

THE FIRST MADE IN INDIA

# Industrial Digital Radiography Systems



World Class  
**Industrial X-ray Images**

For Higher Productivity  
**Our Radiography Systems can be  
Customized to your specific requirements**

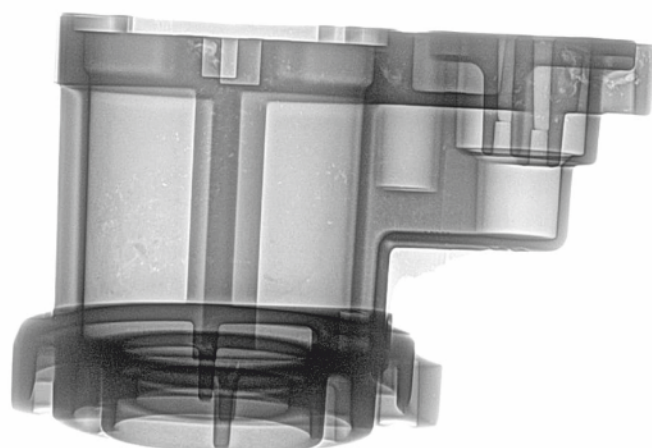
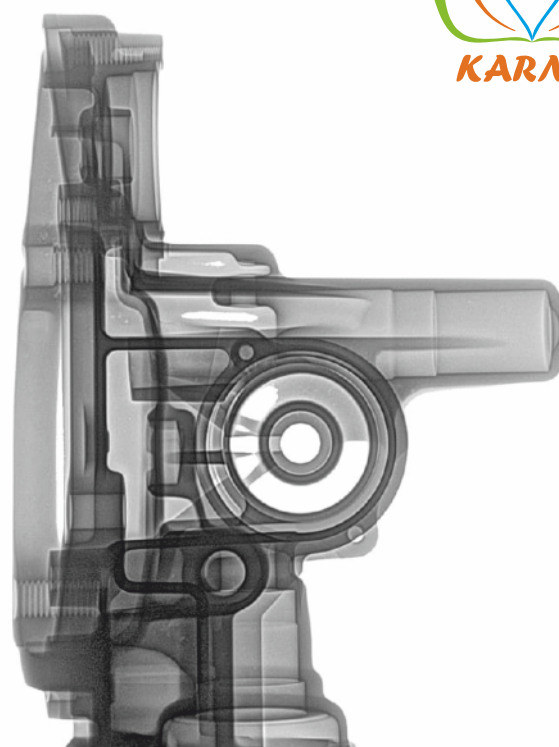
**The First Made in India**  
**Self-Shielded System**  
**Type Approved by AERB**

## Technological Advancements:

### 1. World's Largest Industrial Flat Panel Detector:

Karma has integrated and has been supplying its machines with the latest technological development, which is Flat Panel Detectors.

We are using the largest Industrial Flat Panel Detectors of size 430mm x 430mm in Dynamic Mode.



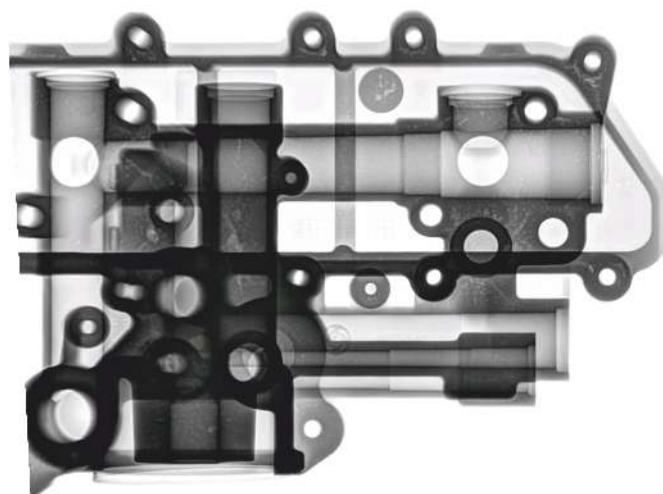
## The benefits to customers from this technology are:

- Higher productivity lesser images per component
- Faster and Confident Interpretation

## Component's Photo



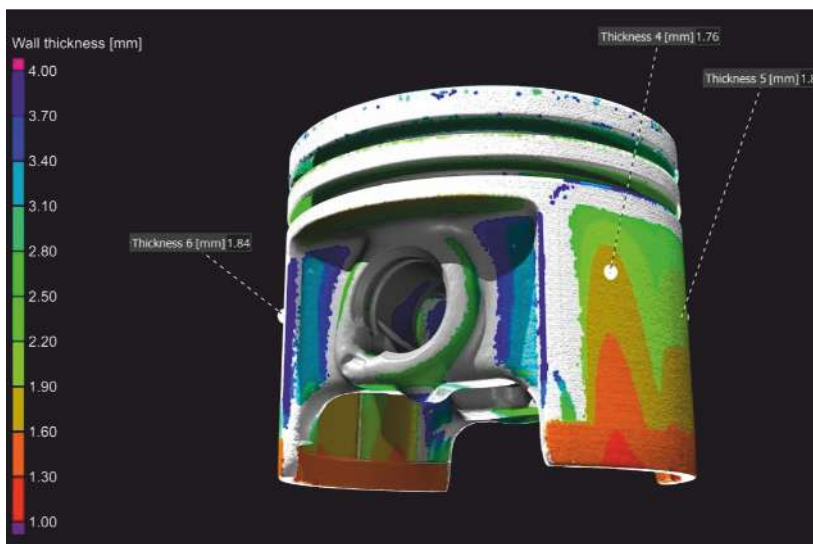
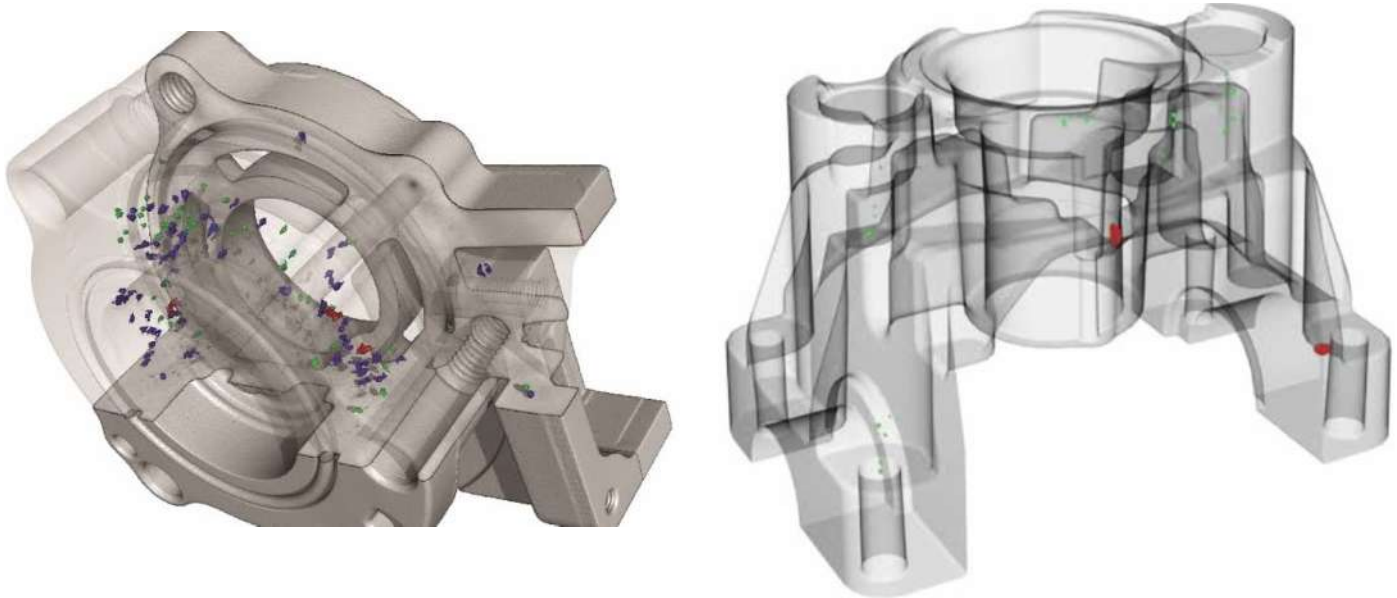
## Component's X-Ray image



## 2. Latest Development: Industrial Computerised Tomography (CT)

CT is the next technological frontier for Industrial Radiography.

Karma has launched its CT systems in tie-up with **Volume Graphics**, the World leader in CT Software. Using CT, the defects are visualized in a 3-Dimensions. The discontinuities can be seen as volumetric defects.



**The benefits to customers from this technology are:**

- Helpful for Reverse Engineering
- Faster New Product Development and Dies

CT images from Volume Graphics\*





## Karma's Standard Model



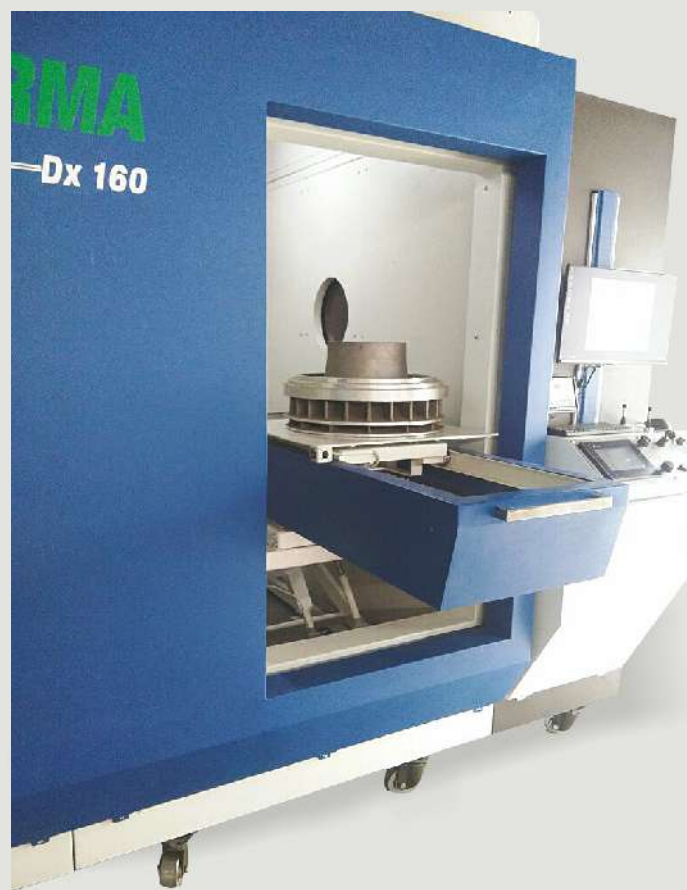
Karma's Standard Model	DX125 (125kV) & DX160 (160kV)
Source to Detector Distance mm *	1300mm
Vertical Movement mm *	400mm
Horizontal Movement mm *	250mm
Movement Towards Sensor mm *	Upto 200mm
Rotation°	N x 360°
Tilting°	±25°
Component Size mm	Upto 500mm x 500mm x 700mm high
Maximum Component Weight kg*	20kg

\*Can be customised to customer's need

## Karma's Lab Model



## Karma's Special Purpose Model



<b>Karma's Lab Model</b>	<b>LDX125 (125kV)</b>
Source to Detector Distance mm *	1000mm
Vertical Movement mm *	Nil
Horizontal Movement mm *	Nil
Movement Towards Sensor mm *	Nil
Rotation°	Optional N x 360°
Tilting°	Nil
Component Size mm	With in 250mm x 250mm x 100mm high
Maximum Component Weight kg*	5 kg
<b>Karma's Special Purpose Model</b>	<b>DX160 (160kV) &amp; DX225 (225kV)</b>
Source to Detector Distance mm *	1300mm
Vertical Movement mm *	1000mm
Horizontal Movement mm *	600mm
Movement Towards Sensor mm *	Upto 200mm
Rotation°	N x 360°
Tilting°	±25°
Component Size mm	Upto 800mm x 800mm x 1200mm high
Maximum Component Weight kg*	100kg

\*Can be customised to customer's need

Karma Innovations and Solutions Pvt Ltd is the pioneer in the manufacture of Industrial Digital Radiography Systems in India. Based in the industrial city of Coimbatore, Karma is serving the industry in all parts of the country and different parts of the world.

With a drive to excel, we have benchmarked our products with the best in the world. Also knowing the Indian user environment and business dynamics, the products have been designed to be rugged, operator friendly and cost effective.

**Some of the Special Features of Karma's Digital Radiography Systems are :  
X-Ray Generators for 24/7 Duty Cycle Oil or Water Cooled.**

#### **Flexibility to Move the Components**

- Upto 5 axes using joystick
- Automatic Programmable Positioning for high volume and high repeatability

#### **Easy to Use Intuitive Controls**

- Based on Ergonomics and Perception Studies
- Video Streaming for high throughput

#### **Software based Defect Enhancement :**

Enhance image quality and defect recognition through:

Image Integration   Several Filters   Measurement Tools  
Annotation Tools   Pseudo-coloring

For experiencing our specialized software, Aayvu for aluminium castings, please ask for a demo / send your components to our centers at Coimbatore, Pune or Delhi.

#### **Aided Defect Identification**

- Different levels of Artificial Intelligence and Machine Learning for fatigue free repeatability in decisions
- Decision linked to ASTM Reference Standards

#### **Quick Supply and Installation**

- Short Delivery Cycle
- Plug and Play Installation







## Made in India

Being an import substitute, Karma's research was funded by **Department of Science and Industrial Research**, and **Technology Development Board**, both Government of India organizations. Our Director, Karthikeyan Jawahar was incubated in **TREC-STEP at NIT, Trichy**. As proof of his research capability and the technological superiority of the product, he was awarded the **Gold Medal for Innovation by DST-Lockheed Martin India Innovation Growth program**.

## Safe & Convenient

Karma's Industrial Radiography uses electrically generated x-rays. These are very safe to use (cutting electrical power stops x-ray generation) and directional. All our systems are supplied with self-shielded chambers, so the operator can stand right next to the machine for operations. **Karma's machines are the first and only Made-In-India Digital Radiography Self-Shielded Systems approved by Atomic Energy Regulatory Board (AERB).**



## International Certification

The manufactured product quality is at par with the best in the world as certified by Euro Cert.

भारत सरकार  
परमाणु ऊर्जा नियामक परिषद्  
Chairman

GOVERNMENT OF INDIA  
ATOMIC ENERGY REGULATORY BOARD

Case File Number: TN-22126-IR-SU-IRE-D-E-001  
Document Number: 21-COMSUPPTA-591282  
Issuance Date: 17/02/2021  
Expiry Date: 17/02/2024

**TYPE APPROVAL FOR INDUSTRIAL X-RAY EQUIPMENT USED IN INDUSTRIAL RADIOGRAPHY**

This has reference to your application no. 21-687403 dated 12/01/2021. In exercise of the powers conferred under Section-16 of the Atomic Energy Act, 1962, read in conjunction with Rule 3 of the Atomic Energy (Radiation Protection) Rules 2004, the Atomic Energy Regulatory Board (AERB) hereby issues Type Approval from radiological safety viewpoint for the **Industrial X-ray Equipment** Unit Model DX160 manufactured by **KARMA INNOVATIONS AND SOLUTIONS PVT LTD India** with technical specifications given in Annexure-I for sale, installation, operation, servicing and maintenance in India.

**TERMS AND CONDITIONS**

1. This Type Approval becomes invalid if any change is made in Model.
2. The Unit shall be supplied only to the user who has obtained requisite permission from AERB to procure the above equipment.
3. The supply of the said Model after expiry of this Type Approval is conditional upon its re-validation.
4. This Type Approval may be subject to review and modification based on operational experience feedback.
5. The additional terms and conditions are specified in Annexure-II.

Issuing Authority  
G. Nagaswara Rao  
Chairman

MR. KARTHIKEYAN JAWAHAR  
KARMA INNOVATIONS AND SOLUTIONS PRIVATE LIMITED  
46, ARASAMARA STREET, AVARAMPALAYAM  
COIMBATORE-641006,  
TAMIL NADU

परमाणु ऊर्जा नियामक परिषद्, अणुसंशोधन, मुंबई 400094 (महाराष्ट्र)  
Atomic Energy Regulatory Board, Nyamak Bhavan, Anushaktinagar, Mumbai 400094 (Maharashtra)

वेबसाइट/Website: www.aerb.gov.in  
दूरभाष/Tel: 91-22-2599 0604  
फैक्स/Fax: 91-22-2599 0544

EURO CERT  
EUROPEAN INSPECTION AND CERTIFICATION COMPANY S.A.

**CERTIFICATE OF CONFORMITY**  
FULLNESS EXAMINATION OF TECHNICAL FILE

Certificate No. : MDLV.0018  
Issue Date : 26/02/2018  
Expiry Date : 25/02/2023  
Applicant (Name & Address) : KARMA INNOVATIONS AND SOLUTIONS PVT. LTD. / 10/11-3, KK Nagar, Bharathi Nagar 4th Cross Extension, Ganapathy, Coimbatore - 641 006, TAMIL NADU, INDIA  
Manufacturer (Name & Address) : Same as applicant  
Test Report Ref. : ITC/TEST/NS/1705/03-A, ITC/TEST/NS/1705/03-C1, ITC/TEST/NS/1705/03-C2, ITC/TEST/NS/1705/03-B, ITC/TEST/NS/1705/03-D1, ITC/TEST/NS/1705/03-D2  
TCF No. : TCF 01  
Product Description : Industrial Digital Radiography System  
Model(s) : 125kV, 160kV & 225kV  
Directive(s) : Low Voltage Directive 2014/35/EU Machinery Directive 2006/42/EC  
Standard(s) : EN 60204-1:2006+A1:2009, EN 61010-1:2010, EN 61010-2-091:2012, EN ISO 12100:2010

This is to certify that, upon the relevant application of KARMA INNOVATIONS AND SOLUTIONS PVT. LTD, EUROCERT as Third Party Authority has reviewed the Technical Construction File of the described product which found to fulfill the basic health and safety prerequisites of above mentioned Directive(s).

**Notes:**

- The manufacturer should issue a Declaration of Conformity according to the basic requirements of the applicable and relevant directives.
- The CE marking can be affixed on the above-mentioned product with the manufacturer's responsibility, if all relevant and applicable directives are complied with.
- All modifications to the Technical File should be first submitted to the Third Party Inspection Authority to ensure further validity of this attestation.
- This certificate is valid only for the product and configuration described and in conjunction with the technical data detailed above.

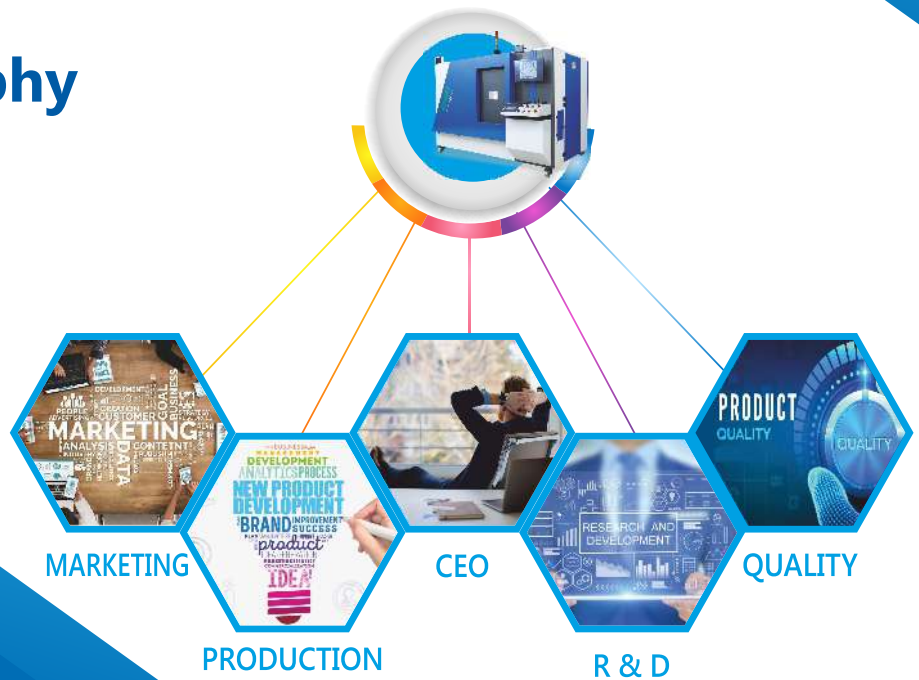
Please check the validity of the certificate from our website using the password y8C6533C

On Behalf of EURO CERT  
George N Sifonios  
Director of Development

Third Party Authority Stamp

BP, CHEDIS STR. & LIKOVISSIOS, 164 52 METAMORFOSI, ATHENS, GREECE  
Tel.: ++30 210 62.52.495, 30 210 62.53.927, Fax: ++30 210 62.03.018  
Internet site: www.eurocert.gr - e-mail: eurocert@eurocert.gr

# Who Benefits from Digital Radiography



## Digital Radiography

### -Key Benefits to Customer:

- The process cost for Digital Radiography is almost negligible when compared with films.
- 100% inspection of all components expected by many automobile companies
- Quick turnaround time for the inspection report
- Fine-tune the casting process itself to prevent defects
- Reduce inventory of goods pending inspection
- Use it as a tool to get value added customers and additional orders from customers



#### **KARMA INNOVATIONS AND SOLUTIONS PVT LTD.,**

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Service : +91 98422 32764

Sales : karthikeyan.j@karmainnovations.com

Service : malaravan.p@karmainnovations.com



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E-mail : bdm.maharashtra@karmainnovations.com



#### **Faridabad :**

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