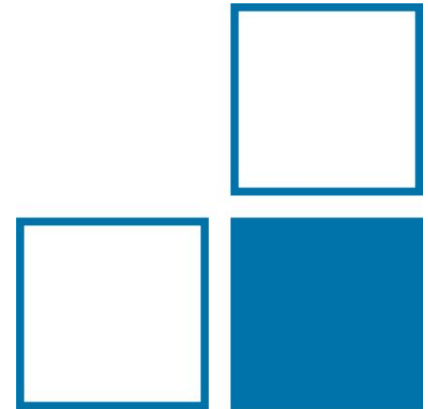


2.3 Department for Electrical Energy Measuring Techniques

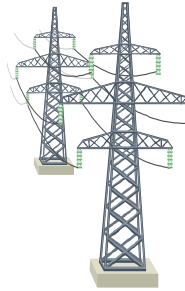
Martin KAHMANN, 2.3



Some Key Data Regarding Electrical Energy Supply

Total yearly consumption about

Total yearly turn over about



480.000.000.000 kWh

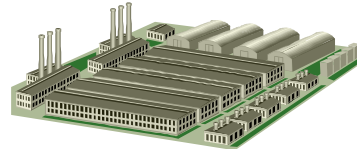
50.000.000.000 €

Number of household meters

Number of industrial meters



40.000.000 pieces



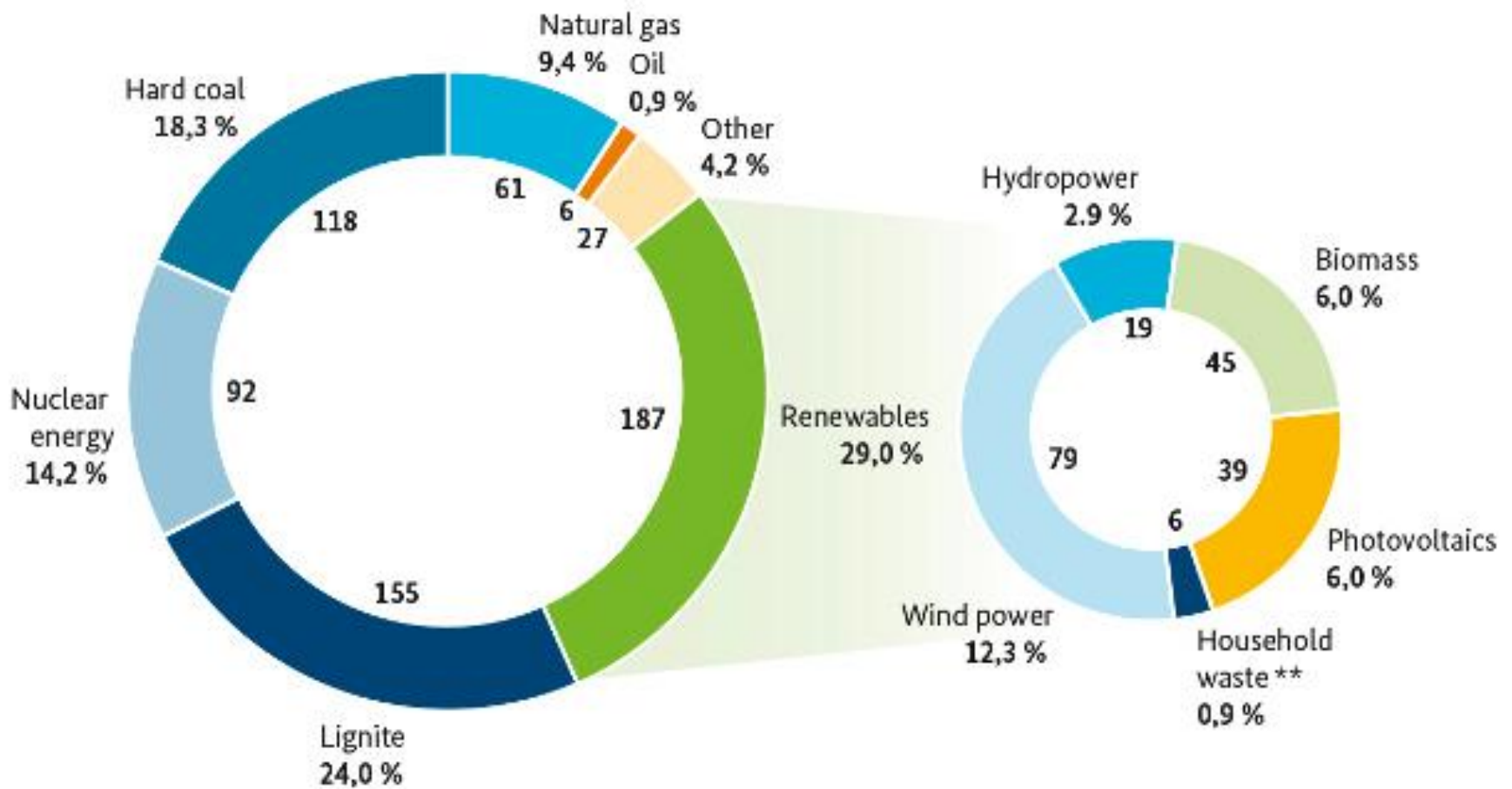
900.000 pieces

Yearly mean consumption (household 4 persons): 4.000 kWh

Yearly mean expense (household 4 persons): 800 €



Successful Energy Transition to Renewables



Core Competences



Competence	Details
Basis Research: <ul style="list-style-type: none">- Expensive, time consuming research- Supporting small and medium enterprises	<ul style="list-style-type: none">- Semiconductor Research (microwatt-measure)- Numerical methods (advanced sampling)- New materials and technologies
Representation and Traceability for units <ul style="list-style-type: none">- Power, Energy,- Ratio (Voltage and current)- Efficiency (Power/Ratio)	<ul style="list-style-type: none">- Creating and Operating Primary Standards- Creating Transfer Standards- Giving Traceability for accredited labs- Giving Traceability for verification labs- Giving Traceability to other NMIs
Legal metrology <ul style="list-style-type: none">- Measurement for billing	<ul style="list-style-type: none">- Type testing, conformity assessment- Support for the verification authorities
Standardisation/Consulting <ul style="list-style-type: none">- IEC/CLC/DKE- German Association of Grid Operators- Neutral consulting of ministries and other authorities	<ul style="list-style-type: none">- Technological innovations (smart metering)

The Four Working Groups of the Department 2.3



2.31 Measuring Transformers and Sensors	<ul style="list-style-type: none">• Maintenance of instrument transformers• Development of new measuring principles for instrument transformer testing• Non conventional instrument transformers and sensors• Test & Calibration as customer service
2.32 High Voltage	<ul style="list-style-type: none">• Maintenance of high voltage instruments• Development of new measuring principles for High Voltage• Test & Calibration as customer service• Conformity assessment electro shock weapons
2.33 Power&Energy, Test Centre System	<ul style="list-style-type: none">• Maintenance for standard meters• Development of new measuring principles for power & energy• Test & Calibration as customer service• Support and consultancy for the state approved test centres
2.34 Type Approval Conformity Assessment	<ul style="list-style-type: none">• Type approval/Conformity Assessment for revenue meters• Support and consultancy for legal metrology and legislator• Working with international committees (WELMEC, OIML, IEC etc.)• Coaching innovative revenue metering concepts

All our work is concerned by standardisation !



**...our staff
is from the world**

The Four Working Groups and Their Tasks

2.33 Power&Energy, Test Centre System

- Maintenance for standard meters
- Development of new measuring principles for power & energy
- Test & Calibration as customer service
- Support and consultancy for the state approved test centres

DKE	IEC
K 461 Elektrizitätszähler	TC 13 Equipment for electrical energy measurement and load control, including: <u>test equipment</u>

You shall see an example of our work - presented by



Ms Ying SU (China) : Power Quality Measurement

The Four Working Groups and Their Tasks

2.32 High Voltage

- Maintenance of high voltage instruments
- Development of new measuring principles for High Voltage
- Test & Calibration as customer service
- Conformity assessment electro shock weapons

DKE

K 124

Hochspannungs- und Hochstrom -prüftechnik

IEC

TC 42

High Voltage Test Techniques

You shall see an example of our work - presented by



Mr. Xiaofei GUO (China) : Impulse Voltage

The Four Working Groups and Their Tasks

2.34 Type Approval Conformity Assessment

- Type approval/Conformity Assessment for revenue meters
- Support and consultancy for legal metrology and legislator
- Working with international committees (WELMEC, OIML, IEC etc.)
- Coaching innovative revenue metering concepts

DKE	IEC
K 461 Elektrizitätszähler	TC 13 Equipment for electrical energy measurement and load control, including: <u>Systems for automated meter reading</u>

You shall see an example of our work - presented by



Mr Roberto CUERDO (Spain): **Smart Metering**

The Four Working Groups and Their Tasks

2.33 Power&Energy, Test Centre System

- Maintenance for standard meters
- Development of new measuring principles for power & energy
- Test & Calibration as customer service
- Support and consultancy for the state approved test centres

DKE	IEC
K 461 Elektrizitätszähler	TC 13 Equipment for electrical energy measurement and load control, including: <u>Metering in charging stations for electric cars</u>

You shall see an example of our work - presented by



Ms. Tatyana SHEVELEVA (Kazakhstan) : **E-Mobility**

Thank You !



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