CASSEL GERMANY

XRAY SHARK® xpb

X-ray Scanner for transformer paperboards

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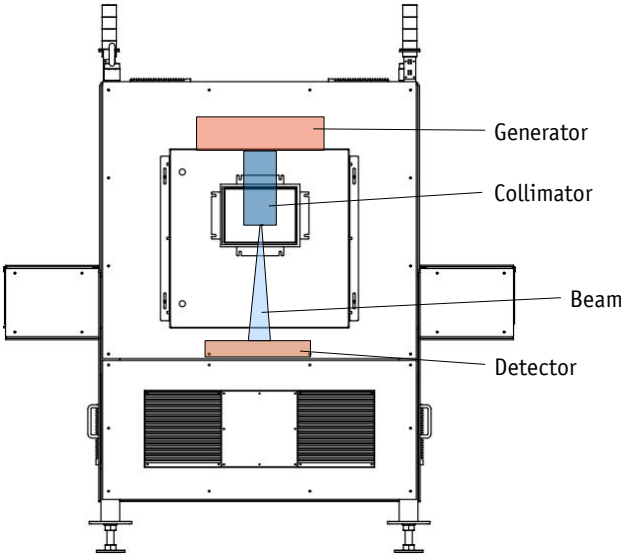
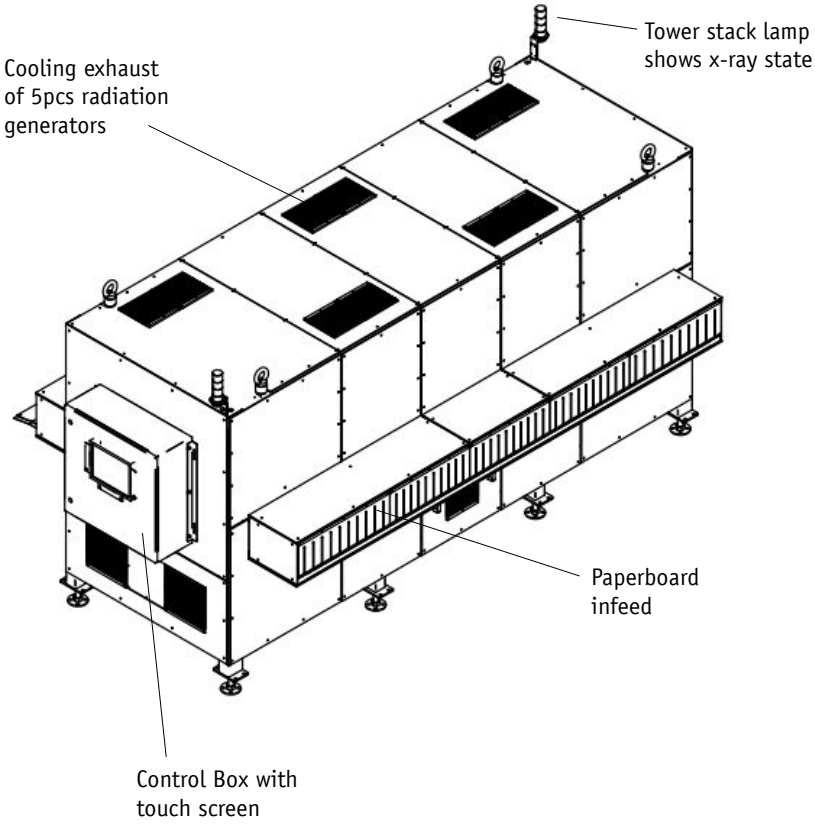




Introduction

XRAY SHARK® - The Better Solution

The XRAY SHARK® is an x-ray device which is to be integrated in an existing production line. It analyses x-ray patterns automatically. The linear x-ray camera is the best in speed and sensitivity. It sends x-ray data of packaged, not packaged or bulk products to the computer which then analyses the pictures fully automatically. It detects contaminants, as well as optionally other individual attributes like e. g. completeness, form, mass, etc. of the product. It classifies and sorts out faulty products automatically.

Detectable Contaminants

The size of the detectable contaminants depends basically on the consistence, density, thickness and structure of the product. Therefore we can only quote exact sizes of detectable contaminants when we have tested the product.

Very Good Price-performance Ratio

The XRAY SHARK® is a high-end device, which stands out due to its high detection sensitivity and dependability.

High Detection Sensitivity

The high-performance line array x-ray camera has a very high photosensitivity. Therefore, it is able to detect very small contaminants and bigger contaminants more likely.

Huge Through-put

The high scan rate of the camera enables x-rays without distortion. Thus, you can see more details, even when producing at very high speed.

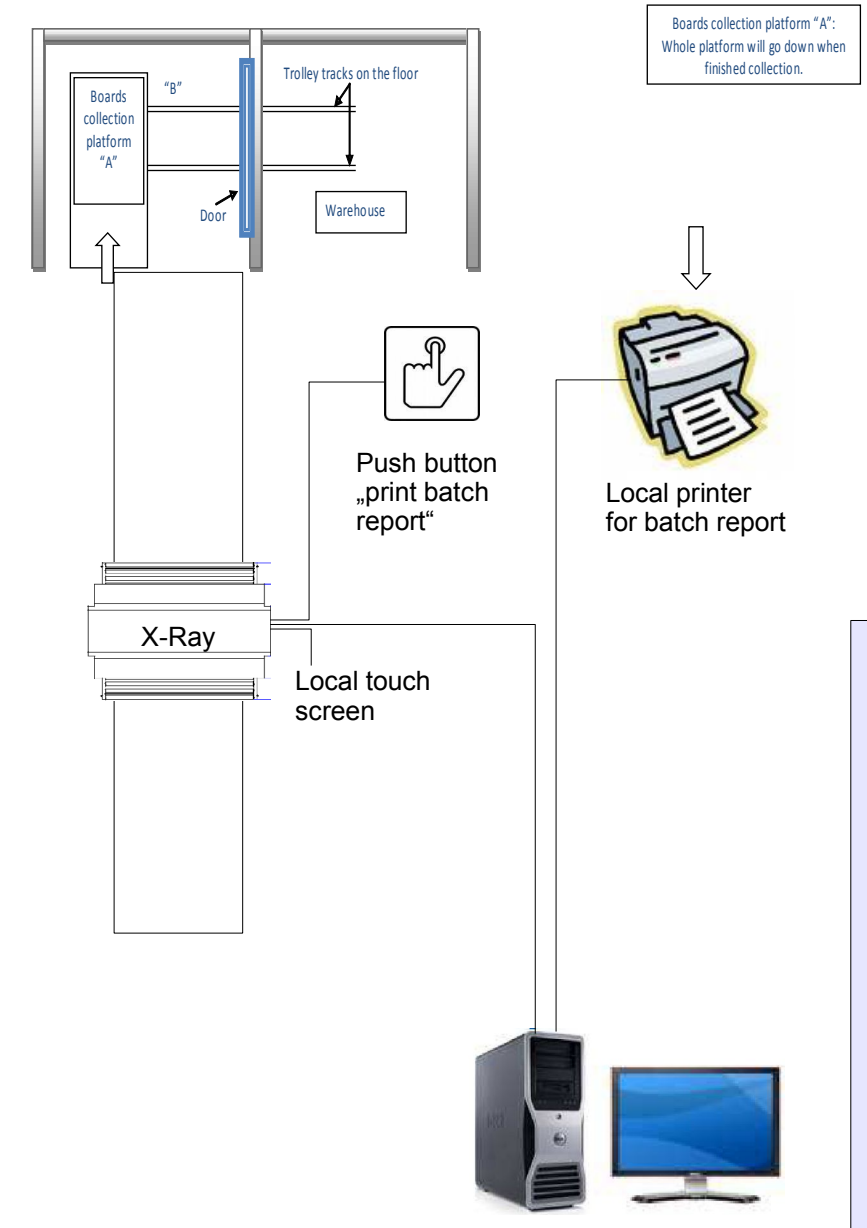
Easy Maintenance

The inner workings of the XRAY SHARK is clearly structured and all components can be connected and disconnected very easily. This allows a very easy maintenance.

How to sort the boards

1) Add another structure with platform at position “B” and add sorting sucking device.
2) Move the metal contaminated boards to position “B” platform by sucking device.
3) After worker collected all good products then the vacuum lifter moves all rejected boards back to platform “A” for worker collection.

TaiZhou Floor layout:



How to remove the metals

All paperboard inspection results are stored in a SQL database.

After finishing a batch the production personnel strikes a pushbutton to print a batch inspection report.

The batch report shows:
Date/time
Board number
Metal coordinates for X/Y
Graphical indication oif contaminant position

The worker manually inspects the board at a special table with bright lamps. The X/Y coordinates guide the worker to quickly find and remove the metal impurity.

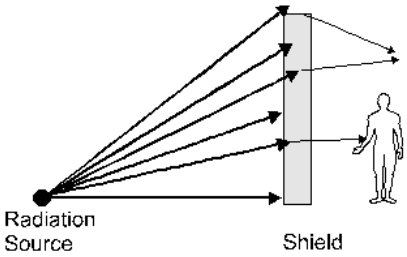
It is recommended to move those boards again through the x-ray and print a secondary batch report, until the report shows zero contaminations.

Those batch reports could eventually be shipped along with the paperboards, in order to demonstrate the high quality level to the customers.

Batch Report for Metal inspection

Print Date 24/09/2009 Time 09:58
Total number of boards produced 12
Total number of metals 3

Date	Time	Board	X mm	Y mm
24/09/2009	09:32	#3	2631	5984
24/09/2009	09:37	#7	1680	3852
24/09/2009	09:41	#12	629	3826



The leakage dose of our x-ray inspection system is only 1 µSv/hr or less.

Safety

How is the radiation generated

The radiation generated is x-rays, which is generated by using electricity.

The paperboard x-ray uses 100kV with 4.5mA as tube high voltage and current.

Is this safer than a radia-active radiation source?

Yes, by turning off the power supply all x-ray generation is stopped. With a radiation sourdce the radiation is always been generated. No Cassel machine uses a radiation source.

How do I check the machine for radiation?

A radiation meter is supplied with all Cassel x-ray machines,. It is recommended that a radiation survey is conducted at least once a week.

Will I be exposed to radiation if I stand near the machine?

No. The x-ray machine is designed so that all radiation is contained within the system. All Cassel x-ray machines are built to ensure that they comply with strict current and future radiation protection standards.

How the x-ray is kept inside the machine

Shielding is a very effective method of reducing exposures to X-Rays. In Cassel X-ray systems, shielding reduces the radiation to extremely low levels at the outside of the housing.

Shielding X-Rays

X-Ray radiation is diminished in intensity by any given absorber but not completely stopped. Materials having a high atomic number can absorb more X-Rays than lighter elements. A frequently used shielding material is lead. It is important to remember that X-Rays can be scattered in the shielding material and emerge at odd angles.

Specifications

Model
XRAY SHARK® XPB 3300/5

Scope of supply
5 pcs 100kV x-ray generators, 5 pcs collimator, 5 pcs. detector module 819 mm each, 1 pcs image processing unit, 1 pcs power supply unit, 1 pcs xray software package for Windows, 1 pcs computer with Windows XP Pro, Database, 15“ touch screen, Ethernet network, safety devices to prevent leackage, flexible lead curtains at aperture openings, all integrated in a single machine cabinet (steelwork) with aperture opening, handheld radiation meter for weekly none-leackage approval, Batch report laser printer with Ethernet link, push button „Print Report“

Detection sensitivity with single boards
Metal sphere 0,4 mm dia, Metal wire 0,2 mm dia x 0,6 mm long (*)
(*) All metals, except aluminum

X-Ray output
Max 100 kV with 4.0 mA

Safety
X-ray leakage dose rate: max 1 µSv/hr or less. Prevention of X-ray leakage by safety devices

Display
15 inch color TFT LCD (unified image monitoring screen and operation screen), attached to machine body. Option: parallel operation from control room Windows PC via Ethernet.

Operation method
Touch screen, Windows XP PRO, remote maintenance prepared.

Product size
Max width 3400 mm @ height 0-30 mm, Max width 3200 mm @ height 30-100 mm

Product preset memory
Max 100 products

Conveying speed
0 – 12 m/min. for best detection rate

Conveyor type
Belt conveyor (not included), or shifted through

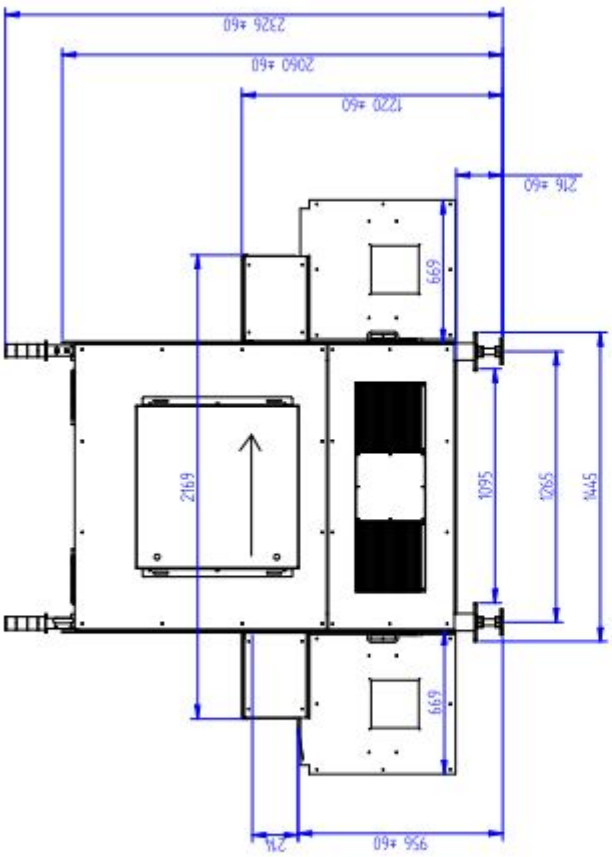
Max product weight
Depends on conveyor type

Environmental conditions
0 to +30°C. with a relative humidity up to 90° not condensing
0 to +40°C with optional active cooling system

Power requirements
380 V / 3-phase / 50/60Hz / 5 kVA / rush current 80A (typ.)(5ms or less)
Stable and uninterrupted mains, protected against overvoltages above 265 V ac.

Protection class
IP5X

Report and print functions :
X-ray photo with color highlighted contamination, graphic and text report of detection events. Database included for collection and recall of historical data. Batch report, with indication of X and Y metal positions.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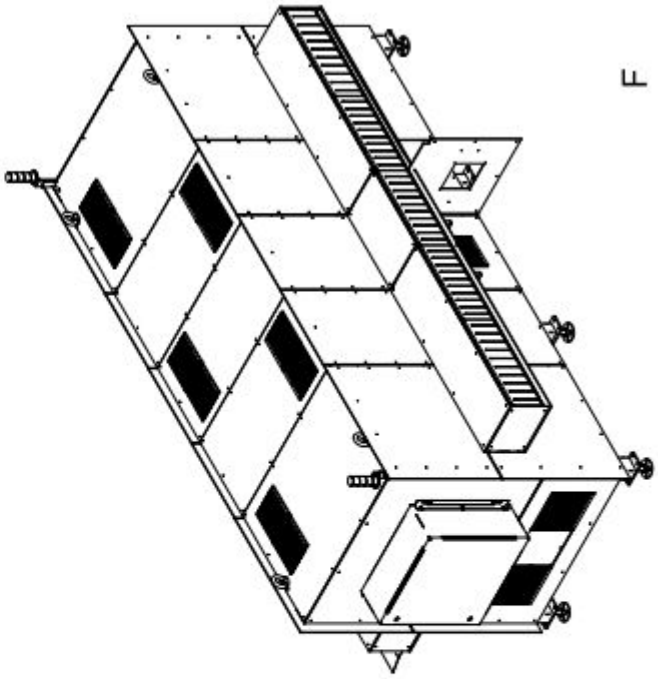
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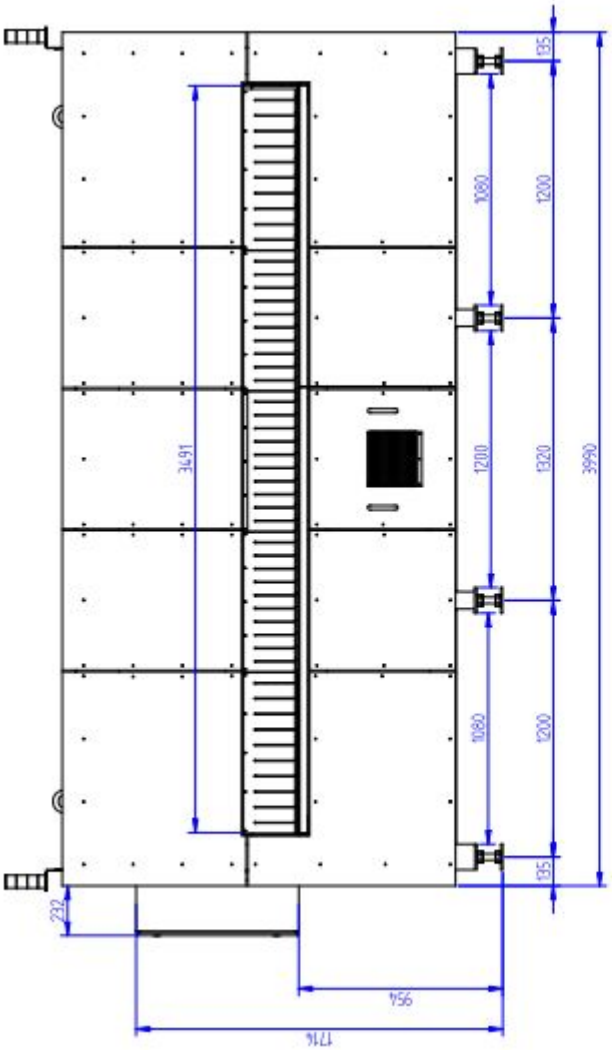
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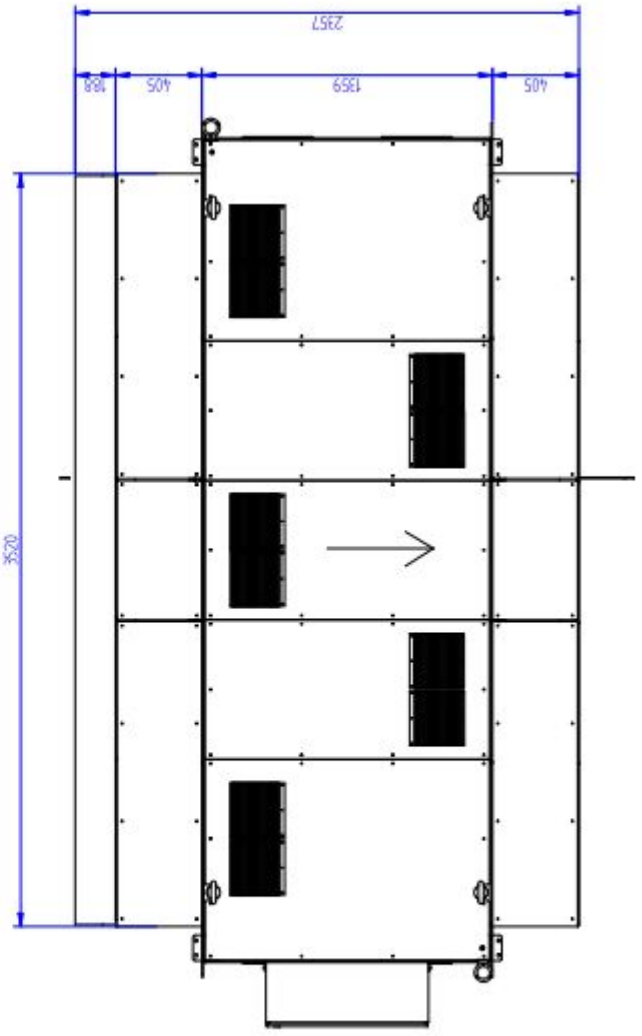
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Xpb version with integrated conveyor

The optional conveyor moves boards with length shorter than 6 meter or complete board stacks of max 100 mm height through the x-ray scanner.

Best detection sensitivity
Single board 1-8 mm = Metal wire 0.2 x 0.6 mm, (except aluminum)
Conveyor speed with single board = max. 12 m/min.
Stack max 100 mm = Metal wire 0.3 mm dia x 1.5 mm long (except aluminum)
Conveyor speed with stack = max. 3 m/min.