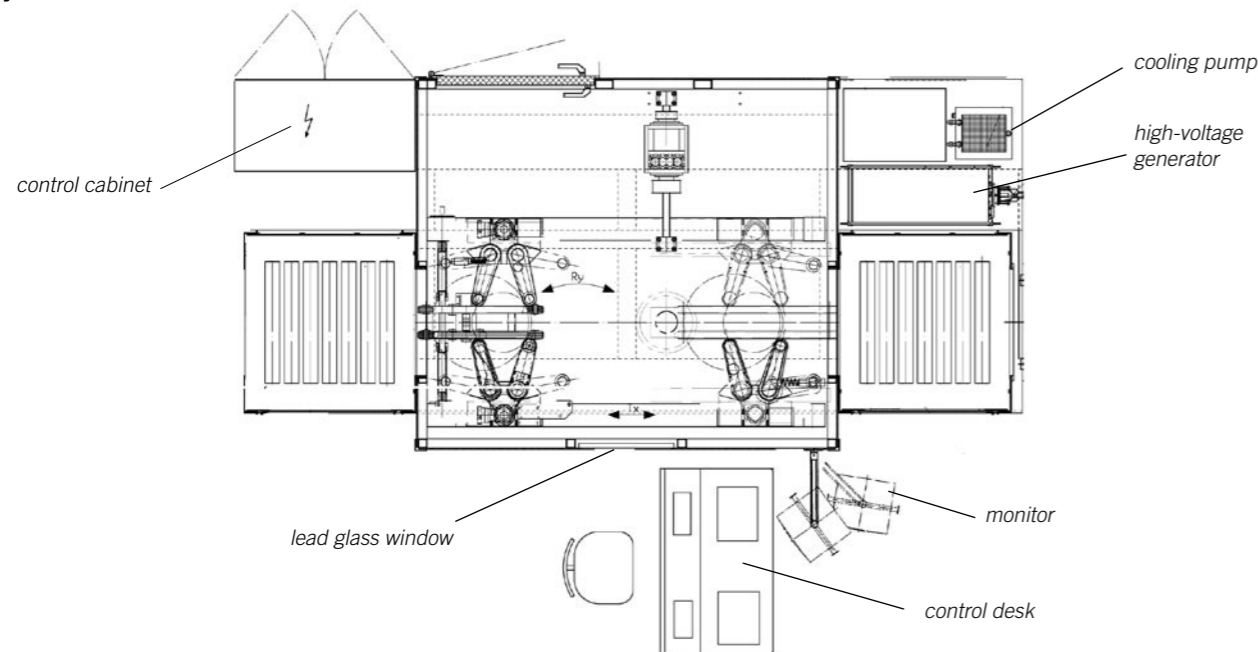
### System Installation / Relocation

Cabinet complete	
with control cabinet and high voltage generator	Fork lift truck
Control desk (on pallet)	Fork lift truck

### Power requirements

Supply voltage	3N PE 400/230 V ± 10%, 50/60 Hz, 3-phase, grounded neutral, TN-S or TN-C-S mains (star connected system, optional 3-phase isolation transformer)
Supply power	approx. 20 kVA (maximum power input dependent on X-ray tube used)
Power supply fuse (customer-provided)	max. 35 A (maximum power input dependent on X-ray tube used)
Grounding	separate grounding for X-ray equipment and high voltage generator (< 2 Ohm) of at least 6 mm <sup>2</sup>

### Layout



### The DP 500 XL is designed to meet or exceed domestic and interational standards and regulations, including, but not limited to:

- |   |                           |                          |
|---|---------------------------|--------------------------|
| • ISO 9001  | • CFR 1020.40             | • DIN EN 954-1           |
| • UVV   | • CE Conformity           | • DIN EN 60529 / IEC 529 |
| • VBG 4   | • VDE 0100                | • DIN 54113              |
| • German X-Ray Regulations RöV in their updated version | • DIN EN 60204 (VDE 0113) |                          |

# SEIFERT DP 500 XL

## Radioscopic Wheel Inspection System



### Application

The programmable DP 500 XL wheel inspection systems with optional available automated defect recognition (SABA) represent very economical systems with a high throughput at a very short idle time.

The DP 500 XL is designed for inspection of light-alloy car and truck wheels from 13 inches to 25 inches.

Using an optional GE Inspection Technologies Wheel Identification Station the system is capable of mixed-mode operation. The gripper principle allows unimpeded irradiation in all test positions.

For shortest cycle times and reliable operation the DP 500 XL is equipped with a SIEMENS S7 PLC control.

### Features

- High throughput
- Precise wheel positioning and optimal speed control
- Wheel gripper with four high speed drive rollers
- Adjust to varying wheel size automatically
- Teach and learn programming
- Large range of manipulation in all axes
- Inspects wheels from 13 inches to 25 inches in diameter
- Unobstructed X-ray view in all axes
- Compact design allows minimal floor space required
- Rugged reliable design with low maintenance
- Easy service access through large doors
- Designed to meet all pertinent radiation shielding and safety regulations
- Manufactured under ISO 9001 certified quality management system

## Description

### Radiation Protection Cabinet

The DP 500 XL is a self-contained shielded X-ray system designed to meet all current international radiation safety standards including the German X-Ray Regulations (RöV) in their up-to-date version and CFR1020-40 (USA). Safety circuits incorporated into the systems are in accordance with DIN EN 954-1, Safety Class 4. The DP 500 XL cabinet is laid out for operation with an ISOVOLT 160 HS industrial X-ray equipment.

Easy service access is by doors, which are fully interlocked with fail-safe door switches in compliance with VDE0113 (EN60204). The service door of the cabinet is lockable to prevent unauthorized access, but can be opened from the inside at any time by manual panic release.

A high-speed roller conveyor moves the wheels into the inspection cabinet through a fast cycle access door, which minimize time between inspection operations.

### Wheel Manipulator

Once in the cabinet the wheel is chain driven to the wheel gripper where it is manipulated in the X-ray beam in the  $T_x$  motion and  $R_y$  rotation. Wheel rotation by beveled rollers ensures precise movement with no wear and accurate positioning. Motor drive in all axes is by AC servo control.

### X-ray Manipulator

The C arm manipulator integrated into the DP 500 XL has the X-ray tube and image intensifier mounted at its extremities with motion in the  $R_z$  axis to allow inspection at various angles.

### X-ray Source

The X-ray unit integrated in the DP 500 XL is the ISOVOLT HS, which offers the following features:

- 40 kHz Operation
- Automatic X-ray tube warm-up
- Microprocessor Control
- Integrated Safety Circuitry
- ISOVOLT 160 M2 / 0.4-0.4 mm dual focal spot X-ray tube, each 1.00 mm (EN 12543) [0.4 (IEC336)] capable of a tube current of 16 mA at 40 kV to achieve the best possible contrast especially for the inspection of "low density" materials,

### Imaging System

The DP 500 XL features a VISTALUX 13S4 imaging system, which includes a 33 cm / 13" state of the art metal ceramic technology intensifier switchable to two smaller fields of view allowing built in magnification. Coupled to the image intensifier by a precision lens system is a CCD camera with wide dynamic range. Display is by a 44 cm / 17" high-resolution b/w monitor, which provides superior imaging capabilities.

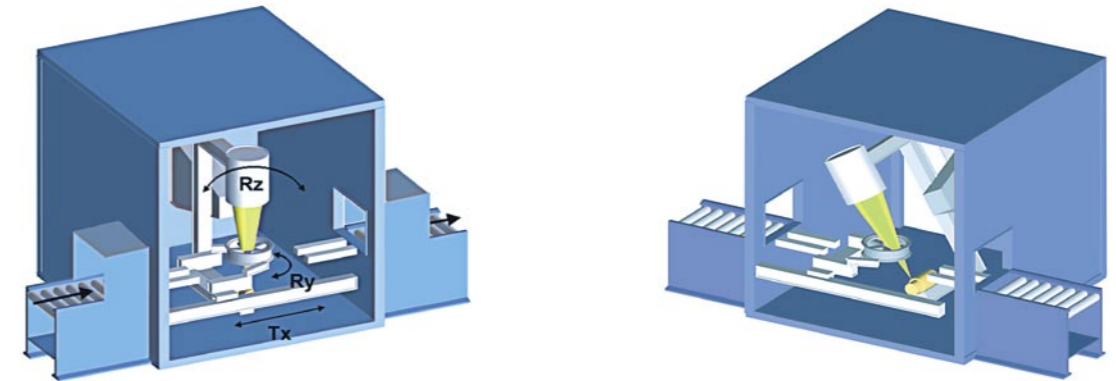
### Control

- System S7 PLC control for easy teach and learn programming via industrial PC, with TFT color display for critical machine data, simple operation by mouse click
- Absolute encoders for the motorized axes (axis  $R_y$  = incremental encoder)
- The number of programs / program steps are nearly unlimited as stored on a hard disk of the industrial PC

### Options

- Collimator
- Beam shader
- ISDN-router for diagnostics
- X-ray beam filter
- Baffle roller conveyor
- Accept / Reject / Rework wheel sorting feature
- Wheel Recognition Station
- Automatic Image Evaluation System (SABA)
- Custom features upon request

## Technical Data (1)



### Radiation Protection Cabinet

Height	2215 mm / 87.2"
Width (without sluices)	2740 mm / 107.9"
Width (with input and output sluices)	4740 mm / 186.6"
Depth	2260 mm / 89"
Total weight	approx. 7500 kg / 16500 lbs

### Manipulator

Maximum wheel weight	35 kg / 77 lbs
Minimum wheel diameter	13 inch (360 mm))
Maximum wheel diameter	25 inch (675 mm)
Minimum wheel width	100 mm / 3.9"
Maximum wheel width	max. 350 mm / 13.78" (including sprue)
Cycle time between inspections	< 5 sec

### Movements

Horizontal motion in transport direction	$T_x$
Rotation of the wheel	$R_y$
Tilt of the C-arm	$R_z$

### Axis

$T_x$	1565 mm / 61.6"
$R_y$	n x 360°
$R_z$	0...45°

### Travel

### Speed

0...125.0 m/min. / 410.1 ft/min.
0...300 °/sec. *)
0... 98 °/sec

\*) dependant on wheel diameter, here for a 13" wheel

### Control Cabinet

Width	1000 mm / 39.4"
Depth	600 mm / 23.6"
Height	2100 mm / 82.7"

### Control

Programmable parameters for each test step:

- |                     |   |
|---------------------|---|
| - Speed             | - Image intensifier ZOOM                              |
| - Rotation          | - Automatic shutter                                   |
| - Tube voltage (kV) | - Wheel diameter                                      |
| - Tube current (mA) | - Spatial position of workpiece in all axes positions |
| - Cycle time        |   |