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VT ElektroPlast
VT Battery

ONE COMPANY – INFINITE POSSIBILITIES

Test & Measuring Lab

www.vtep.videoton.hu

HISTORY & OVERVIEW

- 2010 - test lab was established based on increased demand of internal and external tests
- located in a separated building, in 140 m^2
- belongs to the Central Quality Department
- provides every necessary public service: high-powered electricity, tap water, air-pressure system, air conditioner
- continuous support in automatized tester development at VTEP
- continuous improvement of test equipment, methods and processes
- most of the life-time testers were designed and built by VTEP engineers

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HISTORY & OVERVIEW

We test products before and after they are launched to the markets; from design to mass production phase:

Test types:

- product design tests
- product release test
- battery tests in separated test lab
- product functionality-related tests
- product performance-related tests
- RoHS compliance
- approbation pre-tests
- internal tests for investigation of quality problems

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HISTORY & OVERVIEW

- a technician performs the tests and he maintains the devices
- an engineer is responsible for leading the test lab and managing the activities
- contact with customers
- report the results of tests
- quick feedback to production if it is necessary

An internal SOP (Standard Operation Procedure) defines acts, roles and responsibilities of Test Laboratory.

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TESTS – BATTERY TESTS

Description:

In the separated battery test lab we are able to execute battery cell and pack:

- (abnormal) charging
- (forced) discharging
- capacity test
- short circuit analysis
- engineering / functional tests
- drop tests

We are able to measure and record during the test: voltage, current impedance, temperature.

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TESTS – CLIMATE TESTS

Our own programmable temperature and humidity chamber is suitable for climatic and ageing tests

Specification:

- model: WTH-L420
- volume: 420L
- temperature range: -20°C…+100°C
- humidity range: 30%... 95% RH
- total permitted load: 60 kg

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TESTS – PORTABLE XRF FOR RoHS TESTS

- the XRF analyser helps to define concentrations of certain specific hazardous materials in electrical and electronic products in order to submit the products to RoHS regulations
- furthermore, it can help to define raw materials of samples, especially alloys
- the XRF technology is a quick and cheap way to analyse substances and filter hazardous materials

Features:

- model: NITON XL3t 700
- the first portable XRF tester by NITON

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TESTS – KITCHEN PERFORMANCE TESTS

Kitchen appliances can be tested from an early phase of development or pre-serial phase and even in the mass production.

Features:

- extended foodstuff supply chain
- wide range of experience in kitchen tests
- pre-prepared raw material on the spot
- we can log and record the data of some tests with special hardwares and softwares

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TESTS – APPROBATION AND BATTERY TESTS

Equipment:

- programmable AC Power Source (Chroma 6530, Chroma 63113A)
- insulation/Current Leakage tester (GW Instek GPI-745A)
- digital power meter (Yokogawa WT210 + GPIB)
- digital multimeter (Picotest M3500A, Keysight 34461A)
- Hi-pot tester (Hioki 3561-01)
- force/torque meter (Mecmesin AFG 500)
- static torque wrench (Mecmesin TW15)
- contactless RPM meter

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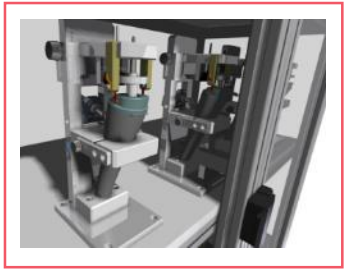
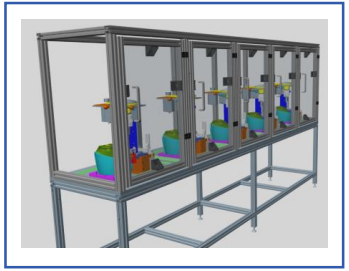
TESTS – ENDURANCE TEST

Main qualities of different life-time testers:

- proper for skincare and personal care products; household appliances; cleaning centers
- working with pneumatic and air-pressure system
- one of testers works with circulating water
- parameters are adjustable manually or via software
- data are logged and recorded





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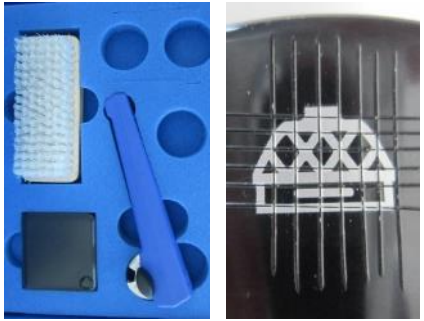
TESTS – OTHER TESTS

fan test



abrasion test

drop test

electric strength test

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CONFIDENTIALITY AND ACCESS CONTROL IN TEST LAB

- entrance is strictly controlled by access cards (all entry recorded)
- customer property, equipment and products are handled safely
- competitors' equipment are separated
- documents are stored electronically and protected from non-authorized access

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MEASURING LABORATORY EQUIPMENT

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GLOBAL PERFORMANCE CM MACHINE

Specification:

- model: GLOBAL Performance
- software: PCDMIS CAD ++
- measuring range: X: 700 Y: 700 Z: 500
- resolution: 0,001 mm
- measurement precision: MPE_E = from 1.5 + L/333 µm

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OPTIV CLASSIC OPTICAL CM MACHINE

Specification:

- model: HEXAGON OPTIV CLASSIC CMM
- software: PCDMIS
- measuring range: X: 300 Y: 200 Z: 200
- resolution: 0,001 mm
- measurement precision:
    - MPE (Exy): 2,8+L/150µm
    - MPE (Ez): 5+L/150µm

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KEYENCE IMAGE MEASUREMENT SYSTEM

Specification:

- model: KEYENCE IM-7020
- software: PCDMIS
- measuring range: X: 200 Y: 200
- resolution: 0,001 mm
- measurement precision: ±(4 + 0,02 L) µm
- sensor: 6,6 mega pixel

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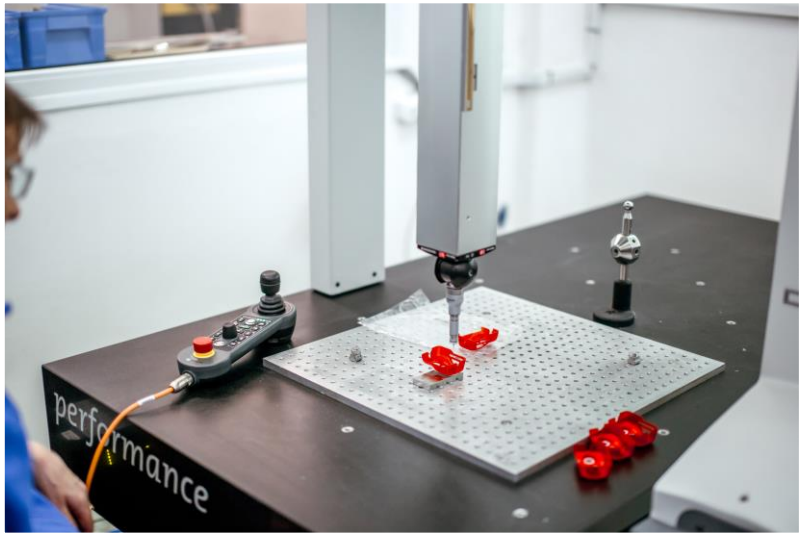
DEA GLOBAL COORDINATE MM

Specification:

- model: DEA GLOBAL Performance
- software: PCDMIS CAD ++
- measuring range: X: 700 Y: 1000 Z: 500
- resolution: 0,001 mm
- measurement precision: ±5,5+0,009L(mm)µm



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TESA VISIO 300 OPTICAL CM MACHINE

Specification:

- model: TESA VISIO 300 OPTICAL CMM
- software: PCDMIS
- measuring range: X: 185 Y: 140 Z: 140
- resolution: 0,001 mm
- measurement precision: ±(2+0,006L(mm)µm)

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TESA COORDINATE MEASUREMENT MACHINE

Specification:

- model: TESA SA Micro-Hite
- measuring range: X: 460 Y: 510 Z: 420
- resolution: 0,001 mm
- measurement precision: (3+4L/1000)µm

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ATOS 3D SCANNER

As an example of the state-of-the-art technology, this device is able to create 3D model about any kind of object (sample part, tool insert etc.), which can be used for further measurement, analyses and reverse-engineering

Specification:

- model: ATOS Core 5M Professional Line
- software: Geomagic Design Direct
- measuring area: 185 x 140 mm
- working distance: 440 mm
- resolution: 0,01 mm
- measurement precision: ±2+0,006L(mm)µm

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TINIUS OLSEN TENSILE TESTING MACHINE

Specification:

- model: H20 K-W
- measuring range: 20 kN
- resolution: 0,3 N
- measurement precision: >0,5%

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IGV KV 02 HARDNESS MEASUREMENT MACHINE

Specification:

- model: KV 02
- measuring range: 0-70 HRC
- measurement precision: <1 HRC

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MITUTOYO DUROMETER

Specification:

- model: Hardmatic HH331
- measuring range: 0-100 Shore A
- resolution: 1 Shore A
- measurement precision: < ± 0,075 N

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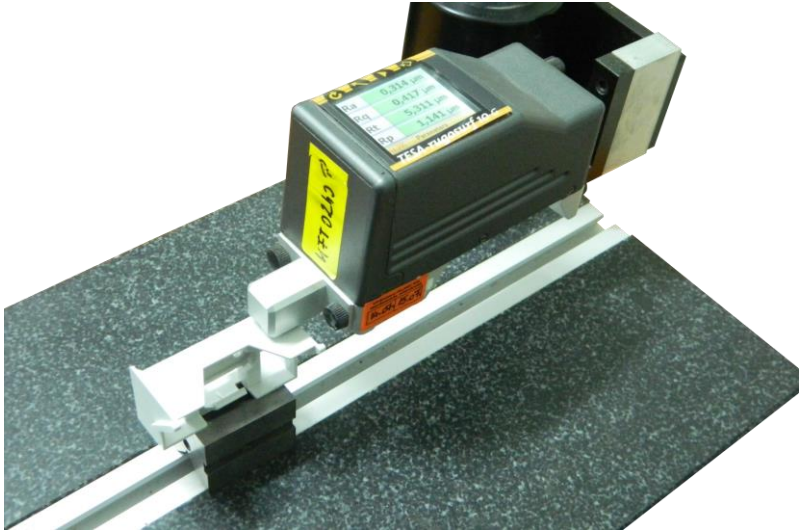
PORTABLE SURFACE ROUGHNESS GAUGE

Specification:

- model: TESA Rugosurf 10G
- measuring range: Ra:0-75 µm Rt:0,05-300 µm
- resolution: 0,001 µm
- measurement precision: 0,3 µm/25 mm



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COLOR-GUIDE GLOSS METER

Specification:

- model: Gardner 6831
- measuring range: 400-700 nm L:0-100
- resolution: 0,01 GU
- measurement precision:
  - 0-10 GU=±0,2 GU
  - > 10 GU=±0,5 GU

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INFRARED CAMERA

The device is proper to detect infrared energy. Temperature and heat distribution can be easily and precisely measured, therefore the heat-related problems can be evaluated.

Specification:

- model: FLIR e50
- thermal image quality: 240x180 pixel
- thermal sensitivity: <0.05°C
- temperature range: -20°C to +650°C

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COOPERATION WITH EXTERNAL LABS / UNIVERSITIES

TÜV Rheinland

- extended contact with the Hungarian subsidiary
- thorough material investigation to detect RoHS-banned substances
- food-contact investigation
- continuous communication in approbation-related topics (in product design phase)
- CE marking

Budapest University of Technology and Economics

- industrial design, ergonomic studies
- functional and concept re-consideration of existing products
- (re)design human-machine interfaces
- 3D product visualizations and animations
- colour studies

COOPERATION WITH EXTERNAL LABS / UNIVERSITIES

Óbuda University

- the Central Research and Development Institute of Videoton has a cooperation with the Kálmán Kandó Faculty of Electrical Engineering of Óbuda University
- test of designed PCBs in EMC laboratory

Kaposvár University

- measurement of technological parameters – physical properties
- alterations of the chemical composition – near infrared spectroscopic (NIRS) and chemical analysis
- analysis of the effects exerted on the organoleptic traits
- cooperation within the dual education system

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COOPERATION WITH EXTERNAL LABS / UNIVERSITIES

University of Pécs (PMMIK)

- cooperation within the dual education system – at the faculty of mechanical and electrical engineering
- cooperation in R&D
- design and optimization of gear drive systems

Széchenyi István University, Győr

- cooperation since 2005
- the packaging laboratory of the institute is a professional partner in the release testing of automotive plastic parts and subassemblies

COOPERATION WITH EXTERNAL LABS / UNIVERSITIES

University of Dunaújváros

- full 3D injection molding simulation of products and mold optimization by using Moldex 3D analysis software
- studies with different injection locations/types
- mold temperature uniformity check → cooling optimization
- optimization for moldability (reduced cycle time, optimal injection pressure); minimal part deformation; best visual part quality (minimal sink marks/welding lines)
- cooperation within the dual education system – at the faculty of mechanical engineering (specialization of mechatronics)

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THANK YOU FOR YOUR KIND ATTENTION!

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