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f-cell 2020

Energizing Hydrogen Markets

Deutsche
Akkreditierungsstelle
D-K-21444-01-00

*Calibration laboratory accredited by DAkkS according to DIN EN ISO / IEC 17025.
The accreditation only applies to the scope of accreditation listed in the D-K-21444-01-00.

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Automotive

Automation

Aviation

HVAC & Energy Engineering

Household Appliances

Sensor Industry

Calibration Laboratories

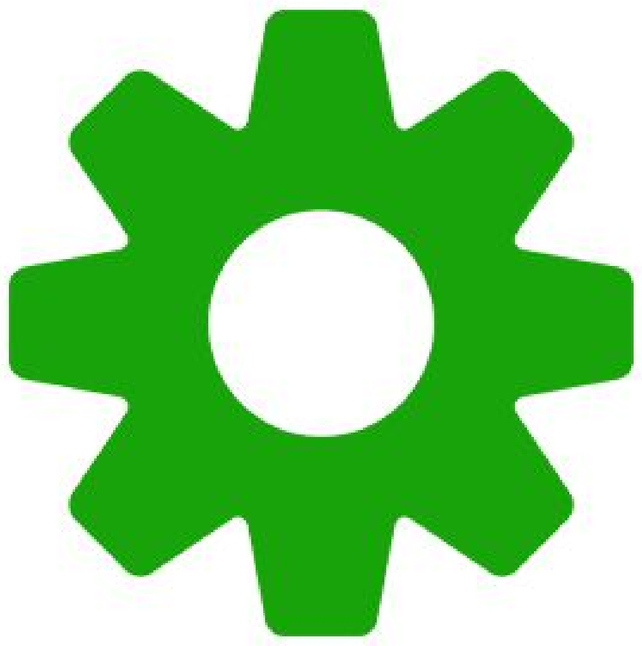
Oil & Gas Industry

Filter Technology

Fluid & Valve Technology

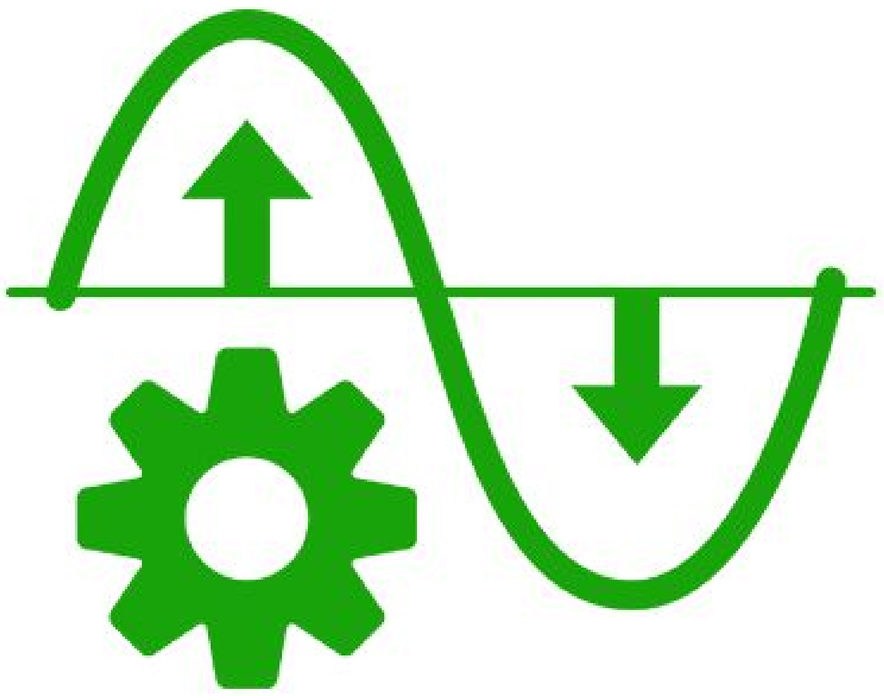
Pharmaceutics & Medicin

Chemistry



Test Benches & Measurement Technology

Engineering & Consulting



Calibration & Service

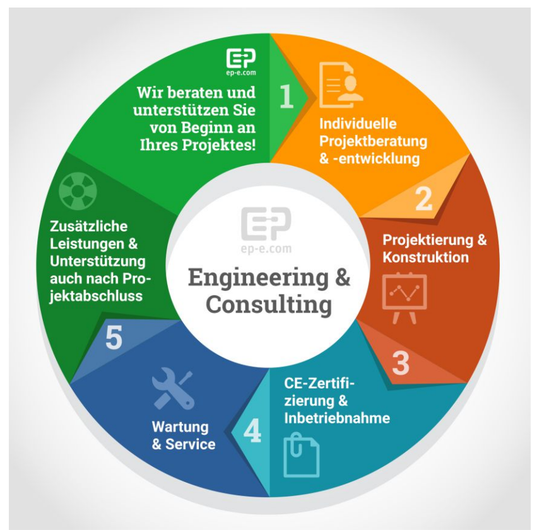
Test benches & Measurement technology

Customized test benches

Standardized measurement systems

Reference standards

Measurement elements



Engineering & Consulting

Customized project management

Pre-engineering & technology management

Software solutions & services with industry 4.0

Calibration & Service

DAkkS & factory calibration

Maintenance & service

Flow training

EP-E Component testing

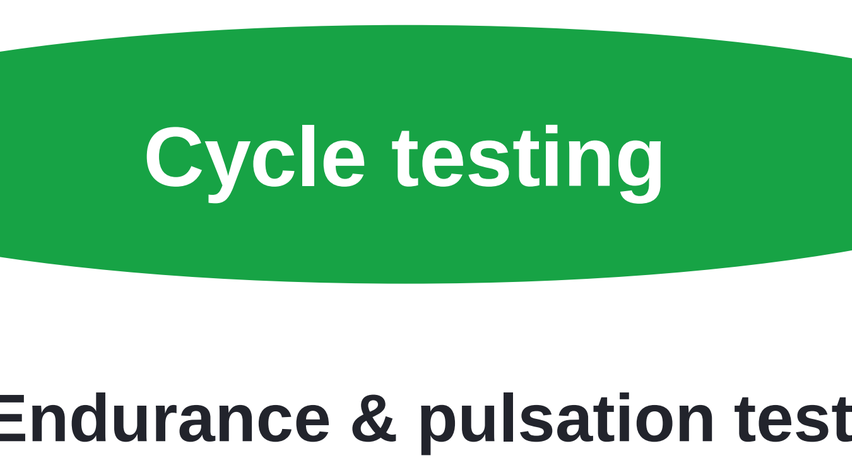
Medium:
air & gases
hydraulic oil
water
refrigerants

Function testing

Testing scope and methods:
R&D, function- , quality and EOL requirements

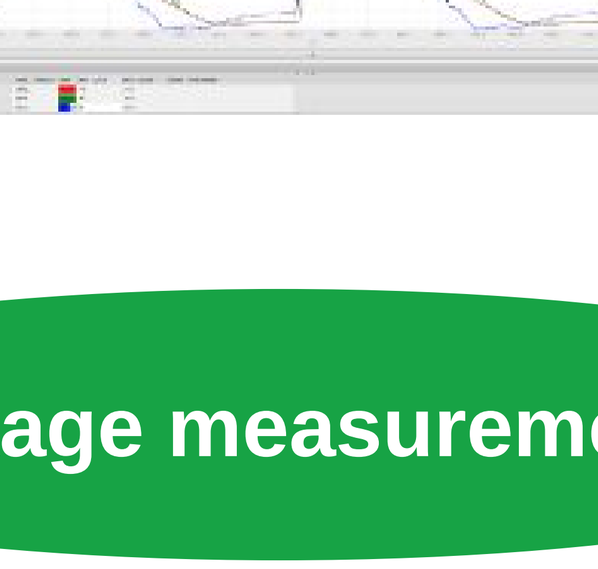
Cycle testing

Endurance & pulsation tests
(climatic) chamber testing
(conditioning: pressure, temperature, humidity)



Leakage measurement

Testing scope:
Low and high pressure ranges
Differential pressure testing
Helium leakage testing



EP-E Component testing

Vehicle & Refueling station

Hydraulic testig

Measurement of leakages, temperatures, pressures

Vehicle

- Tanks
- Tank valves
  - Solenoid / manual / check valves
  - Temperature / pressure sensors
- Pressure regulators
- Proportional valves / injectors

Refueling station

- Valves
- Sensors
- Breakaway couplings
- Hoses
- Nozzles

Function testing

Cycle testing

Leakage measurement

H2 & fuel cell industry

✓Measurement & testing technology

✓Flow measurement of air & gases

✓Calibration & service

✓Leakage measurement & burst pressure tests

✓Thermal management

✓Research & Developement

✓Gas calibration loop

✓Component testing

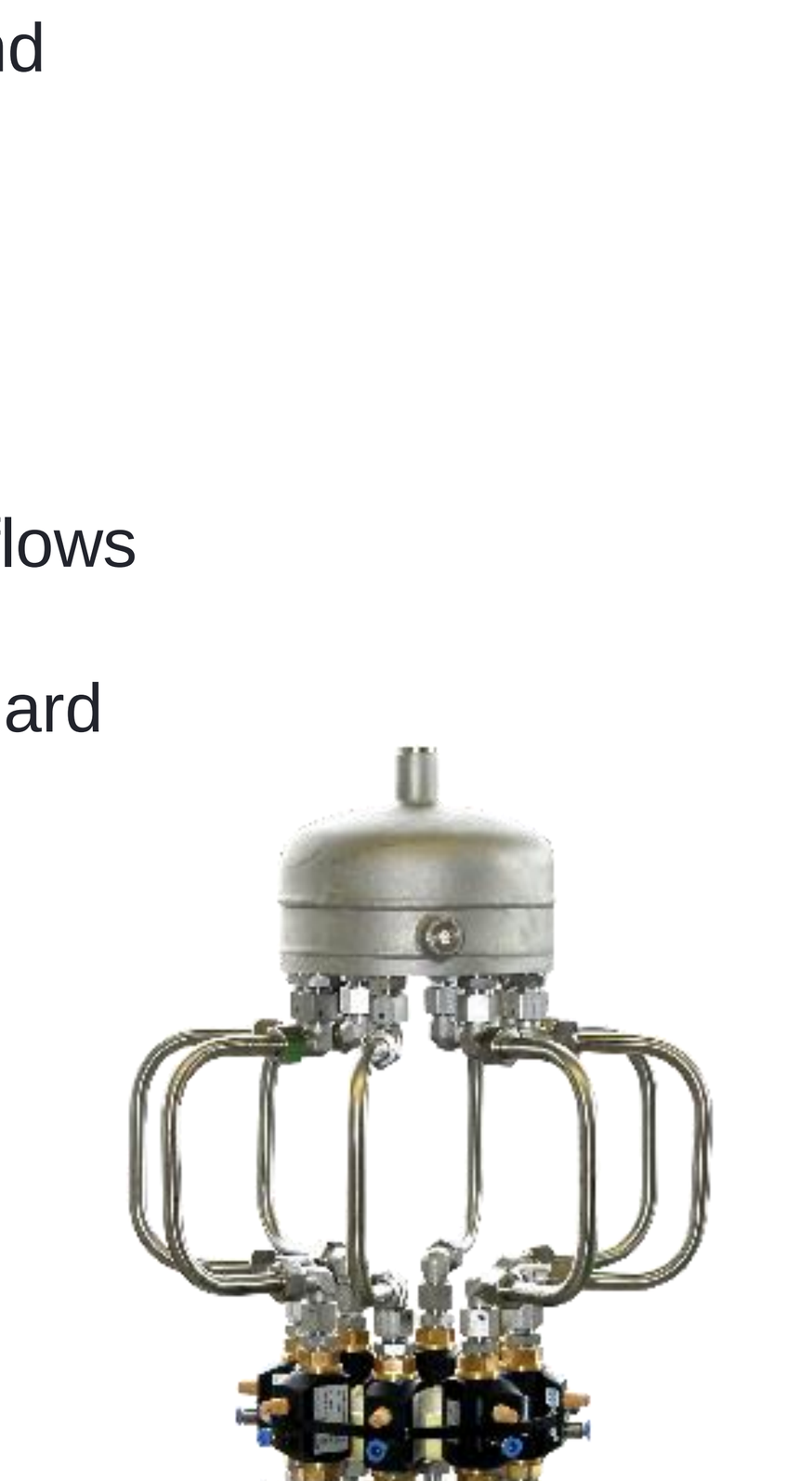
EP-E reference standards

Reference standards for flow meters

Hydrogen approved

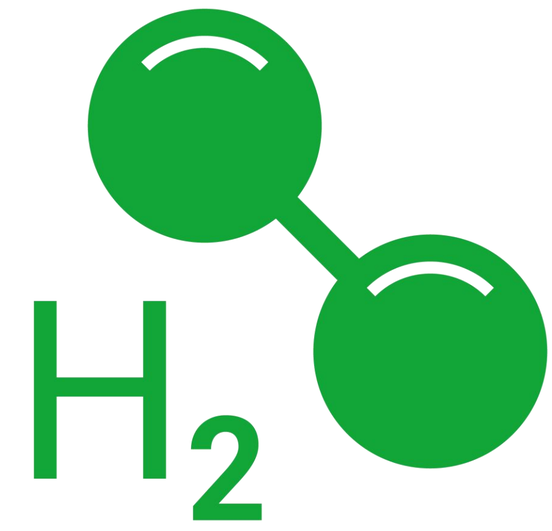
SMF® - SonicMasterFlow® for hydrogen
Reference standard for flow meter
(fuel cell test benches)

- Nozzle register and/or calibration stand with critically operated nozzles for determining mass flows
- Highest accuracy - up to 0.15% MW
- Flow generation of $2^8 = 256$ different flows
- Approved by PTB as calibration standard



EP-E reference standards

Reference standards for flow meters



Hydrogen approved

RPD reference gas meters
The **gold** standard for low flow measurement

- Continuous and absolutely pulsation free
- Low flow reference measurement down to 0.01 m³/h, also for **hydrogen**
- Operating pressure up to 6 bar gauge
- Excellent measurement accuracy 0.5 % MV + 0.005 % EV
- Typical applications are: Industrial applications, Calibration & transfer standards, Measurement sections for test benches

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Product range

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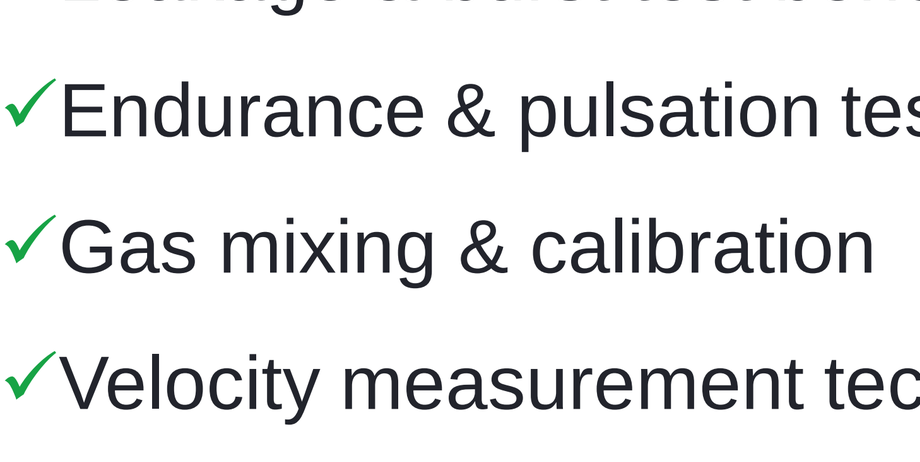
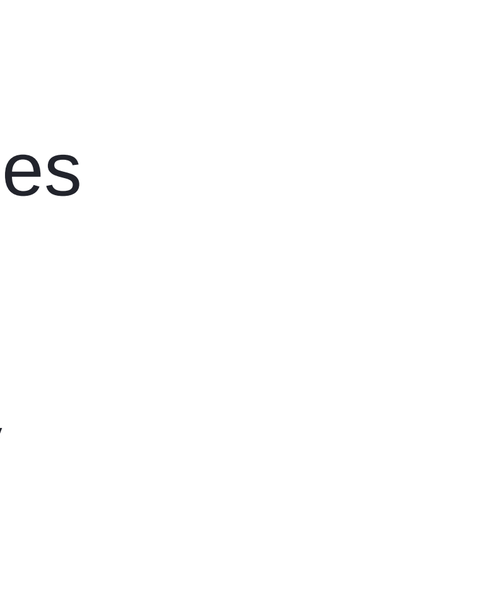
Test benches & Measurement technology

Customized test benches & standardized measurement systems

- ✓Flow measurement systems
- ✓Gas measurement technology
- ✓Calibration standards
- ✓Climate test benches (media conditioning)
- ✓Leakage & burst test benches
- ✓Endurance & pulsation test benches
- ✓Gas mixing & calibration
- ✓Velocity measurement technology

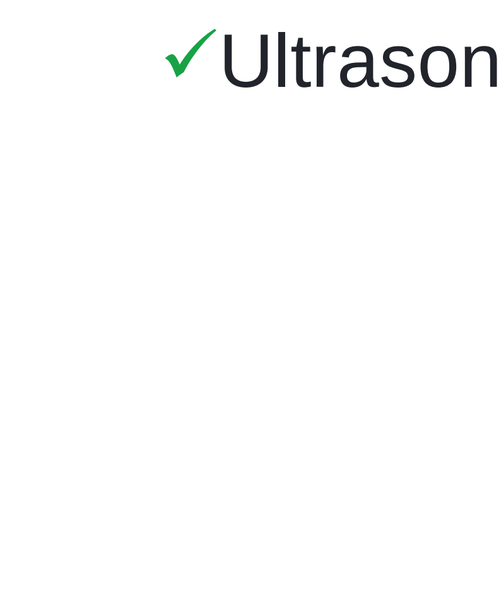




Test benches & Measurement technology

Reference standards & measurement elements

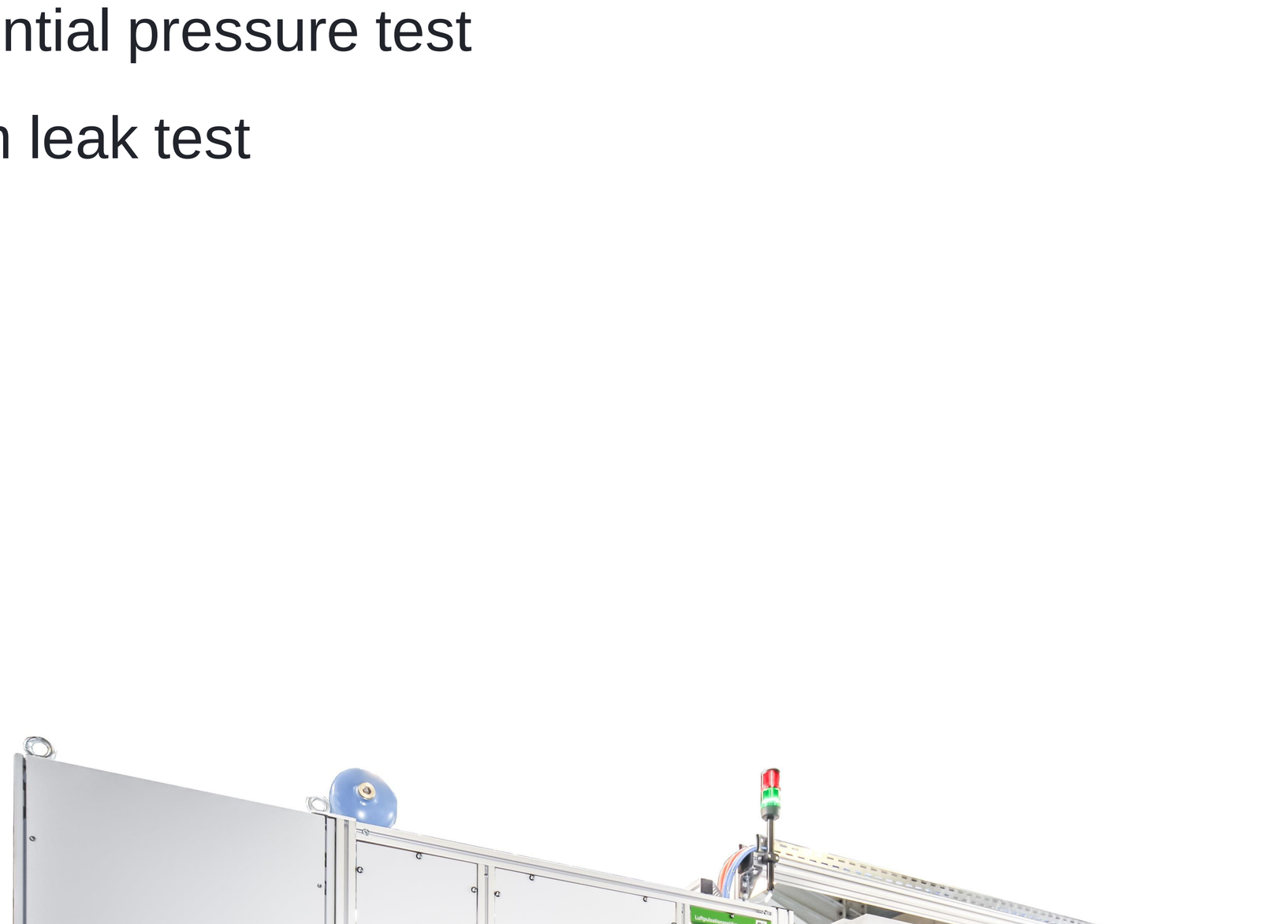
- ✓Laminar Flow Elements (LFEs)
- ✓Critical nozzles
- ✓Venturi nozzles
- ✓Reference gas meters
- ✓Piston-cylinder systems
- ✓Orifices
- ✓Prandtl probes
- ✓Ultrasonic flow meters



Test benches & Measurement technology

Testing scope

- ✓**Medium**: Air & gases, water, oil, refrigerants
- ✓**System & component testing**: R & D, functional, quality and EoL requirements
- ✓**Media / air conditioning:** Pressure, temperature, humidity
- ✓**Test scope, pressure:**
  - Low & high pressure ranges
  - Differential pressure test
  - Helium leak test



Calibration & Service

<u>DAkkS & factory calibration, test equipment calibration</u>

Volume and mass flow of gases

- **Flow lab Niederstetten:**
  20 ml/h…10000 m³/h
  Measurement accuracy: from 0.22 % Q_V

- **On-site calibration:**
  0.005…3750 m³/h
  Measurement accuracy: from 0.30 % Q_V

- **Flow lab Hangzhou:**
  0.016…6500 m³/h
  Measurement accuracy: from 0.24% Q_V

✓**Maintenance & Service**

✓**Flow training**

<u>NEW</u>:
DAkkS - Application procedure for:
- Temperature
- Humidity
- Absolute pressure
- Differential pressure
- Relative pressure

统一社会信用代码

营业执照

（副本）

名　　称

类　　型

法定代表人

经营范围

注册资本

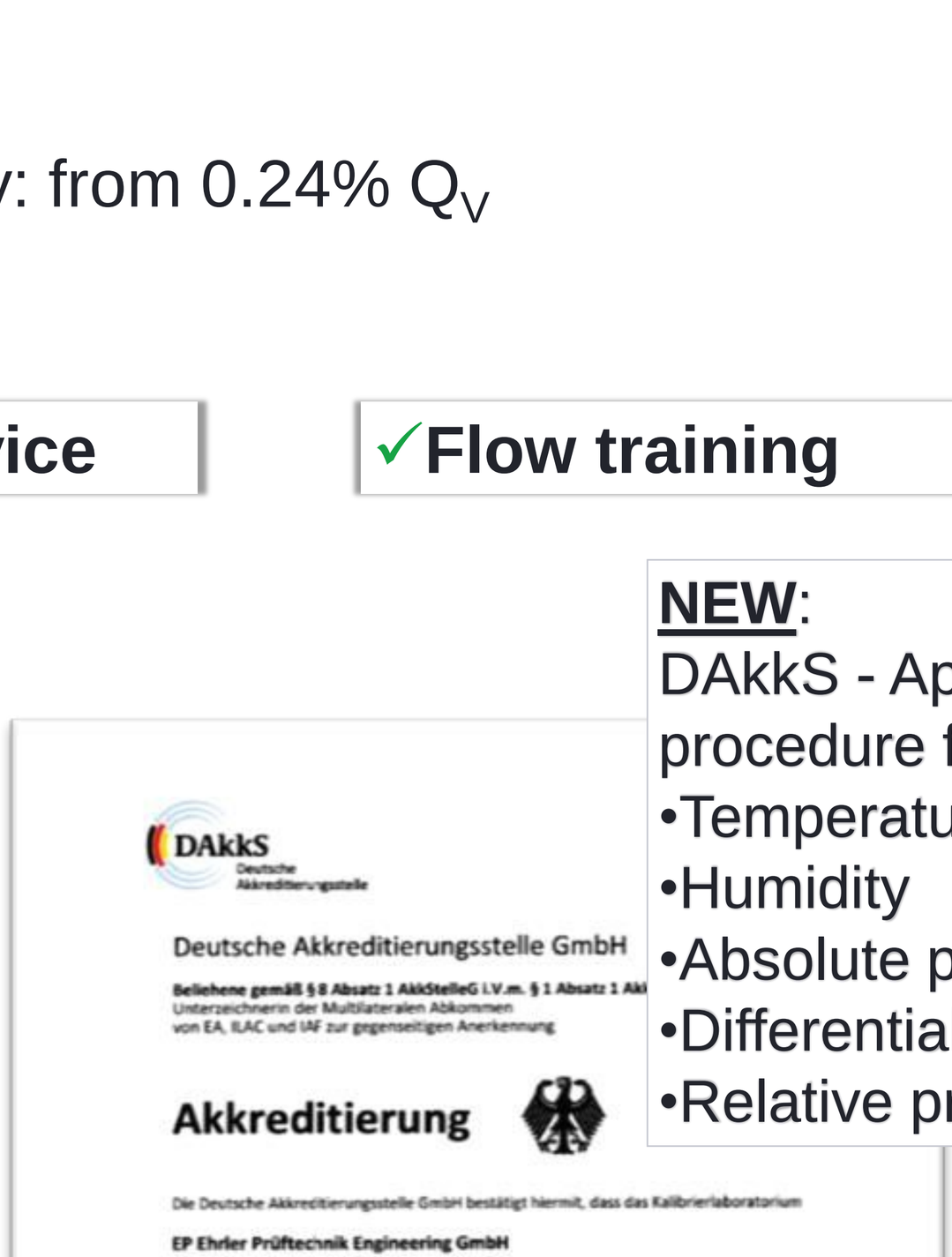
成立日期

营业期限

住　　所

登记机关

2020 年 12 月 17 日



DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 Akk
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Kalibrierlaboratorium

EP Ehrler Prüftechnik Engineering GmbH
Wilhelm-Hachtel-Straße 8, 97996 Niederstetten

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Kalibrierungen in folgenden Bereichen durchzuführen:

Durchflussmessgrößen
- **Durchfluss von Gasen** a)
- **Volumen strömender Gase** a)
- **Masse strömender Gase** a)

a) auch Vor-Ort-Kalibrierung

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 01.10.2019 mit der Akkreditierungsnummer D-K-21444-01. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 3 Seiten.

Registrierungsnummer der Urkunde: **D-K-21444-01-00**

Braunschweig, 01.10.2019

Im Auftrag Dr. Heike Menke
Abteilungsleiterin

Bell calibration pyramid

Primary Standard
EP-E Bell Prover (0.06 % unc.)

calibrates

Secondary Standard
EP-E Nozzle test bench
SMF®4000 (0.15 % unc.)

calibrates

Working Standard
EP-E Blower test bench
(0.5 % unc.)

calibrates

DUT
Blower
(1…x % acc.)

SI units: m, s

Traceability path

Primary Standard
for national metrological institutes

Secondary Standard
for calibration laboratories

Working Standard
for industry laboratories

DUT (device under test)

Engineering & Consulting

Customized project management

Pre-engineering & technology management

Software solutions & services with industry 4.0

LabVIEW, Siemens S7 Tiaportal, Inventor, CODESYS, C-Sharp, Wonderware, EPlan

Customized project management

Project planning & Construction

CE – certification

Electrical design & E-Planning

Service & Maintenance

Control cabinet engineering

Spare parts

Electrical installation

Service- & Maintenance contracts

Programming & Commissioning

Training Remote & Inhouse

Software Solutions & Services with industry 4.0:

LabVIEW, SPS, C-Sharp, Wonderware

Machine monitoring

Software modification & adjustment

Reporting & Evaluation

Cloud storage & On-Premis, Data storage

Individual user administration

Test plan

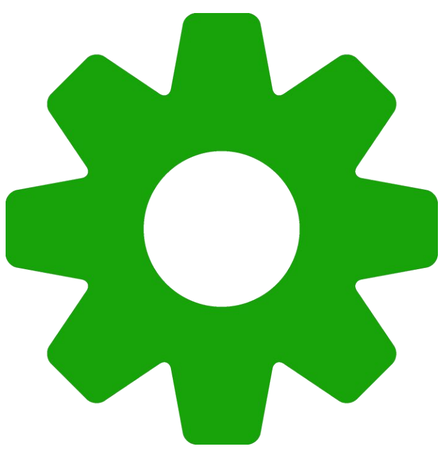
Technical support, Remote maintenance

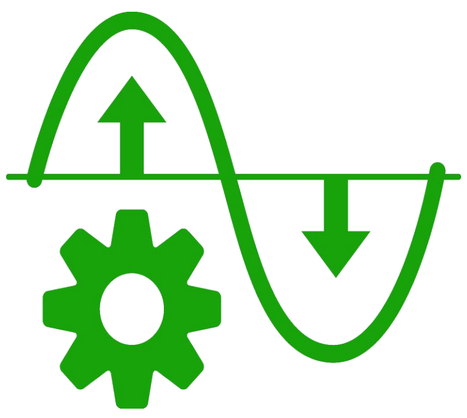
Database connection & Data exchange

EP products & services – What we can do for you!

Test benches & Measurement technology | Engineering & Consulting | Calibration & Service

- ✓Media: **Gases** (e.g. air, natural gas, nitrogen, hydrogen) & **Fluids** (e.g. water, petrol, diesel, oils)
- ✓**Flow and pressure measurement** or **regulation, pressure test, burst test**
- ✓**High-precision temperature control** of fluid / gas and temperature change
- ✓**High-precision humidity control** in air flows - also in the low temperature range
- ✓**High-precision pressure change** with high dynamics for gases and liquids
- ✓**Cross section determination** of complex components and assemblies
- ✓**Feasibility studies / Pre-engineering**
- ✓**Customized project management**
- ✓**Software solutions** with Industry 4.0
- ✓**Calibration & Service**





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