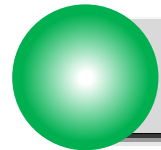
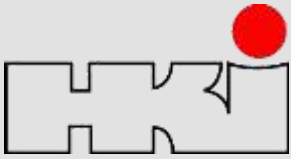
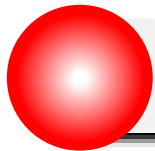


Market development and perspectives

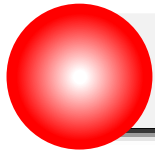
IEA Workshop, 29.10.2015



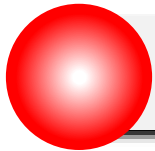
HKI Industrial association



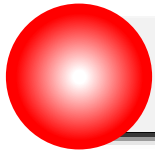
Market and Statistics



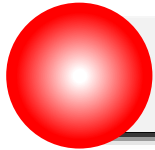
Types of Appliances



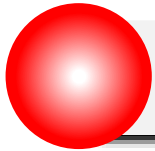
Requirement Overview



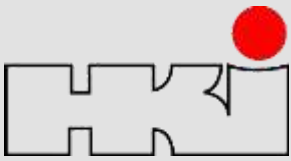
Emission and Efficiency Requirements



Research and development



HKI activity examples

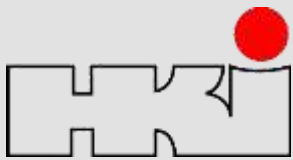


Department of domestic heating and cooking appliances

HKI industrial association for house, heating and kitchen technology represents the interests of

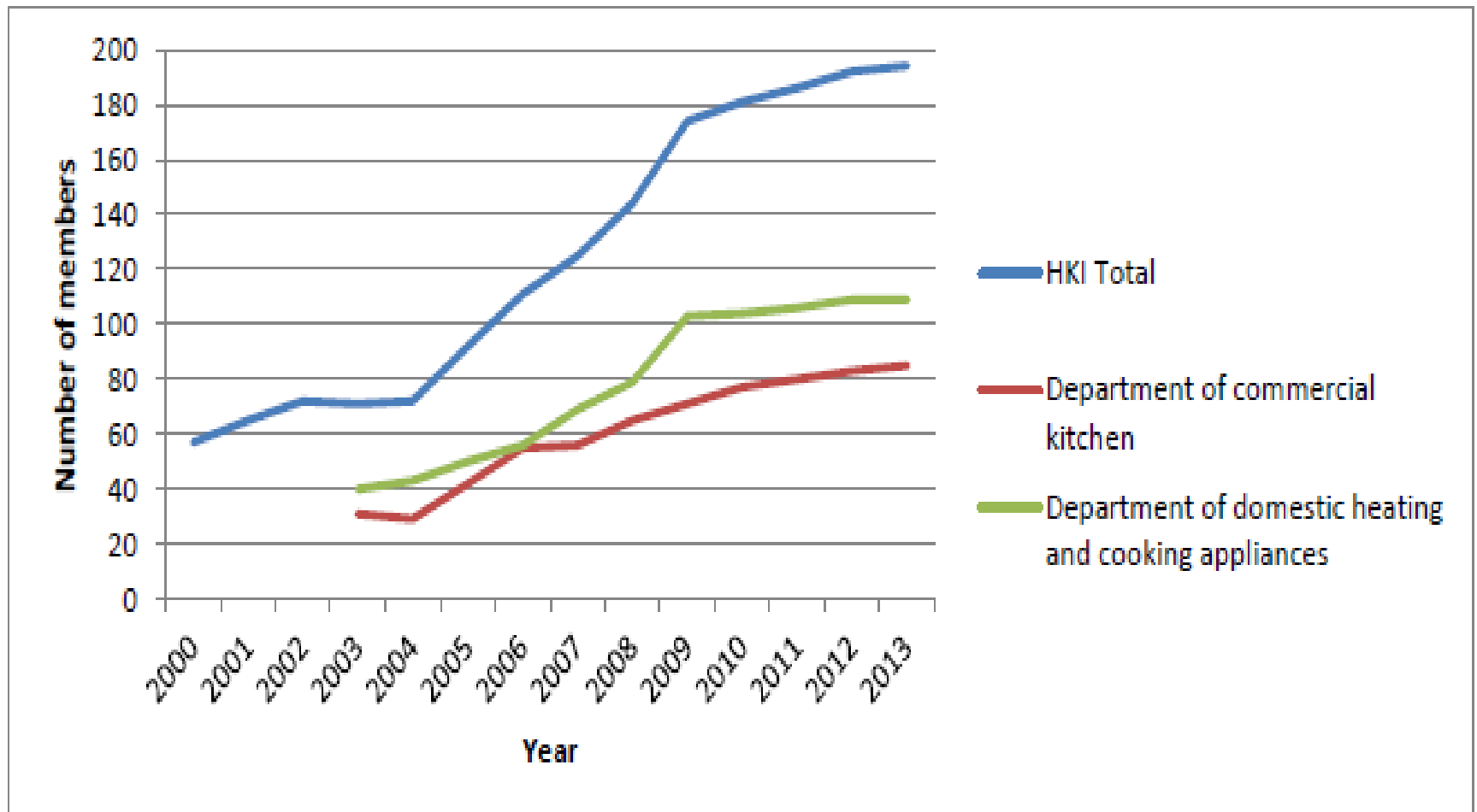


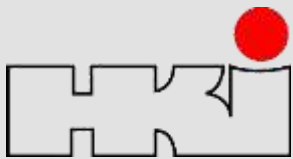
producers of manufactures of domestic heating, cooking appliances and catering equipment



Membership development trends

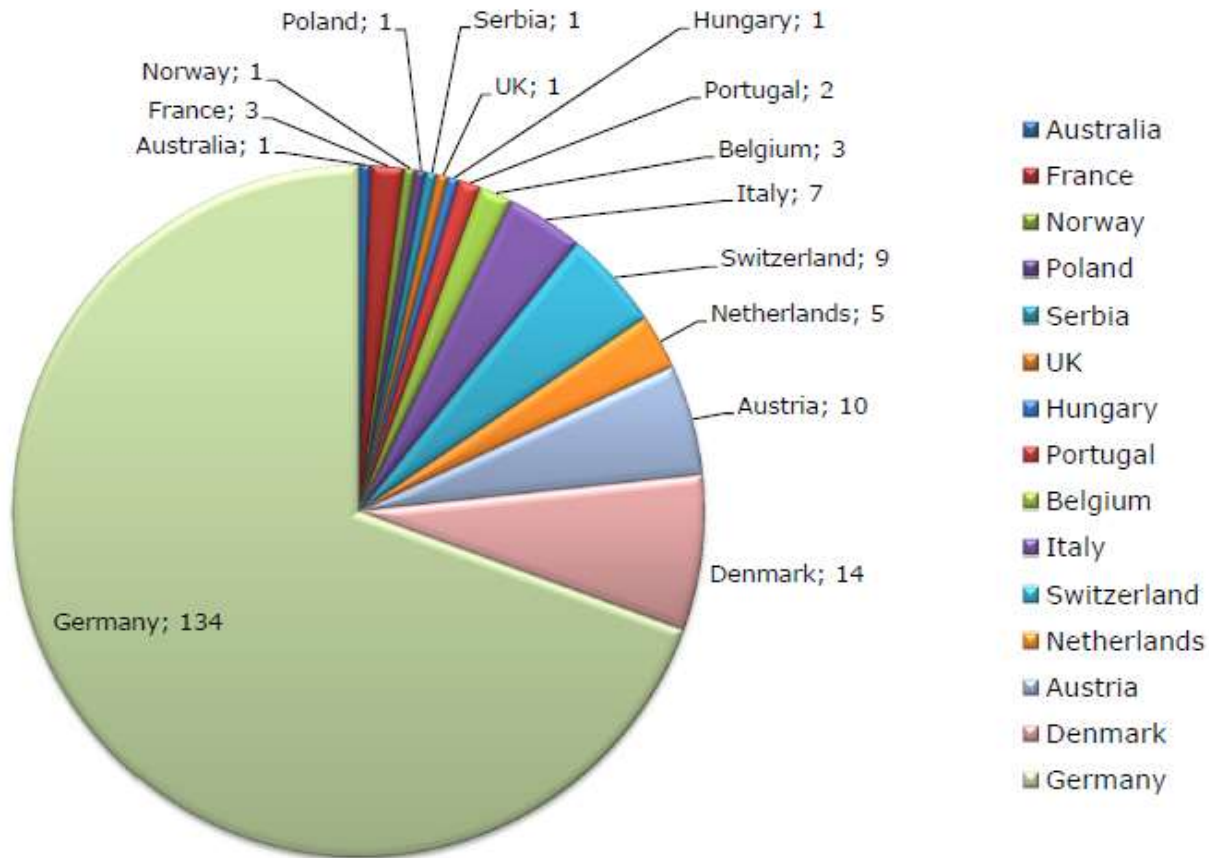
Department of domestic heating and cooking appliances





HKI Total members (193)

Department of domestic heating and cooking appliances

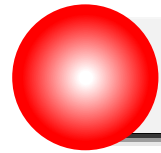
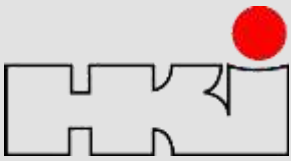




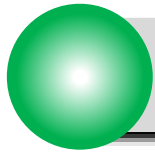
Members of the department heating and cooking appliances

Department of domestic heating and cooking appliances

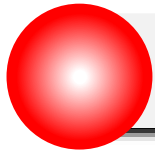




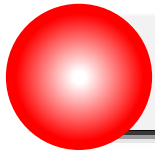
HKI Industrial association



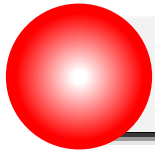
Market and Statistics



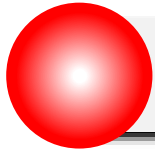
Types of Appliances



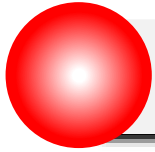
Requirement Overview



Emission and Efficiency Requirements



Research and development



HKI activity examples



Appliance stock – Domestic roomheating appliances

Department of domestic heating and cooking appliances

	Stock Roomheating Appliances [Mio]	Stock Biomass- Boilers [Mio]	Stock Oil-/Gas- Boilers [Mio]	Number of households [Mio]	Households with Roomheating Appliance [%]
DE	10,2 ^{a,1}	0,9 ²	19,6 ²	40,2 ⁴	25,4 %
EU	65 ^{a,3}	7,8 ³	120 ²	216,2 ⁴	30,1 %

¹ Source – ZIV (Chimney Sweeps Association DE)

² Source – BDH (Central Heating Association DE)

³ Source – BioIS Study on Erp Lot 15 Task 2 2009

⁴ Source - Wikipedia

^a including inset appliances, peelt stoves and cookers

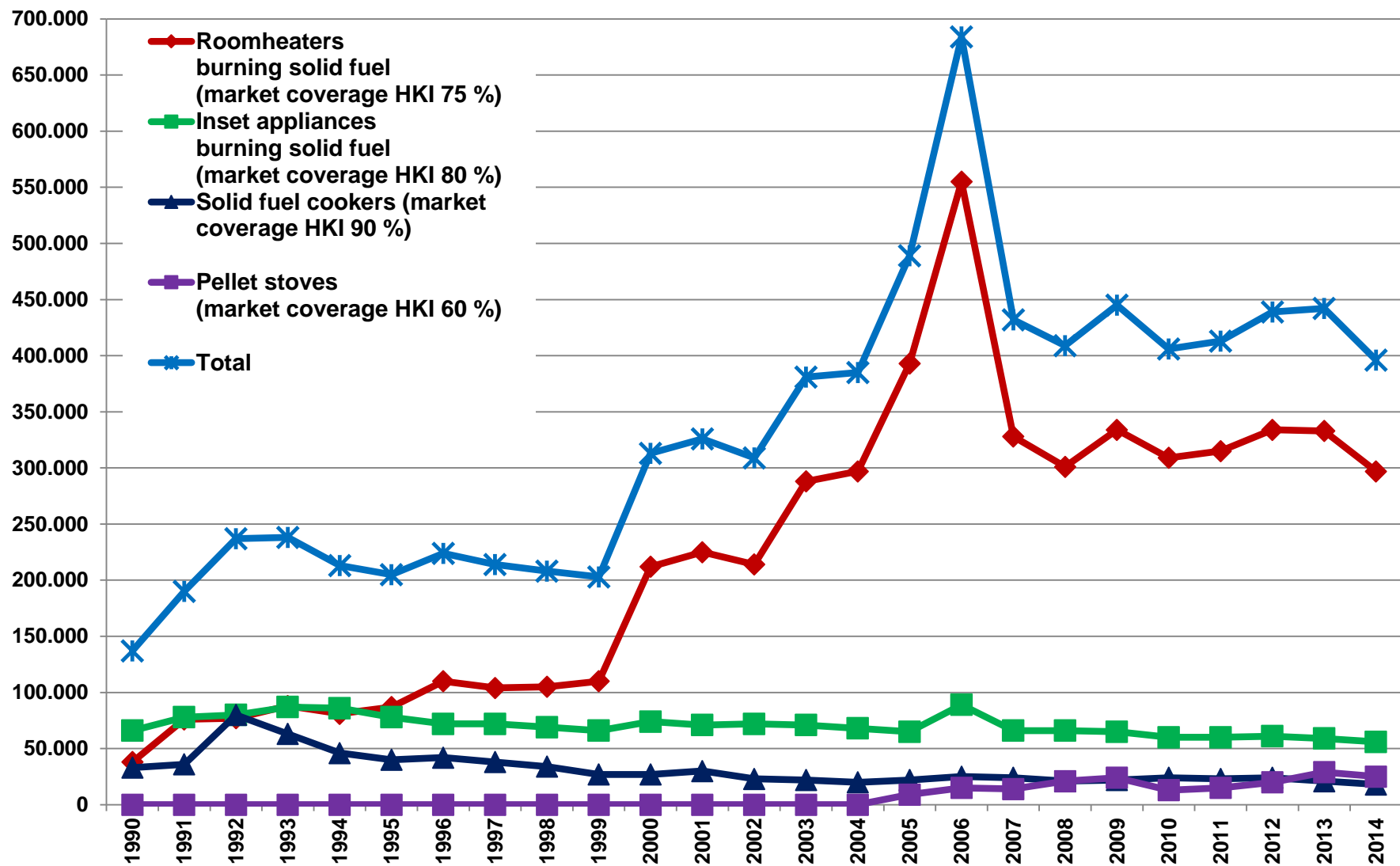




Sales trend 1990 - 2014

Domestic roomheating appliances

Department of domestic heating and cooking appliances



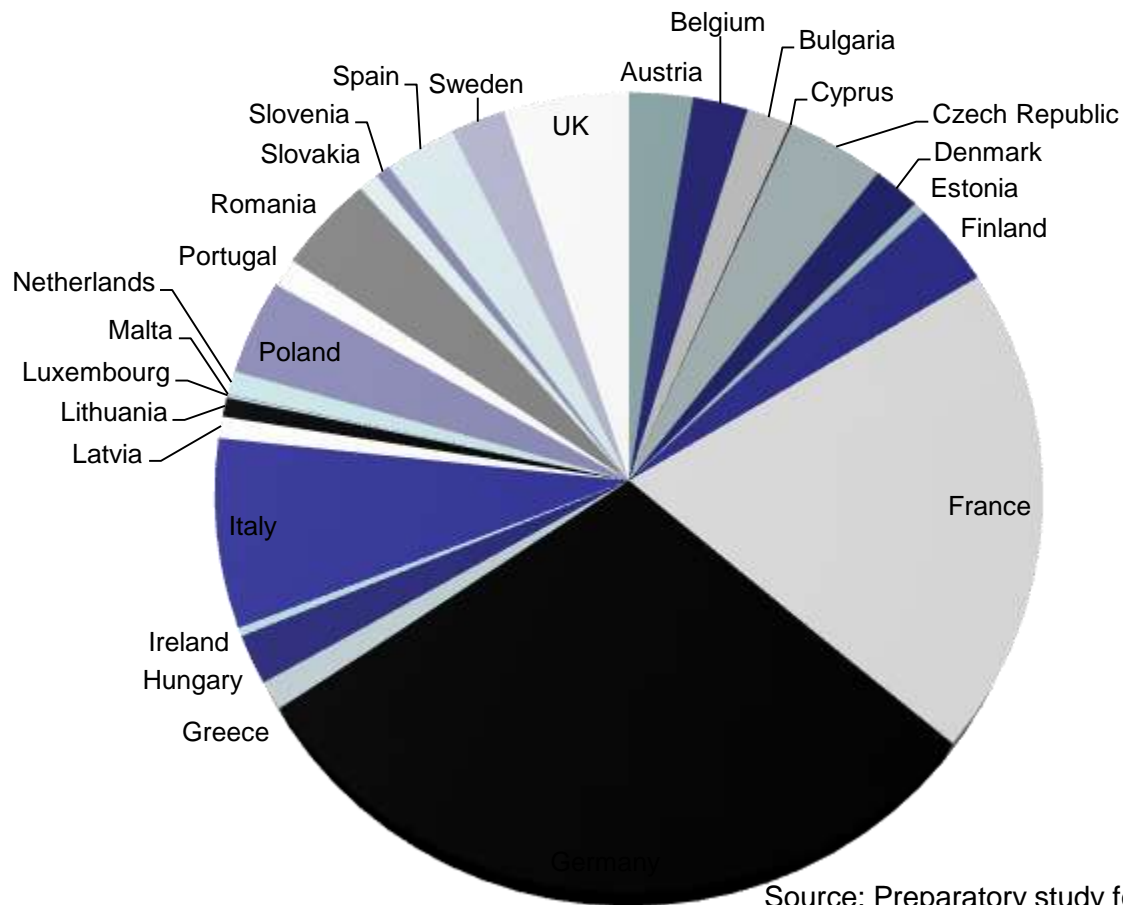
Source:
HKI



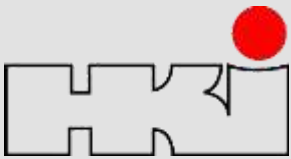
European sales in 2007

Department of domestic heating and cooking appliances

Hand stoked stoves



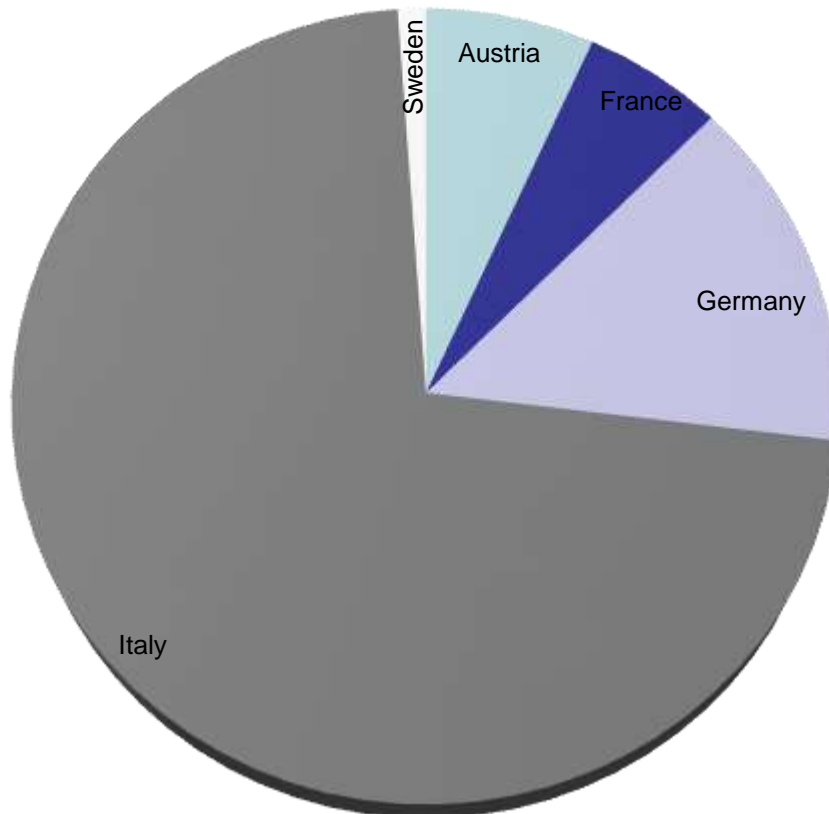
Source: Preparatory study for Eco-design Requirements of EuPs Lot 15



European sales in 2007

Department of domestic heating and cooking appliances

Automatically stoked stoves i.e. pellet stoves



Member State	Automatically stoked stoves
Austria	12.000
France	10.000
Germany	25.500
Italy	127.000
Sweden	2.000
Total	176.500

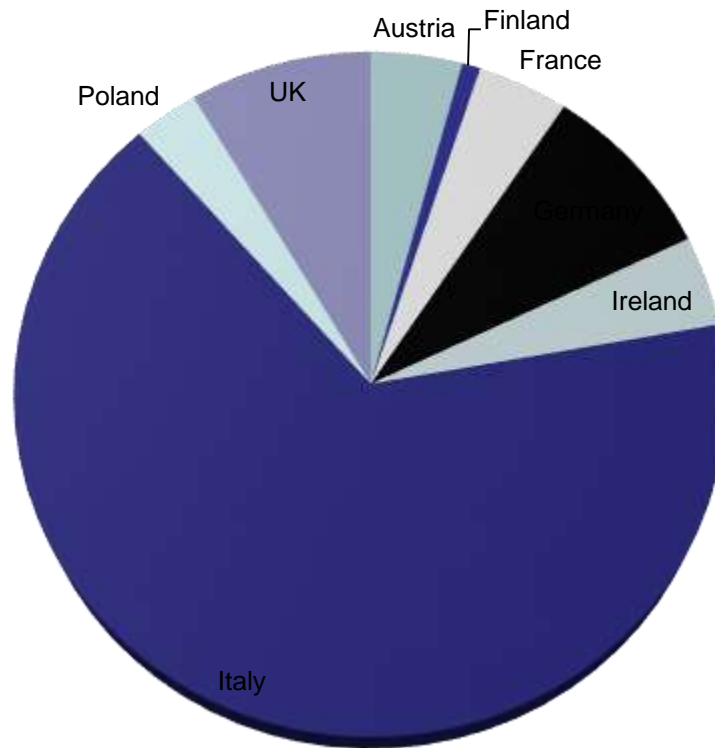
Source: Preparatory study for Eco-design Requirements of EuPs Lot 15
For other member states no data are available or negligible.



European sales in 2006-2007

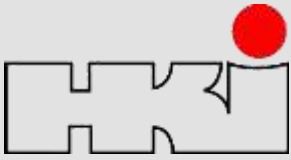
Department of domestic heating and cooking appliances

Cookers



Member states	Cookers
Austria	10.000
Finland	2.000
France	10.000
Germany	20.000
Ireland	10.000
Italy	155.000
Poland	7.100
UK	20.000
Total	234.100

Source: Preparatory study for Eco-design Requirements of EuPs Lot 15
For other member states no data are available or negligible.



HKI Industrial association

Market and Statistics

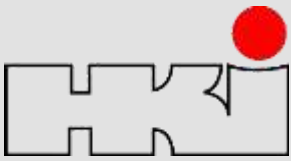
Types of Appliances

Requirement Overview

Emission and Efficiency Requirements

Research and development

HKI activity examples



Types of appliances on the market

Department of domestic heating and cooking appliances

Room heater

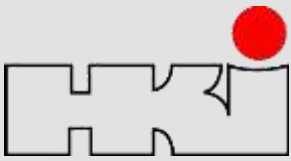


source: Buderus

Inset appliances



source: Buderus



Types of appliances on the market

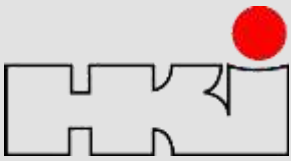
Department of domestic heating and cooking appliances

Inset appliances



Source: unknown





Types of appliances on the market

Department of domestic heating and cooking appliances

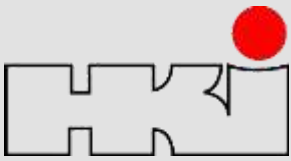
Inset appliances



Source: Buderus



Source: Hagos



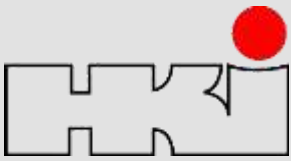
Types of appliances on the market

Department of domestic heating and cooking appliances

Inset appliances



Source: Spartherm



Types of appliances on the market

Department of domestic heating and cooking appliances

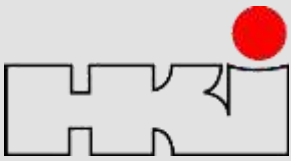
Pelletstove



Source: Buderus



Source: Wodtke



Types of appliances on the market

Department of domestic heating and cooking appliances

Heat release appliances

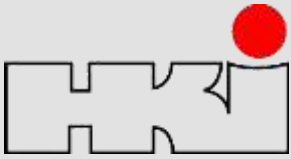


Quelle: Wolfshöher Tonwerke GmbH & CO KG

Cookers



Quelle: Wamsler



HKI Industrial association

Market and Statistics

Types of Appliances

Requirement Overview

Emission and Efficiency Requirements

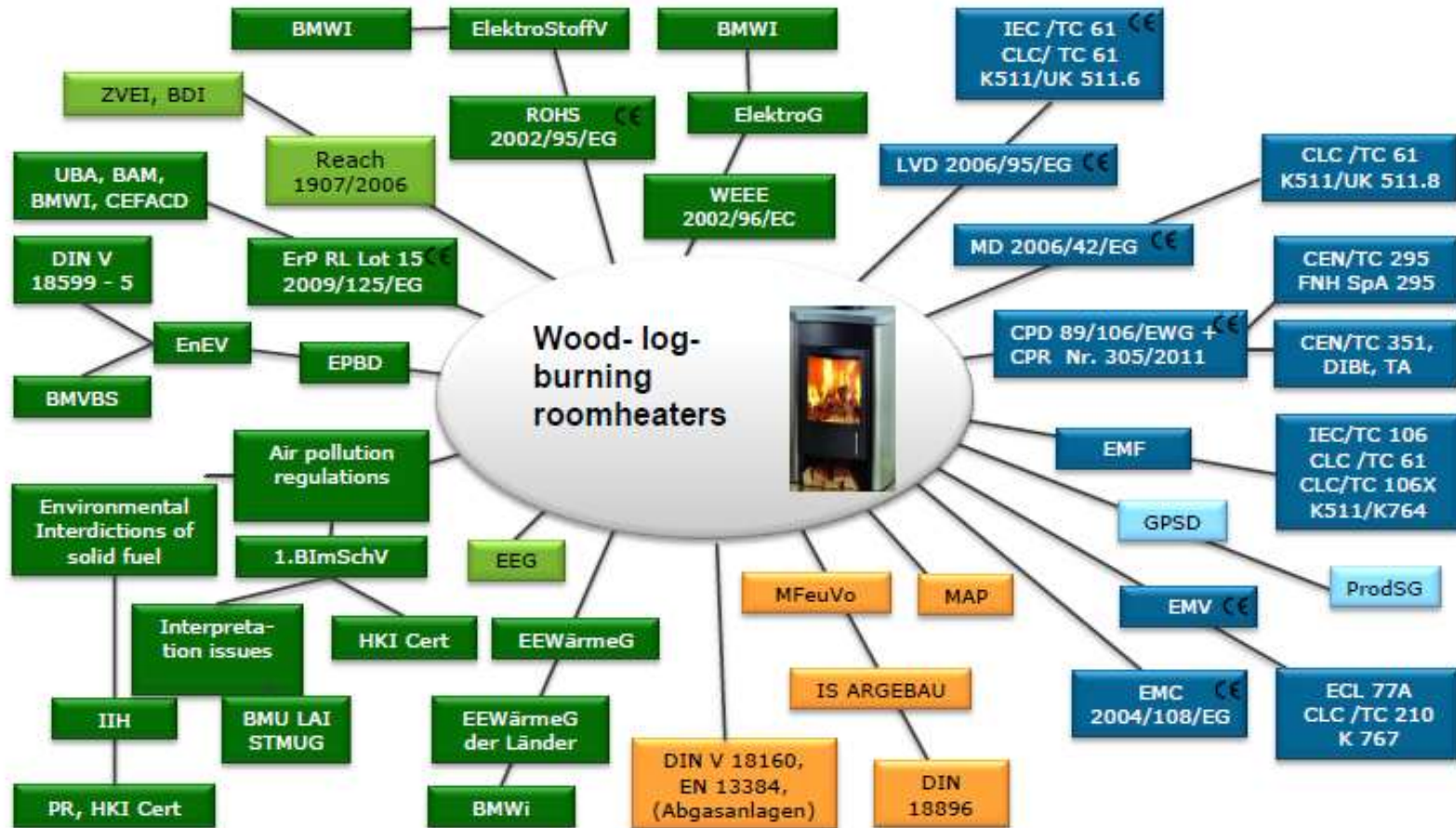
Research and development

HKI activity examples



Laws and regulations

Department of domestic heating and cooking appliances



Legend:

Environment

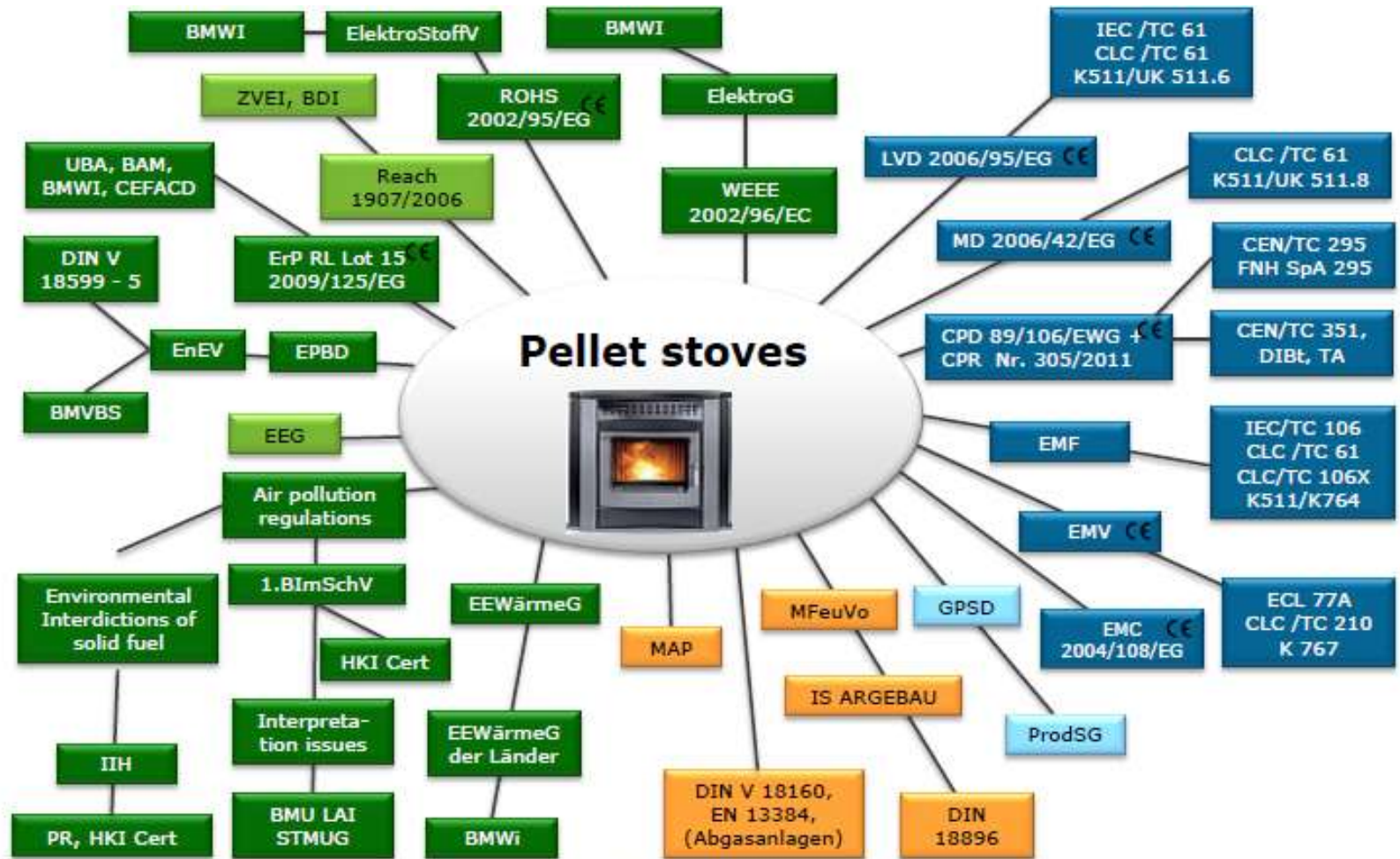
Installation

Security



Laws and regulations

Department of domestic heating and cooking appliances

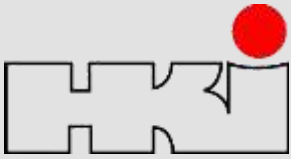


Legend:

Environment

Installation

Security



HKI Industrial association

Market and Statistics

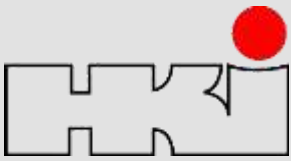
Types of Appliances

Requirements Overview

Emission and Efficiency Requirements

Research and development

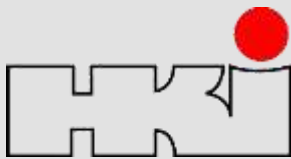
HKI activity examples



Overview on regulation on efficiency and emissions in the EU

Department of domestic heating and cooking appliances

	Regulation
EU	Ecodesign Lot 20 – from 2022
DE	1. BImSchV
AT	15 a
CH	LRV – clean air act CH
DK	Stove-regulation
FR	Tax reducement - Crédit d` impot



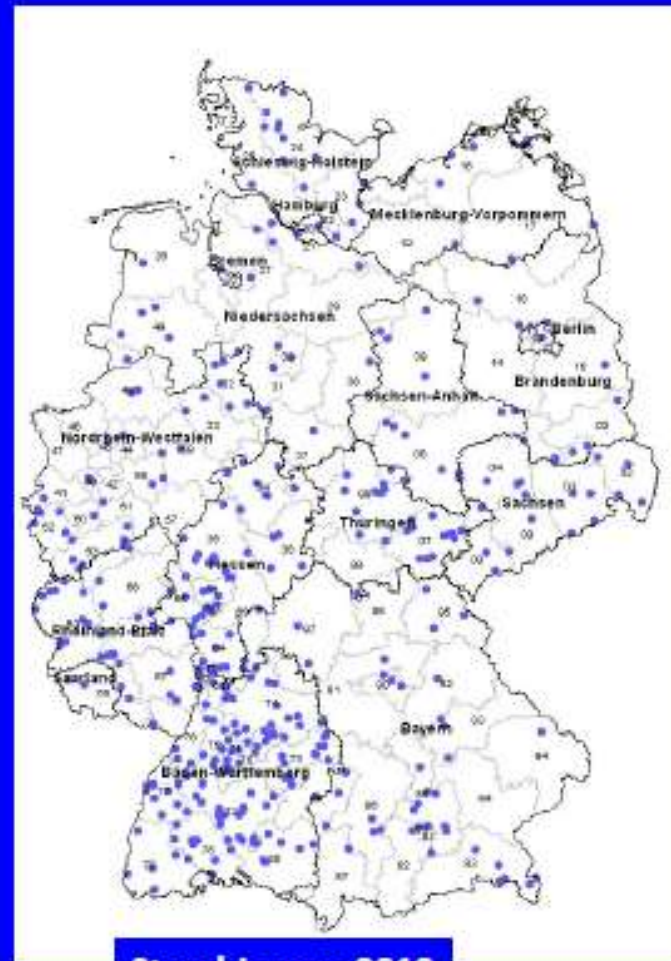
Regional / communal regulation on efficiency and emissions in the EU

Department of domestic heating and cooking appliances

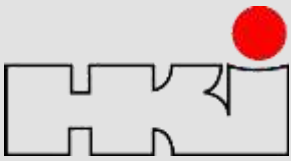
Kommunale Eingriffe in den Wärmemarkt

Bundesland	Anzahl
Schleswig-Holstein	22
Hamburg	1
Bremen	1
Niedersachsen	69
NRW	60
Mecklenburg-Vorpommern	19
Brandenburg	18
Berlin	89
Sachsen-Anhalt	12
Thüringen	93
Sachsen	31
Hessen	73
Rheinland-Pfalz	78
Saarland	4
Baden-Württemberg	287
Bayern	66
Summe	923

und das ist nur die
Spitze des „Eisbergs“ !



Stand Januar 2012

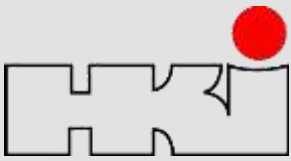


1.BImSchV in Germany

Department of domestic heating and cooking appliances

- Requirements to new appliances
 - in two steps
 - Confirmation with type test measurement, extract :

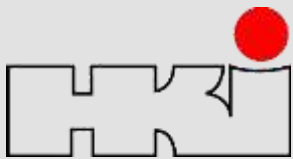
Type of appliances	Requirements on emissions [g/m ³]				Efficiency [%]
	CO	PM	CO	PM	
	1.Stage: from 22.03.2010		2.Stage: after 31.12.2014		from 22.03.2010
Roomheater EN 13240	2,0	0,075	1,25	0,04	73
Inset appliance, EN13229	2,0	0,075	1,25	0,04	75
cookers, EN12815	3,0	0,075	1,5	0,04	70
Pelletstove EN14785 without water heat exchanger	0,4	0,05	0,25	0,03	85
Pelletstove EN14785 with water heat exchanger	0,4	0,03	0,25	0,02	90



1.BImSchV in Germany

Department of domestic heating and cooking appliances

- Regulation for existing appliances
 - appliances installed before 22.3.2010
 - „Requirements: $PM \leq 0,15 \text{ g/m}^3$ $CO \leq 4 \text{ g/m}^3$
 - exclusions:
 - Not commercial used cookers/ovens below 15 kW
 - Open appliances
 - Individual appliances (TROL)
 - Appliances in dwelling unit (as only heat supply)
 - Appliances before 01.01.1950

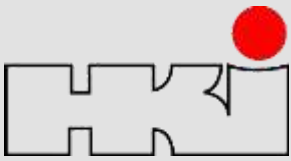


Austria regulation referred to Art 15a B-VG

Department of domestic heating and cooking appliances

- From 01.01.2015 – at nominal heat output

Type of appliance	Standard	Efficiency [%]	CO [mg/MJ]	Dust [mg/MJ]	NO _x [mg/MJ]	C _n H _m [mg/MJ]
Roomheater fired by wood	EN 13240, EN 13229, EN 15250	80	1100	35	150	50
Roomheater fired by coal	EN 13240, EN 13229, EN 15250	80	1100	35	100	80
Cooker for wood	EN 12815	72	1100	35	150	50
Cooker for coal	EN 12815	73	1100	35	100	80
Appliances fired by solid fuels, automatic fuelled biogenous	EN 14785	80	500	25	100	30

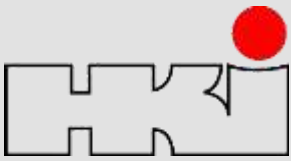


Austria regulation referred to Art 15a B-VG

Department of domestic heating and cooking appliances

- From 01.01.2015 – at partial load

Type of appliance	Standard	Efficiency [%]	CO [mg/MJ]	CnHm [mg/MJ]
Roomheater fired by wood	EN 13240, EN 13229, EN 15250	80	1100	50
Roomheater fired by coal	EN 13240, EN 13229, EN 15250	80	1100	80
Cooker for wood	Herde für Holz EN 12815	72	1100	50
Cooker for coal	EN 12815	73	1100	80
Appliances fired by solid fuels, automatic fuelled biogenous	EN 14785	80	500	30

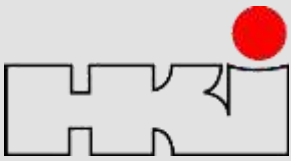


Swiss Regulation for clean air

Department of domestic heating and cooking appliances

- Emission for wood logs refers to 13% O₂ and for lignite to 7%O₂
- Valid limit value from 01.01.2011:

Type of appliance	Standard	CO [mg/m ³ N]	PM [mg/m ³ N]
Roomheater for solid fuels	EN 13240	1500	75
Inset appliances including open fires for solid fuels	EN 13229	1500	75
Cookers for solid fuels	EN 12815	3000	90
Residential space heating appliances fired by wood pellets	EN 14785	500	40

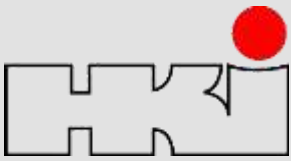


Danish Order regarding air pollution from solid fuel combustion plants

Department of domestic heating and cooking appliances

- The emission value refers to 13% O₂.
- From 26.07.2015

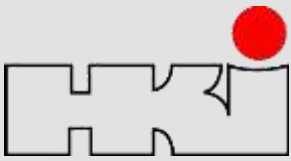
Type of appliance	Standard	Dust (PM) [mg/m ³]	C _n H _m [mg/m ³]
Roomheater	EN 13240	40	150
Inset appliances	EN 13229	40	150
Heat release appliances	EN 15250	40	150
Pelletstoves	EN 14785	40	150



Europe: Eco-Design guideline Lot for heat- and cooking utensils

Department of domestic heating and cooking appliances

- Lot 1 „Boilers and combiboilers“ + Los 2 „Water heaters“
- Lot 15 “Solid fuel boilers”
- Lot 20 und Los 21 „Local space Heater”
- Lot 22 + 23 „Domestic and commercial ovens, hobs and grills”



Ecodesign Lot 20 „Local room heating“

Department of domestic heating and cooking appliances

- Coming into force Eco label
 - estimated to 1. January 2018
 - all roomheater get the same label
- Coming into force Eco design
 - Validity of minimum requirements from 2022, until then in Germany 1.BImSchV is valid
 - 3 methods of particulate measurement
 - Calculation of Seasonal Efficiency
 - No planning reliability because national regulations are still possible (see Danish regulation with 30 mg/m³ from 2017)



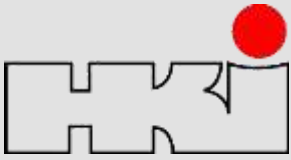


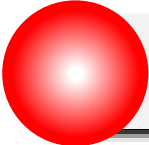
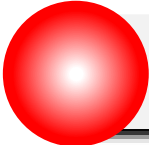
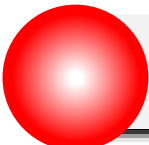
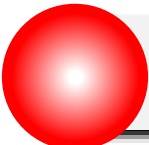
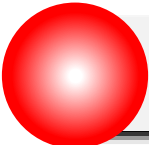
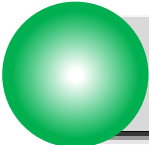

ERP Lot 20 Requirements in Europe

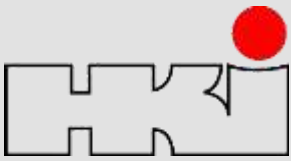
Department of domestic heating and cooking appliances

Coming into force: 2022
national regulations until then in force

	Seasonal Efficiency	PM (mg/m ³)	OGC (mgC/m ³)	CO (mg/m ³)	NOx (mg/m ³)
Closed fronted	65%	40	120	1500	200 300 fossil
Open fronted	30%	50	120	2000	200
Closed fronted Pellets	79%	20	60	300	200
Cookers	65%	40	120	1500	200 300 fossil



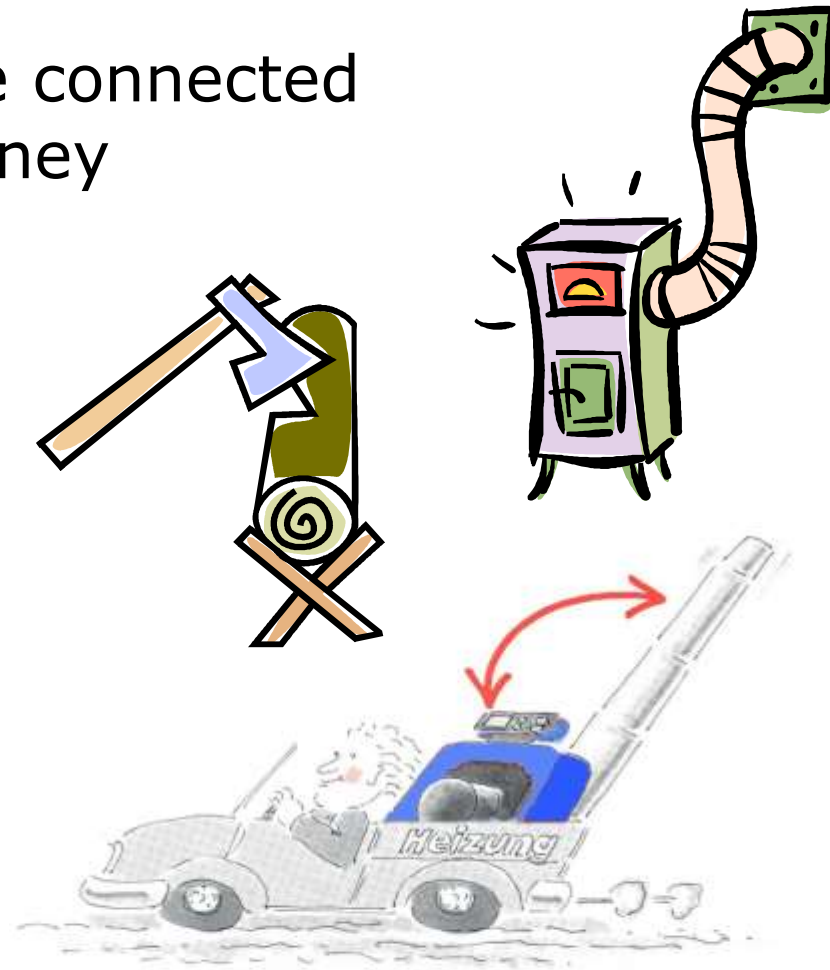
-  HKI Industrial association
-  Market and Statistics
-  Types of Appliances
-  Requirements Overview
-  Emission and Efficiency Requirements
-  Research and development
-  HKI activity examples



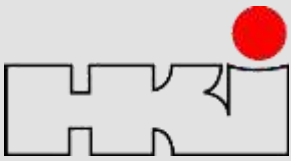
Safe and environment-friendly solid-fuel burning appliances

Department of domestic heating and cooking appliances

- **1** The right appliance connected to the fitting chimney
- **2** The right fuel
- **3** The right use of the appliance



The chimney belongs to the appliance, as the exhaust to the car!



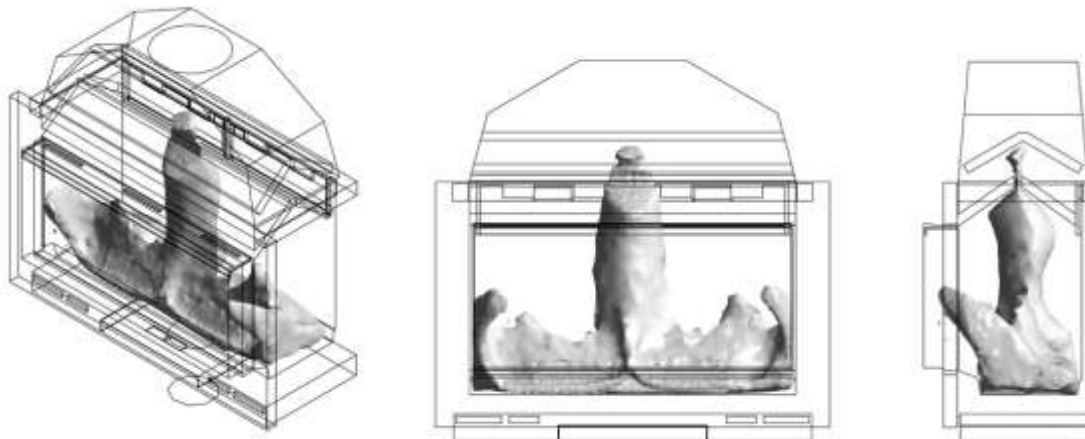
Research and development

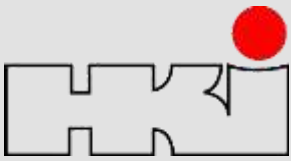
Department of domestic heating and cooking appliances

„Low emission appliances“



- CFD-Simulations of 3-D models
- Different air inlets and deflection were tested
- Better combustion conditions with using numeric fluid dynamics
- Optimization of combustion conditions





Research and development

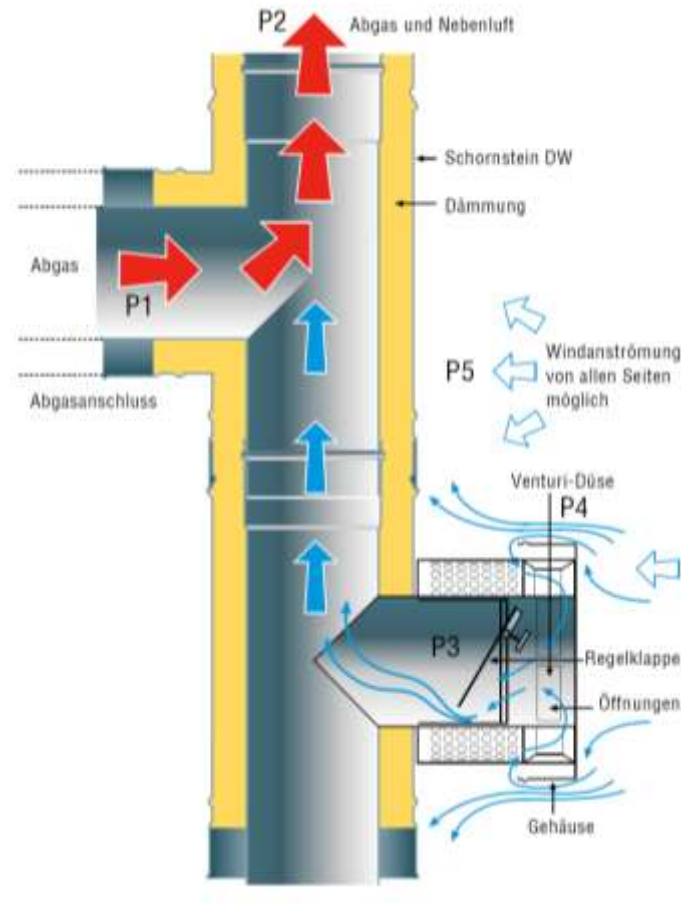
Department of domestic heating and cooking appliances

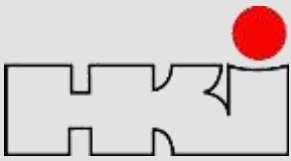
Draught limiter



Funktionsprinzip Zugbegrenzer DW (außen)

- stable draught
- Compensation thermal and atmospheric draught variation
- Reduction of Emissions through stable combustion





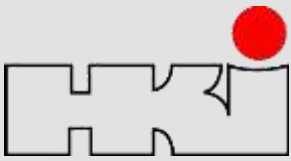
Research and development

Department of domestic heating and cooking appliances

Wood log-Pellet-Combi appliances

- Roomheater and tile stoves, which can operated with wood logs and pellets
- Connection between pellets and woodlogs combustion technique





Research and development

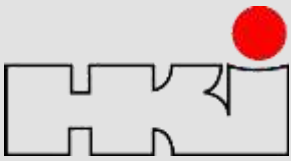
Department of domestic heating and cooking appliances

Absorber appliances

- Water heat exchanger absorber appliances
- Hybrid- heating systems with water containing pipes

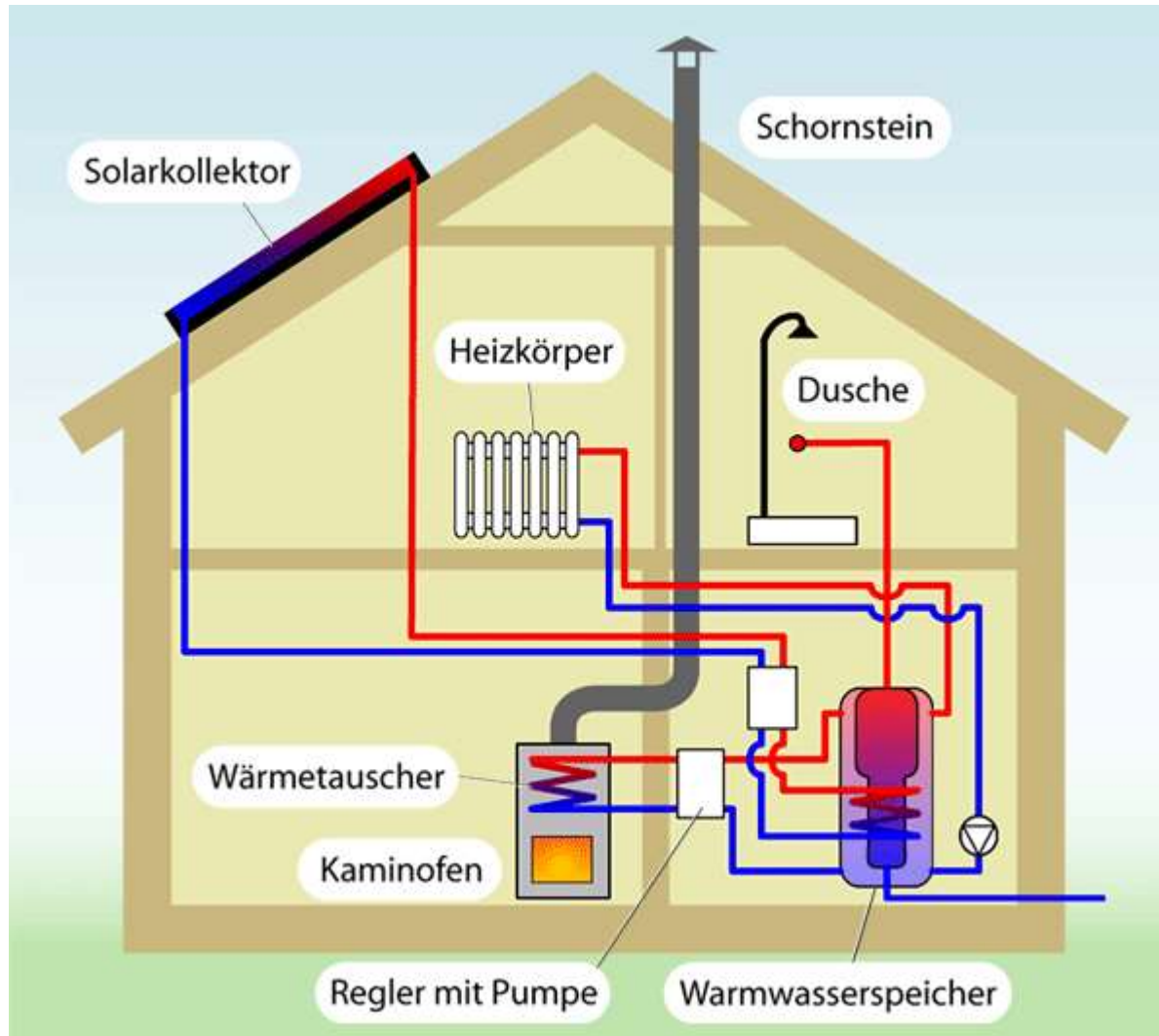


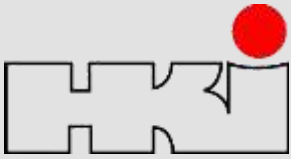
Source: Tulikivi OYJ



Research and development

Department of domestic heating and cooking appliances





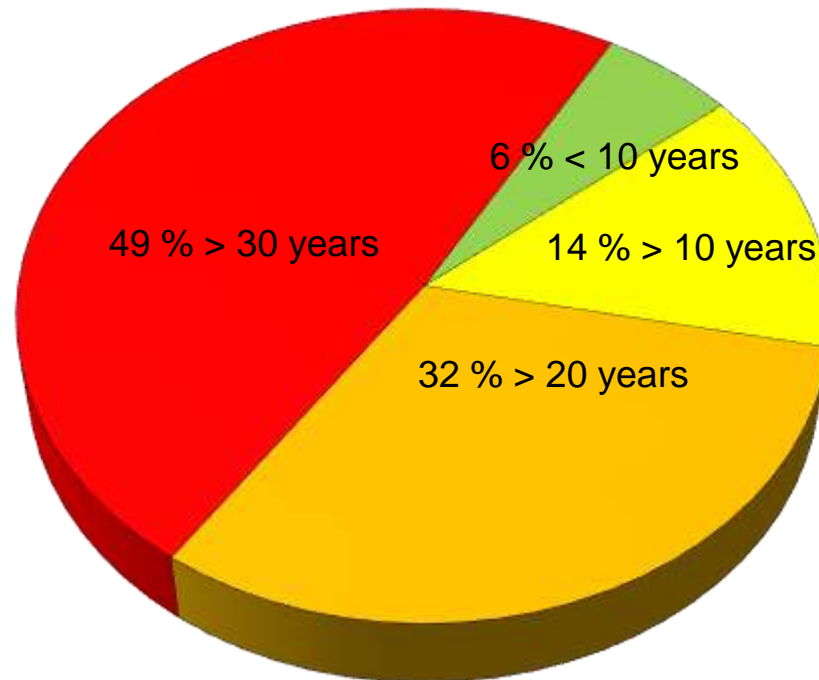
- HKI Industrial association
- Market and Statistics
- Types of Appliances
- Requirements Overview
- Emission and Efficiency Requirements
- Research and development
- HKI political activity - examples



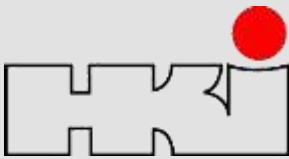
Emission overview

Department of domestic heating and cooking appliances

Particle emission portions from appliances fired by solid fuels depending on age



State July 2015



Emissionlabel for old appliances

Department of domestic heating and cooking appliances



<<bBSF>>

Emissionseinstufung von <<Feuerstätte>> <<Aufstellort>>	
<input type="checkbox"/>	 1.BImSchV Stufe 2: sehr emissionsarm betreibbar
<input type="checkbox"/>	 1.BImSchV Stufe 1: emissionsarm betreibbar
<input type="checkbox"/>	 Einhaltung der Anforderungen an bestehende Öfen nachgewiesen: mit geringer Emission betreibbar
<input type="checkbox"/>	 Bis Baujahr 2010: ist außer Betrieb zu nehmen oder nachzurüsten bis 31.12.2024
<input type="checkbox"/>	 Bis Baujahr 1994: ist außer Betrieb zu nehmen oder nachzurüsten bis 31.12.2020
<input type="checkbox"/>	 Bis Baujahr 1984: ist außer Betrieb zu nehmen oder nachzurüsten bis 31.12.2017
<input type="checkbox"/>	 Bis Baujahr 1974: ist außer Betrieb zu nehmen oder nachzurüsten bis 31.12.2014
<input type="checkbox"/>	 Bis Baujahr 1950 sowie Alleinheizung*, Grundofen, Herd, Backofen oder Badeofen: darf weiter betrieben werden**
<input type="checkbox"/>	 Offener Kamin: darf weiter betrieben werden, aber nur gelegentlich**

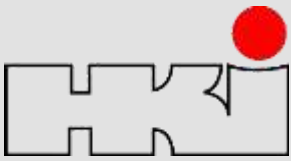
* Feuerstätten in Wohneinheiten, deren Wärmeversorgung ausschließlich über Einzelraumfeuerungsanlagen erfolgt.

** Verursacht hohe Emissionen. Im Sinne der Umwelt wird Außerbetriebnahme empfohlen.

Datum, Unterschrift

**HKI- Initiative in Cooperation with
Association of German Chimney
Sweeper (ZIV)**

**Label for old appliances:
Emission Classification for old
appliances**

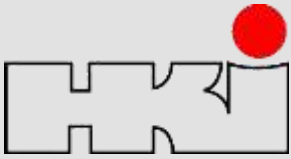


HKI CERT Database

Department of domestic heating and cooking appliances

- Confirmation of requirements German regulation 1.BImSchV
- Requirements of the European Standards for the particular product (e.g. EN 13240) – certification by independent third party
- protection high-quality, low -emission and efficient appliances fired by solid fuels
- Environmentally acceptable combustion
- Indicator of future-proof appliances
- Assistance of user <http://cert.hki-online.de>





Thank you for your attention

