VERDER SCIENTIFIC DIVISION
SCIENTIFIC EQUIPMENT

ENABLING
PROGRESS

VERDER SCIENTIFIC DIVISION

- 6 business segments
  - Heat Treatment
  - Elemental Analysis
  - Materialography & Hardness Testing
  - Milling & Sieving
  - Particle Characterization
  - Pharmaceutical Testing
- 11 manufacturing sites
- 22 sales offices
- 300 Mio. € revenue
- 1.300 employees

ABOUT US

VERDER
Scientific Division

FOCUS

Sample preparation
Analytical equipment

INDUSTRIES

Automotive
Aerospace
Chemical
Pharmaceutical Industry
Construction & Environment
Energy
Food & Agriculture
Geology & Metallurgy
Materials Science
Research & Development

...and many more

BUSINESS

Application specific high-tech equipment for quality control and research of solid matter

CUSTOMERS

Manufacturing companies
Research institutions
Analytical laboratories

ACCESS TO MARKET

Over 1.000 dedicated & qualified employees worldwide
Global distribution network

ORGANIZATION

VERDER GROUP
Vleuten, Netherlands
> 530 Mio € revenue
> 2.400 employees

- **VERDER** Liquids Division
- **VERDER** Scientific Division
  - CARBOLITE® a VERDER company — UK | Germany
  - ELTRA® a VERDER company — Germany
  - QATM® a VERDER company — Germany | Austria
  - Retsch® a VERDER company — Germany
  - MICROTRAC a VERDER company — Germany | USA | Japan | France
  - ERWEKA a VERDER company — Germany
- PINDUSTRY

Sales Offices

and affiliated companies in other countries


Manufacturer
Sales Offices

DEVELOPMENT

1959

André Verder starts his business as a trader of pumps and plastic semi-finished products

1989

becomes part of the Verder Group and expands the Verder business towards scientific equipment

1999

Foundation of

2000

Start of establishing worldwide subsidiaries

2010

Continuous strategic expansion due to acquisitions starting with

2012

Acquisition of

ELTRA ELEMENTAL ANALYZERS

and

CARBOLITE Leading Heat Technology

2013

Acquisition of

2015

Acquisition of

ADVANCED MATERIALOGRAPHY

Carbolite and Gero operate together as Carbolite Gero

CARBOLITE GERO 30-3000°C

2018

Acquisition of

...more milestones in the next slide

DEVELOPMENT

VERDER

2019

Acquisition of MicrotracBEL (Total Solutions in Particle Characterization) and Microtrac (Total Solutions in Particle Characterization)

2020

Fusion of ATM & Qness

QATM QUALITY ASSURED

Fusion of Microtrac, Microtrac BEL & Retsch Technology

MICROTRAC PARTICLE CHARACTERIZATION

2023

Acquisition of FORMULACTION and ERWEKA

ENABLING PROGRESS

BUSINESS SEGMENTS

PORTFOLIO

Technologies

Analytics

Sample preparation

- integrated
- potential

INDUSTRIES


Aerospace
Agriculture
Construction Materials / Abrasives
Electronics
Medicine / Pharmaceuticals
Commercial Testing Laboratories
Chemistry / Plastics
Ceramics
Research / University
Food / Feed
Materials Research
Coal / Power plant / Energy
Automotive
Engineering
Environmental
Mineralogy / Geology / Mining
Biology / Biotech
Steel Production

CUSTOMERS

VERDER

PRODUCTS | MILLING & SIEVING

Milling

Sieving

Assisting

APPLICATION EXAMPLE

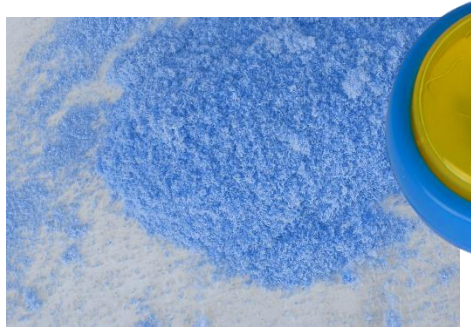
Child's toys

A plastic rattle has to be analyzed for hazardous substances like: Cadmium and lead

Analytical methods:

Microwave digestion
and Atomic Absorption Spectroscopy (AAS)

Prior to analysis the toy has to be ground and homogenized to a particle size smaller than 300 – 500 µm which requires several grinding steps (pre-grinding and fine grinding).
Therefore two Retsch mills have to be used:
Pre-grinding can be done in the Cutting Mill SM 300 and fine grinding is carried out with the CryoMill.



PRODUCTS | PHARMACEUTICAL TESTING

Dissolution Testing

Physical Testing

R&D Equipment

APPLICATION EXAMPLE

Tablet testing in quality control

A tablet has to be tested according to methods described in the USP/EP/JP pharmacopeias before it can be released to the pharmacies.

Methods:

Testing of its physical properties

Testing of the dissolution of the API (Active Pharmaceutical Ingredient)

The physical properties are tested with a tablet hardness tester: testing for hardness, dimensions and weight of the tablet.

To ensure bioavailability of the API, a dissolution test is performed in a dissolution tester according to USP methods and the samples are analyzed in UV/Vis or HPLC equipment.

ERWEKA offers both tablet hardness tester, e.g. MultiCheck 6 and dissolution tester, e.g. the DT 950 Series.

PRODUCTS | PARTICLE CHARACTERIZATION

MICROTRAC

Dynamic Image Analysis

Dynamic Light Scattering

Laser Diffraction

Adsorption

Catalyst Evaluation

Dispersion Stability Analysis

APPLICATION EXAMPLE

Glass beads for road markings

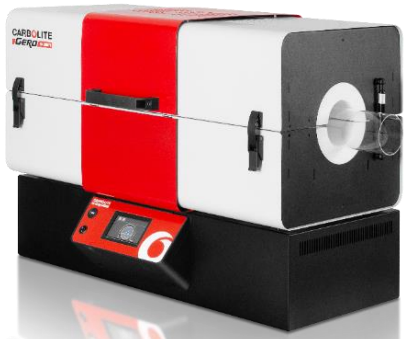
The paint of modern road markings is mixed with glass beads which reflect the light of passing vehicles in order to increase visibility of the markings.

In order to ensure this the glass beads have to have a certain shape and size. The analysis of these properties can be carried out with the CAMSIZER 3D.

CARBOLITE

Ovens

Laboratory Chamber Furnaces



Tube Furnaces

Vacuum Chamber Furnaces

APPLICATION EXAMPLE

Parts produced by additive manufacturing

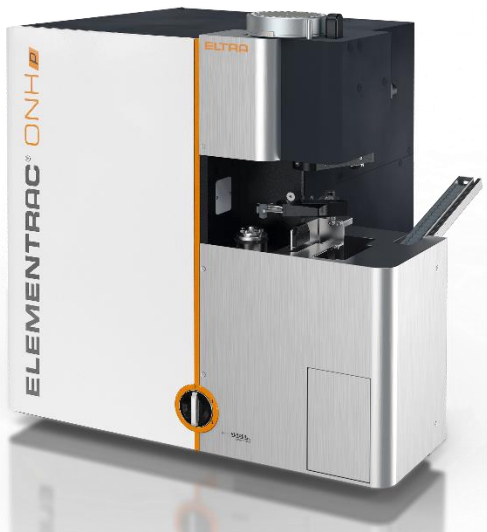
The powder used in additive manufacturing processes is usually mixed with a binder that helps to hold the powder together and needs to be removed from the manufactured part or product by thermal treatment.

This is done in a Carbolite Gero furnace.

After that the resulting "Brown Part" has

to be sintered in order to give the part its final shape and properties. This is also done by subjecting the part to heat.

ELTRA



ONH Analyzers

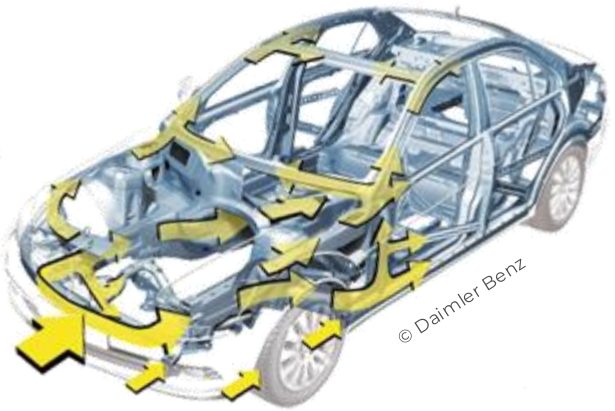
CS Analyzers

APPLICATION EXAMPLE

Different sorts of steel
Depending on the amount of the element Carbon (C) steel can have different properties:

High C content (> 2.1 %)
- Makes steel brittle: „cast iron“
- Product is not ductile

→ Used for: Pans, motors, gully covers



Medium C content (0.2 - 1.7 %)
- allows to control the hardness

→ Used for: Rail tracks, knives

Low C content (< 0.2 %)
- Steel is no longer hardenable and very ductile

→Used for: Chassis of cars (controlled crush zone)

The carbon content in steel can be analyzed by ELTRA’s ELEMENTRAC CS-i for example.

PRODUCTS | MATERIALOGRAPHY & HARDNESS TESTING

Cutting

Mounting

Polishing

Hardness testing

APPLICATION EXAMPLE

Weld seam of car parts

In order to determine the quality of a weld seam (e.g. in a car part) it has to be analyzed with a hardness tester.

But before this can be done different steps have to be undertaken:

The respective section has to be cut out of the car part (cutting).

The cut sample has to be embedded in a mounting compound (mounting) and the surface has to be polished (polishing).

Hardness testers

KNOW-HOW TRANSFER

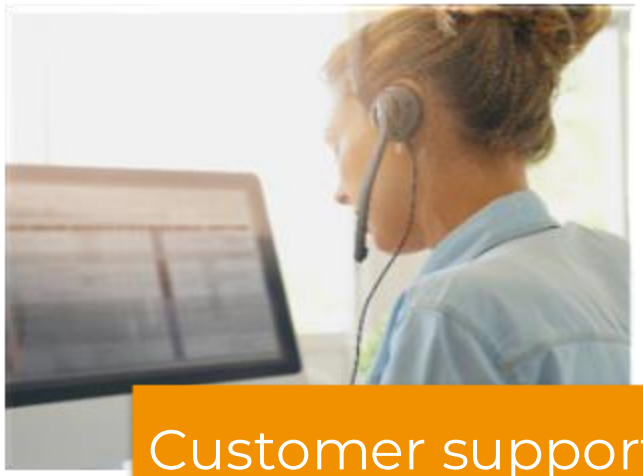
Application support

Technical reports

Seminars

Webinars

Technical service



Customer support

INDEPENDENCE AND COHESION

AN ALLIANCE OF STRONG COMPANIES

ADDING VALUE

Business operations are coordinated by central departments

- Management & Controlling
- Sales & Marketing
- Processes & Systems
  (operational backbone)
- Human Resources
- Best Practice

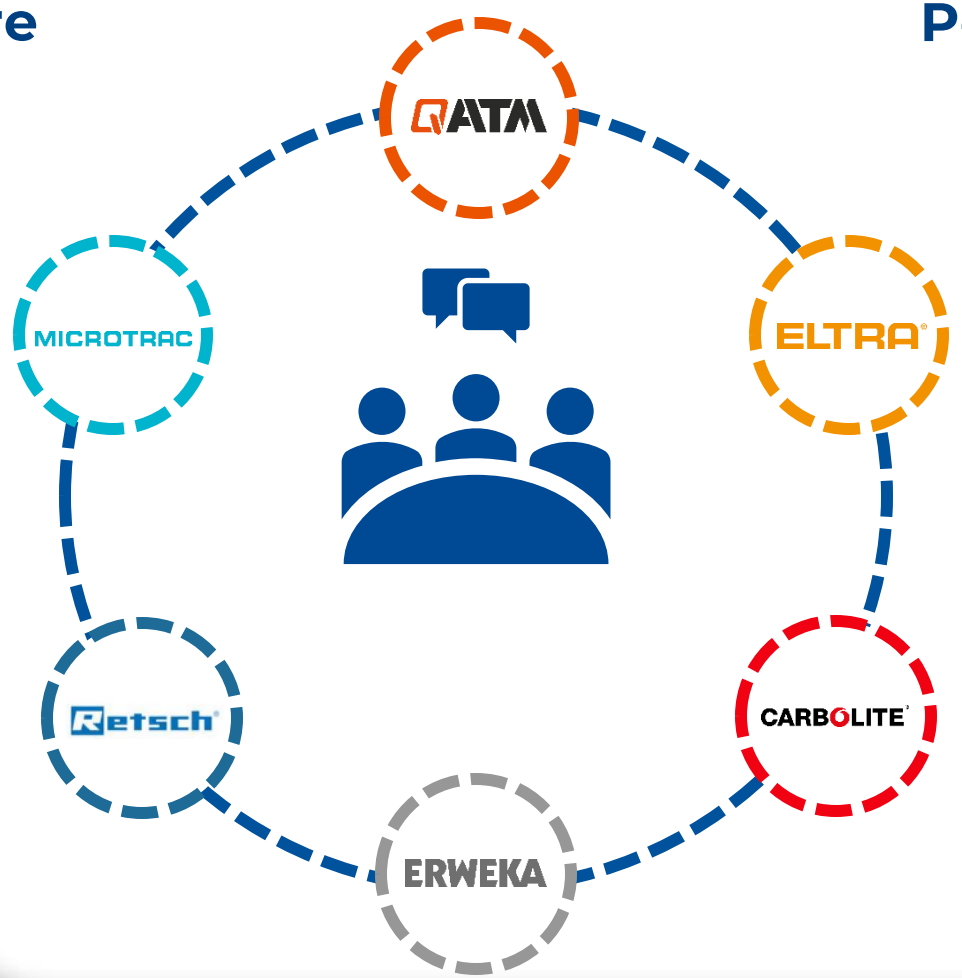
BEST PRACTICES

Adding value

Provided infrastructure

Central functions

Distribution channels



Peer 2 peer learning

R&D

Sales

Purchasing

Production

ENABLING PROGRESS. TO THE BENEFIT OF MANY.

MORE SAFETY IN EVERYDAY LIFE

From analytical equipment for food or toy testing to pumps for X-ray scanners at the airport: we contribute to greater safety.

PROCESS CONTINUITY ENSURE

Our solutions are highly reliable and meet the highest quality standards. In this way, they help to secure processes worldwide.

PROTECT RESOURCES

We support effective quality control and thus contribute to the reduction of waste and waste.
For more sustainability.

PIONEERING WORK FOR THE FUTURE

We enable insights through constant research, helping our customers to profit from even better production processes and quality control.

VERDER

Thank you for your attention!