

KABLITZ

FOUNDED 1901



RENEWABLE ENERGY SOLUTIONS FOR THE NEXT GENERATIONS



„BIOMASS and WASTE to Energy“

N° 24,320



A.D. 1906

Date of Application, 31st Oct., 1906

Complete Specification Left, 29th Apr., 1907—Accepted, 12th Sept., 1907

PROVISIONAL SPECIFICATION.

Improvements in Feed Water Heaters for Boilers.

I, RICHARD KABLITZ, of 9 Albert Street, Riga, Russia, Engineer, do hereby declare the nature of this invention to be as follows:—

This invention relates to a feed water heater, in which escaping gases from the furnace are used to raise the temperature thereof, while the said feed water is flowing through the ribbed or corrugated tubes of the heater. The novelty consists in the arrangement of the ribbed tubes in the device composing the body of the apparatus, and in the provision of cleaning apertures in the connecting channels, between said pipes, in such a way that all parts of the pipes can be blown through from the said apertures.

In my improved feed water heating apparatus the covering plate is a hollow chamber, which serves both as top of heating flue, and as a support to which the ribbed pipes or tubes are attached or suspended and in which said pipes are duly connected in a zigzag course one to the other by means of enclosed compartments or channel pipes said connection being namely, the first to the second, the second to the third, the third to the fourth and so on, the lower ends of said pipes being also connected together in a corresponding manner by means of the usual cap or end pieces.

Each group of said ribbed pipes is provided with apertures for cleaning purposes, so that several can be blown through together from said cleaning apertures, anyone of the latter being able to operate all the tubes in proximity to it.

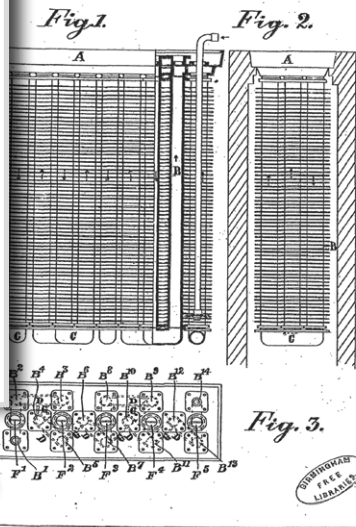
In order to get rid of any escaping gases that may collect in the said corrugated pipes or tubes, the enclosed channels or compartments are connected by other smaller tributary channels or pipes.

Dated this 30th day of Oct. 1906.

S. S. BROMHEAD,
Agent for Applicant,
33 Cannon St. London, E.C.

A.D. 1906, OCT. 31, N° 24,320,
KABLITZ'S COMPLETE SPECIFICATION.

(1 SHEET)



FROM 1901 TO TODAY



KABLITZ Company History since 1901:

*Having the courage to provide
unconventional solutions*

*Future tasks already being carried out
for the clean future for the next generations.*

1901 – A good year for historic moments!

*Together with Dr Reinhold Geist,
Professor Charles Clark and R. von
Büingner (engineer), Richard Kablitz
founded the Riga Society for Economy
of Steam Generation Costs and Heating
Control (invention, development and
construction of the Kablitz gilled tube
economisers, mechanical overthrust
firing systems and air heaters).*

*Will power, industry and ideas featured
on the founders' list, which, nowadays,
would be called a business plan.*



■ General Manager
Andreas Hehn-Mark,
since 2007

In an age of global competition and increasing comparability of products and companies, our history provides an impressive demonstration of who we are and why customers can rightfully rely on our quality, dependability and innovativeness.

Andreas Hehn-Mark
ANDREAS HEHN-MARK

The Changing Face of Kablitz

1901 - today

KABLITZ looks back on many successful years of company history and ventures a look into the future.

We are in the year 1901. Nobel Prizes are being awarded for the first time, with Conrad Röntgen receiving the Nobel Prize for Physics. Carl Benz is building petrol-driven vehicles, thereby making industrial history. Gottlieb Daimler and Wilhelm Maybach are making industrial history, producing the „riding car“ – the first motorcycle with a petrol engine.

1899-1929

- 1899 Invention finned heating surfaces
- 1901 **Company formation**
- 1908 Economiser patent
- 1912 Soot blower cleaning patent
- 1918 Patent for automatic loading (Germany)

■ Applications were made for over 25 patents in the first 20 years

- 1920 Development and construction of the first universal grate
- 1921 Patent for overthrust grate
- 1928 Patent for flat grate
- 1929 Vertical gilled tube pre-heater



1930-1949

- 1931 Patent for streamlined air heaters
- 1933 Cross-flow heat exchanger made of gilled plates
- 1936 **35 years Kablitz**
- 1939 Patent for secondary air conduit
- 1939 Patent for grate firing for low calorific values
- 1940 Expropriation and flight of the Kablitz family to Warthegau (Posen, Poland)
- 1942 Economiser patent
- 1943 Richard Kablitz has been a member of the VDI (Association of German Engineers) for 50 years and becomes an honorary member. Re commencement in Warthegau
- 1945 Vogtland falls under Soviet control
- 1945 Renewed flight to Marbach/Tauber
- 1949 **Plans for the plant in Lauda are formed**

1950-1959

- 1951 Move into the new company building in Lauda
- 1956 Patent for overthrust heating system; Green England becomes licence holder
- 1959 The founder of the Company dies at the age of 91
- 1959 In the space of a few years (1959-1965), 24 large-scale tankers for Onassis were equipped with heat exchangers

1959 **Richard Kablitz jr. takes over management of the company with his brothers-in-law, J. Kaschkin and P. v. Rudakow**



1960-1969

- 1961 **More than 60 patents have now been applied for**
- 1962 Patent for cross-flow plate heat exchanger
- 1962 Patent for soot blower on gilled heat exchanger
- 1966 **65 years Kablitz**
- 1967 Richard Kablitz jr. dies on 9 December
- 1968 **His grandson, Gunnar Plawneck, takes over management of Kablitz**



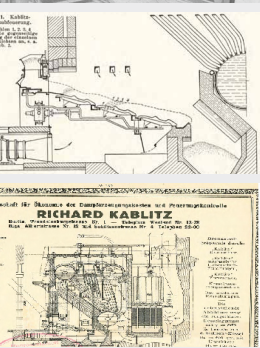
1970-1979

- 1970 Patent for double-shell radiation recuperator
- 1971 Kablitz cooperates with Krauss Maffei
- 1976 **75 years Kablitz**
- 1979 **Kablitz is sold to new investors, the Döriges family and Mr Fox**



1980-1989

- 1981 **80 years Kablitz**
- 1984 Patent for grate bars for inclined grate
- 1986 Patent inclined grate for combustion system
- 1987 Kablitz takes over gilled tube manufacture from Mannesmann in Hilden
- 1988 **Lentjes-Kablitz is created, under managing directors W. Kapf and Dr. Peters**



Energiegewinnung aus Brennstoffen mit geringen Brennwerten und brennbaren Abfällen – seit 65 Jahren





1990-1999

■ Start of R. Kablitz & Mitthof GmbH

1990 Takeover by Hans Mitthof; the company, R. Kablitz & Mitthof, is created

1994 The first big projects arrive, e.g. Homanit Losheim

1994 "Brandy" foundry in Czech Republic

1995 Kronospan Luxemburg I, the first inclined afterburning chamber ("Big Bertha") is produced

1996 Kablitz obtains quality seal ISO 9001

1999 Kaindl Salzburg, BHT Ebersdorf, Kronopol Zary



2000-2005

2000 First steam boiler plant Hamberger Rosenheim, 30 t/h

2000 Masisa Brazil, two plants at 36 MW

2001 100 years Kablitz

2001 First horizontal pass boiler (tailend boiler), SEC Dresden 30 t/h, waste wood A I - A IV

2001 Kronospan Lampertswalde, 43 MW

2002 Kronospan Chirk, 22 MW

2002 SEC Buchen, 30 t/h steam boiler, waste wood A I - A IV

2003 Pfeifer Kundl, 30 t/h steam boiler

2004 SEC Traunreut, 22 t/h steam boiler, waste wood A I - A IV

2005 Schöbwendter Saalfelden, 24 t/h steam boiler

2005 Borchers Borken, 39 t/h Dampfkessel, Altholz A I - A IV

2005 Tegra I Domat/Ems, 42 t/h steam boiler



2006-2009

2006 Norbord Genk, 49 MW

2006 Stadtwerke Düsseldorf Garath, 23 t/h steam boiler

2006 Dynamo Russia, thermal oil boiler

2006 Heggenstaller Unterbernbach, 55 t/h steam boiler

2007 Andreas Hehn-Mark is appointed General Manager

2007 Dieffenbacher Toms, 95 MW

2007 Tegra II Domat/Ems, 42 t/h steam boiler

2008 Kronospan Menznau, 58 MW

2008 Getec Goldenstedt, 11 MW with ORC

2009 Dalkia UK Chilton, 67 t/h steam boiler

2009 Bioenergie Aschaffenburg, thermal oil boiler 12 MW

2009 Kronospan Luxemburg II, 30 MW



2010-2014

2010 20 years R. Kablitz & Mitthof GmbH

2010 RWE Kehl, 23 t/h steam boiler

2011 First saturated steam boiler Dalkia France Amiens, 28 t/h steam boiler

2011 RWE Goch, 31 t/h steal boiler

2012 ESWE Wiesbaden, 49 t/h steam boiler, waste wood A I - A IV, with flue gas cleaning in accordance with 17th Federal Immissions Control Act (equivalent to WID)

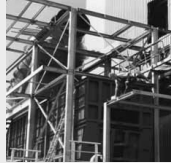
2012 Stadtwerke Bad Mergentheim, thermal oil boiler 9,4 MW with ORC

2013 Andreas Hehn-Mark will be participant

2014 Orafti Permucco, Chile 66 t/h steam boiler

2014 Kronospan Jihlava, two hot-gas generator each with 40 MW

2014 Norbord South Molton firing system, 6,2 MW



2015

2015 Kronospan Brasov hot-gas producer 60 MW

2015 Kronospan Burgos thermal oil boiler 27 MW

2015 Takeover of the shares of H. Mitthof by the Italian company Engitec

2015 Thomas Kaspar is appointed as a further managing director



2016-2017

■ Start of Richard Kablitz GmbH

2016 The new company name is Richard Kablitz GmbH

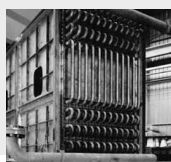
2016 Kronospan Mielec, thermal oil boiler 27 MW

2016 TTKP Tisza, 2 saturated steam boiler, each 21 MW

2016 Steico, steam boiler 30 to

2017 Trojan, Sattedampfkessel 26 to

2017 Sunchang Korea, 64 to steam





Saving Energy, Generating Energy in an Environmentally Friendly Manner

The world is choking on waste, with landfill sites overflowing. Raw materials, on the other hand, are becoming ever scarcer and energy costs ever higher. What could be more natural than saving energy or using combustible waste material for environmentally friendly power generation? This is precisely the special field of expertise of Richard Kablitz GmbH, which has been grappling with this demanding challenge for more than a hundred years now.

Richard Kablitz GmbH *Then and Now*



Richard Arnold Kablitz
Inventor and entrepreneur

* Eichhof (Livl.) 7/05/1868
† Lauda (Baden) 11/07/1959



Administrative building RIGA ...
... where it all began!



Painting of Richard Kablitz GmbH



Energy from Biomass

KABLITZ is developing from being a pure machine construction company into a system provider, the growth in its scope of work thereby becoming a key factor for current and future projects.

Biomass currently already has an important share of renewable energies.

Its advantage: It is an indigenous energy source that does not need to be imported from distant regions of the world. During combustion the amount of CO₂ released to the atmosphere is equal to the amount the biomass has collected during its growth. This makes our energy **carbon neutral**.

Furthermore, **biomass**, unlike sun and wind, is year round and **constantly available as well as storable**.

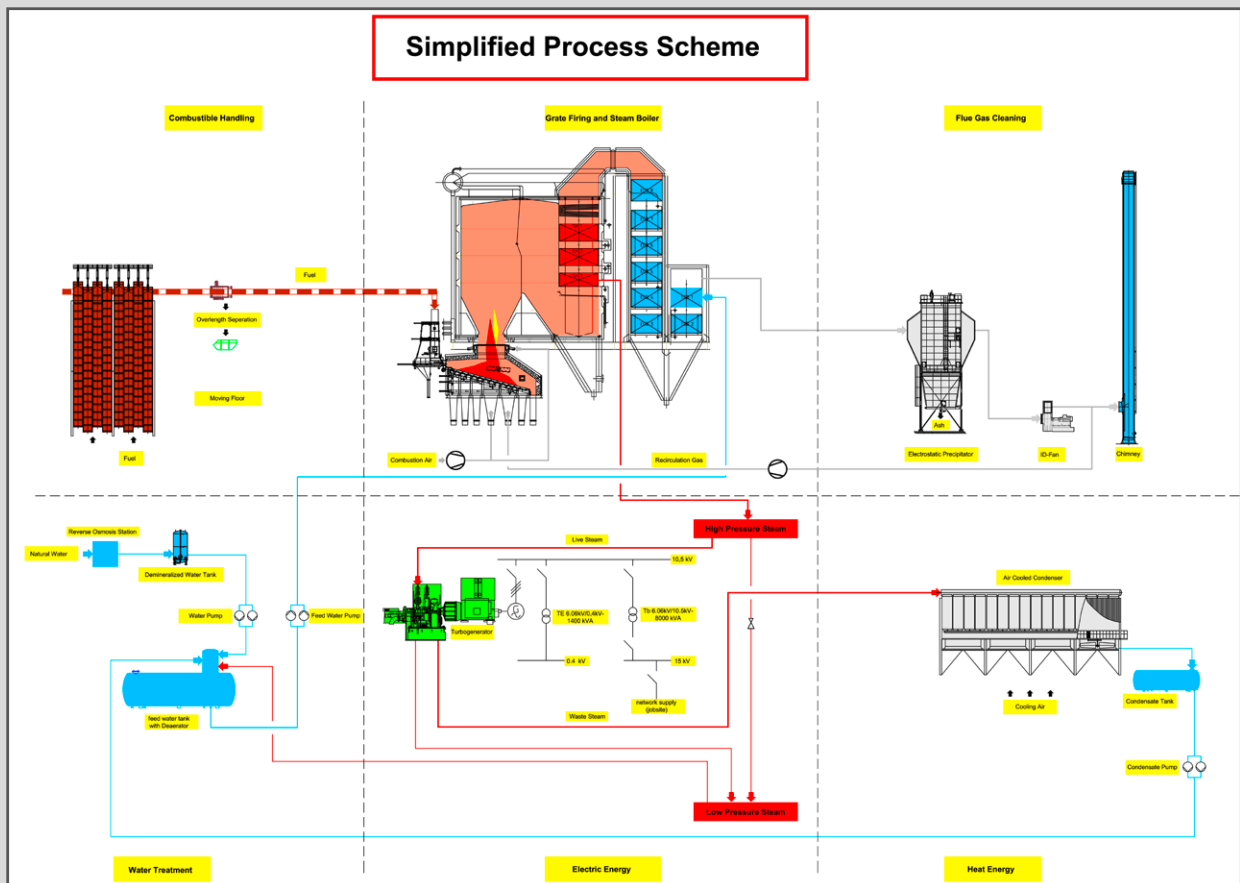
It is therefore being accorded increasing importance throughout the world.



✓ Heat exchanger with over 12,800 m² heating surface and over 300 t casting

100 MW hot gas generator with thermal oil heater ✓





Energy for All Requirements

Each plant is tailored to customers' specific requirements.

Our long-standing experience as a general contractor enables us to have the right concept for every application:

Steam turbine power stations

for the generation of electricity, process steam and heat in the 1 to 25 MWeI power output range.

RDF-power stations

for the generation of electricity, process steam and heat in the 1 to 25 MWeI power output range.

ORC power stations

for the generation of electricity and heat in the 1 to 4.2 MWeI power output range.

Heating plants

for the generation of process steam and heat upwards of 5 MWth net power output.



✓ 67 t/h steam generator with 65.6 m² reciprocating grate





Energy from Waste/RDF

“For a Clean World for next Generations“

Kablitz - the system provider even for “difficult” fuels such as waste, RDF, fluff, etc.

At the present time, owing to the worldwide population growth, more and more waste is accrued.

While a big part of the waste can be recycled, there are still large quantities of materials that no longer accumulate usable residues.

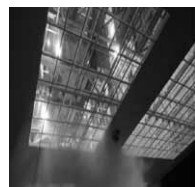
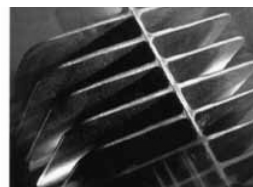
These waste fractions referred to as RDF, SRF or fluff, may for example no longer be dumped in Europe and therefore prove to be good, regionally available fuel with short transport routes.

With its know-how, Kablitz is in position to supply the systems that can generate environment-friendly electric and thermal energy with these fuels.

✓ 55 t/h steam generator with patented afterburning chamber



■ Im Werk vollkommen vo gefertigte, komplett montierte Einheiten



Environmentally Friendly Energy Generation from Biomass

Are you **looking for intelligent technologies** for generating energy from solid fuels?

Do you have questions about thermal utilisation of wood waste and combined heat and power generation?

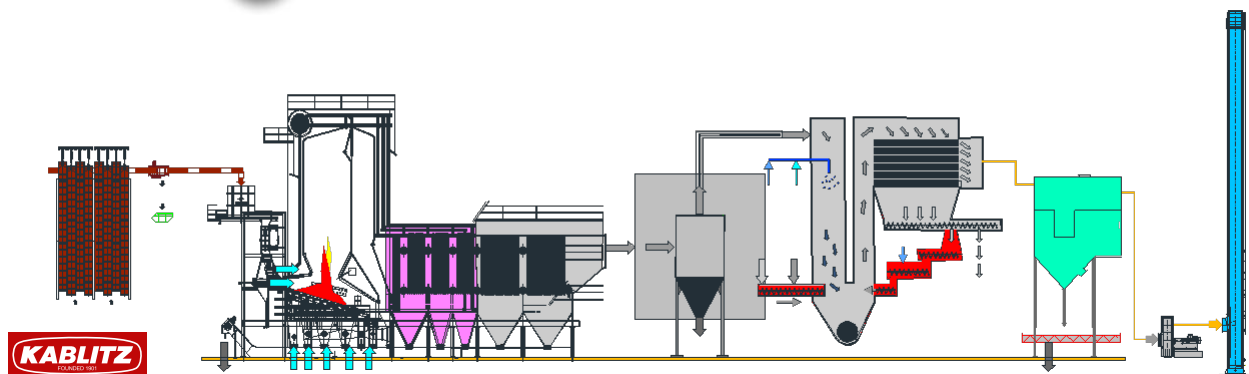
If so, we are the right partner for you: since 1901 efficient and environmentally friendly energy production from biomass and other solid fuels has been our enduring strength.

 sales@kablitz.de

KABLITZ manufactures and supplies

General contractor for:

- Complete Waste to Energy power stations
- Complete solid fuel plants
- Complete boiler systems
 - steam boilers
 - thermal oil boilers
 - smoke tube boilers
- Services
- Overthrust and reciprocating grates
- Cast-iron gilled heat exchangers
- Glass tube heat exchangers
- Customized casting from our own foundry



■ *Grate bar produced in-house*



✓ *Heat exchanger with over 12,800 m² heating surface and over 300 t casting*

✓ *100 MW hot gas generator with thermal oil heater*



SERVICES

Boiler Plants

Apart from pure firing systems for biomass and waste, our core competencies also include steam, hot water and thermal oil boilers, all in compliance to the Directive 2010/75/EZ on industrial immissions - Waste Incineration Directive (WID) ...

- Water tube boilers (up to 100 t/h)
- Smoke tube boilers (up to 25 MW)
- Thermal oil boilers (up to 80 MW)

Hot Gas Generators

For continuous, operationally reliable and, above all, environmentally safe provision of thermal energy ...

- Grate-fired hot gas generators with patented afterburning chamber
- Solid fuel-fired hot gas generators with thermal oil boiler
- Hot gas generators fired by a combination of grate, granulate and fibre

Firing Systems

Kablitz firing systems stand out, in particular, due to their wide range of applications and their insensitivity to fuel and load fluctuations ...

- Reciprocating grates
- Overthrust grates
- Travelling grates
- Injection burners

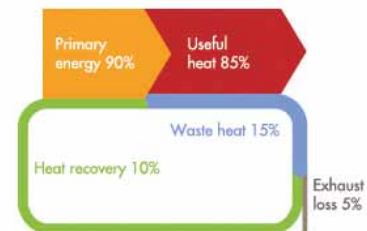
Heat Recovery

Using heat recovery to save energy

Thermal energy is expensive. That is why the Kablitz heat exchanger has been the **best solution**, since 1899 for efficient use of the residual heat in flue gas up to the dew point limit.

Depending on application, savings potential of up to 10 % of gross output is possible. Furthermore, Kablitz heat exchangers are characterized by high availability at the same **time**

as low contamination and corrosion.



Service

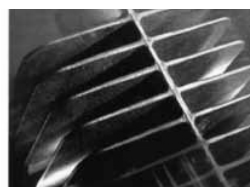
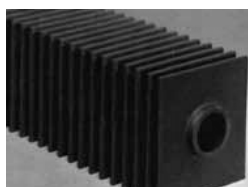
We provide the complete service for your plant:

- 24 h hotline / online service
- Conversions to existing plants
- Inspection, service and maintenance
- Assembly and disassembly
- Commissioning and commissioning support
- Plant optimisation
- Emission measurements
- Spare and wear parts
- Process engineering consultancy

✓ 55 t/h steam generator with patented afterburning chamber



■ Im Werk vollkommen vor gefertigte, komplett montierte Einheiten



blitz-Luftfilterer mit zusammen 5184 m² kurz vor in den Antriebsraum der „Ira Chemie“

Advantages of the Kablitz Heat Exchangers



- ▶ **Compact design** and minimal loss of radiation
- ▶ **Self-supporting structure** on a base frame allows free expansion
- ▶ **Support additional loads** of up to 10 % of their own weight
- ▶ **No moving parts**, i.e. no additional energy requirements
- ▶ **Flexible application and switching possibilities**
- ▶ **Short assembly times**



Customer Service

Our Customer Service is not only part of our offering to existing customers: Our staff is also qualified to service other manufacturers' plants. You benefit here from our wealth of long-standing international experience.

■ Conversions to existing plants

We provide the engineering for your conversion: planning, calculation and design from a single source.

■ Service and maintenance

We look after your plant on a regular basis to ensure higher availability and operational reliability.

■ Assembly and disassembly

We can assemble and disassemble all plant components for you, including piping, boiler parts, conveyor systems, steel structures, electronics and control systems.

■ Commissioning and commissioning support

We will be pleased to commission new or replaced components for you or assist your staff in this process.

✓ 5 MW thermal oil heater with 1 MW ORC turbine





■ **Plant optimization**

Dissatisfied? We will analyse your plant, configure it to optimum operation mode and provide on-site or remote support.

■ **Emission measurements**

Our experienced staff will assist you with prescribed measurements incl. European Waste Incineration Directive (2010/75/EU).

■ **Spare and wear parts**

You can obtain a wide selection of original spare parts directly from us. Our own foundry production enables us to respond to your requests with speed and ease.

■ **Process engineering consultancy**

We will be pleased to help you with any questions related to your firing system and will devise a customised plant concept for you.

✓ 30 t/h steam generator for waste wood incineration

✓ 77 MW hot gas generator with 25 MW thermal oil heater in membrane wall design



„Biomass and Waste“ as an energy source as versatile as nature!



Wood



Agriculture fuels



Waste / RDF

Request our information material at sales@kablitz.de!

- Biomass thermal power stations
- RDF thermal power stations
- Boiler plants
- Hot gas generators

■ Biomass power stations

- Reciprocating grates (water-/air-cooled)
- Overbrust grates (water-/air-cooled)
- Post-combustion grates

■ Firing systems

- Cast-iron gilled heat exchangers
- Glass tube heat exchangers

■ Heat exchangers

- After Sales Management
- Customised casting
- Repair parts
- Service

■ Service and customised casting

✓ 5 MW thermal oil heater
with 1 MW ORC turbine



***More than 6,500 Kablitz plants exist throughout the world:
in Europe, Asia, South and North America as well as Australia
and New Zealand.***



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Richard Kablitz GmbH
Plant/Power station construction for Biomass and Waste

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