OSL SERVICES

TÜV Rheinland Philippines Inc.
G/F La Fuerza Building 1
2241 Don Chino Roces Avenue
1231 Makati City, Philippines

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Long Tradition

TÜV Rheinland – originator of many TIC services

1872

Founded to ensure the safety of manufacturing plants

1904

First vehicle inspection

1908

First elevator inspection

1955

First product certification

2001

First internet-based certification database

2009

Global market leader in photovoltaic certification

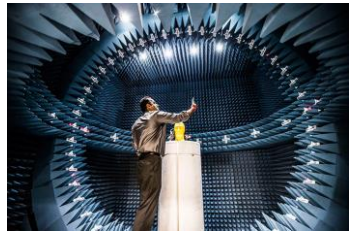
2012

New test mark with QR code for fast research and more transparency

2014

One of the biggest independent service providers for ICT security

2017



Center of Excellence Wireless Internet of Things (IoT)

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Solution-driven

Key facts

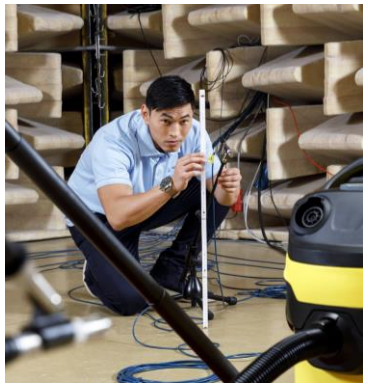
6 Business Streams

27 Business Fields

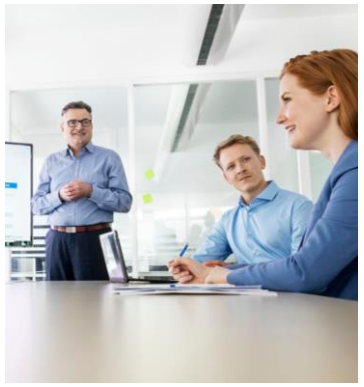
2,000 Services

INDUSTRIAL SERVICES

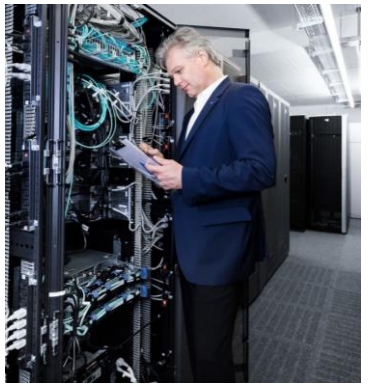
MOBILITY



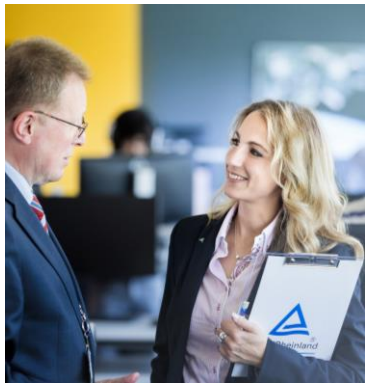
PRODUCTS



ACADEMY & LIFE CARE



ICT & BUSINESS SOLUTIONS



SYSTEMS

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Products

Key facts - Group

220 Laboratories

>80,000 Test samples /month

400,000 Product test /year

Business fields

- Softlines
- Hardlines
- Electrical
- Commercial
- Medical
- Solar

Focus industries

- Retailers
- Manufacturers
  - Suppliers
  - Investors

Good to know

- Safety and trust with our unique test mark
- Quality & safety throughout the entire product lifecycle
- One stop shop service
- Market Access Services
- Wireless “Internet of Things”
- Sustainability, DETOX

Statistics in 2016: unconsolidated data

International Presence

Regions/Countries

GERMANY
Active since 1872

LABORATORIES
34

OFFICE LOCATIONS
About 250 in all federal states

TEST FACILITIES
About 220 car inspection centers in all federal states

EUROPE
Active since 1970

LABORATORIES
34

OFFICE LOCATIONS
- Austria
- Belgium
- Bulgaria
- Czech Republic
- France
- Hungary
- Italy
- Latvia
- Luxembourg
- Netherlands
- Poland
- Portugal
- Romania
- Russian Federation
- Serbia
- Slovakia
- Spain
- Sweden
- Switzerland
- United Kingdom

ASIA, PACIFIC
Active since 1978

LABORATORIES
92

OFFICE LOCATIONS
- Australia
- Cambodia
- Georgia
- Greater China
  - Mainland China
  - Hongkong
  - Taiwan
- Indonesia
- Japan
- Kazakhstan
- Malaysia
- Philippines
- Singapore
- South Korea
- Thailand
- Vietnam

AMERICA
Active since 1983

LABORATORIES
25

OFFICE LOCATIONS
- Argentina
- Brazil
- Canada
- Chile
- Colombia
- Mexico
- Peru
- USA

CAR INSPECTION CENTERS
In Chile (18)

INDIA, MIDDLE EAST, AFRICA
Active since 2010

LABORATORIES
22

OFFICE LOCATIONS
- Algeria
- Armenia
- Bangladesh
- Egypt
- India
- Iran
- Kuwait
- Lebanon
- Morocco
- Oman
- Qatar
- Saudi Arabia
- South Africa
- Tunisia
- Turkey
- United Arab Emirates

Statistics in 2018

TÜVRheinland®
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Present around the globe.

Because global markets demand skills that can be compared.

TÜVRheinland®
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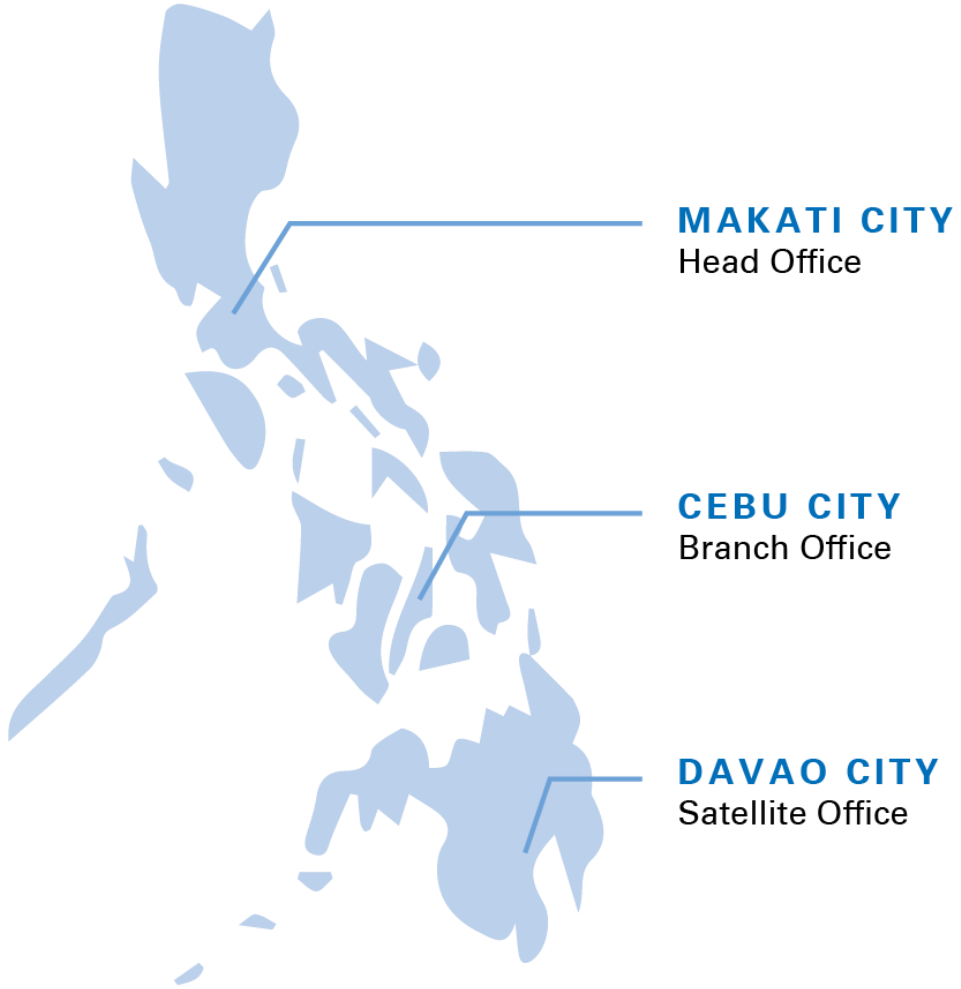
TÜV Rheinland Philippines

Managing Director	Engr. Tristan Arwen Loveres
Foundation	August 1991
Business Industry	Testing, Inspection, Certification, and Training Services
Staff	120
Locations	Head Office: Don Chino Roces, Makati City Branch Office: Cebu Business Park Satellite Office: Davao City
Laboratories	Electrical Laboratory Energy Efficiency Laboratory OSL Dosimetry Laboratory
Business Streams	Academy and Life Care, Mobility, Products, Systems
Main Businesses	Certification of Management Systems Professional Training and Personnel Certification; Electrical and Electronic Products Testing; Industrial Inspection; Occupational Health and Safety



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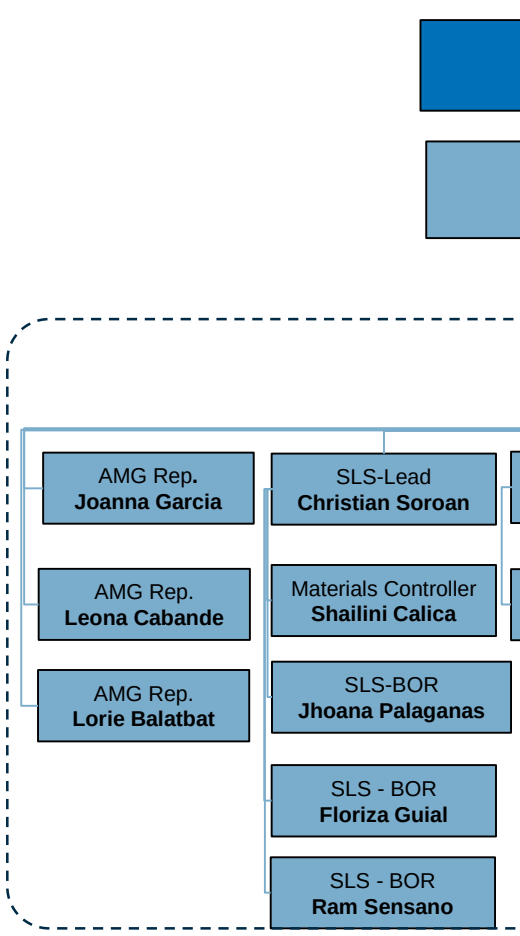
STRUCTURE OF ORGANIZATION – OSL DOSIMETRY

OSL | WEM | CTS | CCA



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PERSONNEL

- The laboratory team is composed of medical physicists and radiologic technologists.
- There is also a team who is responsible for the quality management system implementation of the laboratory.
- Other staff are involved in other services such as account management, supply, logistics and support, and are shared with other radiation protection services outside dosimetry
- Competence requirements are defined in the laboratory’s QMS

FACILITIES AND ENVIRONMENTAL CONDITIONS

- Total floor area is 192 m^2 (general space such as lobby area, etc. is not included).
- Ambient temperature (19-23^oC) is maintained when performing laboratory tasks.
- Relative Humidity is kept at ~50%

EQUIPMENT

Landauer Auto 200 Reader

Landauer Microstar® OSL Reader

TÜVRheinland®
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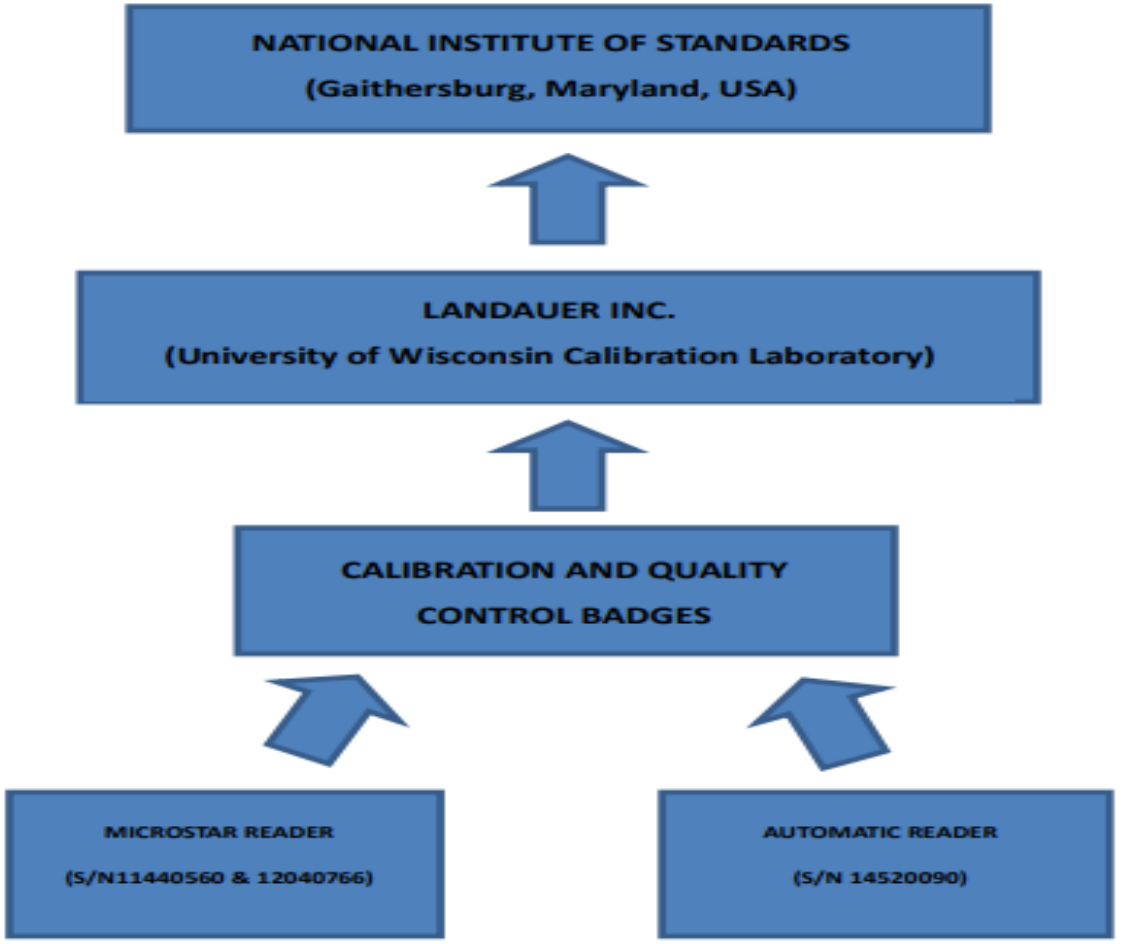
EQUIPMENT

OSL Annealer	
Operation	Anneals the used OSL badges for reuse
Operation Speed	3 – 5 minutes
Capacity	200 – 250 badges
Light Array	16 blue fluorescent bulbs (14W)
Size	72 cm x 92 cm
Power Requirements	220V

METROLOGICAL TRACEABILITY



QA/QC PROGRAMME

Reader Preparation:

- Inlight whole body calibration of the OSL reader must be performed:

a. During equipment acceptance test
b. Every three (3) months
c. After a system failure (e.g. Standard measurement or quality control failed after several attempts, etc.)
d. If moved from one site to another
e. After repair or maintenance
f. If there is a change in the energy range of expected exposures
g. If software is reinstalled or installed on another PC or network
h. If there is a new calibrate set

QA/QC PROGRAMME

Reader Preparation:

- Calibration badges should be replaced after eight (8) times of use or one year after issuance whichever comes first.
- Standard Measurements should be performed on a daily basis prior to the readings of the whole body and nanodot OSLDs and prior to quality control.
- Quality control (QC) should be performed before and after the actual reading of the badges on a daily basis for whole body OSLDs.
- QC badges should be replaced if reading is below 3.75 mSV for 5 mSv.

Warm-up

- Connect the reader power cord and the reader USB cable to the Automatic reader. Second, attach the USB from the reader and barcode scanner to the laptop. Third, turn on the Automatic Reader and warm it up for 30 minutes.

QA/QC PROGRAMME

Calibration for Inlight (Whole Body) Dosimeters

- The InLight software sets the measurement criteria (calculates the calibration factor) for each badge type through the read out process of calibrates exposed to known dose levels.

Process Preparation

- Calibrations, QC, and linearity badges have an associated dose level that must be entered into the database before the first use. Enter serial numbers with associated dose level one at a time or by importing a file using the badge assignment function.

QA/QC PROGRAMME

Reader Maintenance

1. Only trained personnel are allowed to perform the cleaning of the reader.

2. Cleaning of the Microstar reader must be done at least once a year to avoid any mechanical problems while for the Automatic Reader, cleaning is done every three months.

QA/QC PROGRAMME

Laboratory Background Badge

1. The Laboratory Background Badge (Lab BB) must be created during the 1st week of every month. The staff will read an OSL inlight whole body badge and place it in his/her work area to monitor the background exposure of the laboratory.
2. All Laboratory Background Badge (Lab BB) must be read once a month for reference in case background badges of the customers are not available or readings from the users need verification.

Intercomparison

c/o OAP

NUMBER OF SERVICE / SAMPLES

- Total number of clients (facility / institution): approximately **900+ facilities**
- Total number of badge users: approximately **4000+ badge users**
- Subscription is either on a monthly or bi-monthly basis (one year contract).

PROBLEMS / NEEDS

- Sudden fluctuation of customer demand resulting in imbalanced supply of dosimeter badges
- Technical support in case of equipment malfunction since the machine experts are based outside the Philippines
- No clear criteria from regulators as to what personnel shall be required to avail of personnel dose monitoring
- Presence of service providers who are not accredited to ISO 17025 as required by law and regulations
- Loss of OSL badges due to market forces and trends