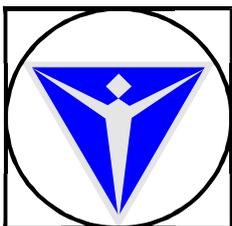


# Junkers

## Heat technology and gas appliances (Exhibition guide)



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## **Preface**

In 1887, Hugo Junkers graduated from the Technical University of Berlin-Charlottenburg where he studied electronic engineering and heat technology at Professor Slaby. The theoretical knowledge he gained there played an important role in his future professional career.

Recommended by his Berlin professor, Hugo Junkers joined the Deutsche Continental Gasgesellschaft in Dessau, where Wilhelm Oechelhäuser (senior) was the technical director.

He moved to Dessau where began the most fruitful period of his creative life. 114 patents were granted only in the field of gas and heat technology.

At the end of the 19<sup>th</sup> and at the beginning of the 20<sup>th</sup> centuries, Dessau was called “the European gas city” and offered the best conditions for research in the field of engineering and technology.

## Chronological survey (timetable) of Professor Hugo Junkers' technical developments in the field of heat technology and gas appliances

- 1890** - foundation of *Experimental Laboratory for Gas Engines von Oechelhaeuser & Junkers*
- 1892** - development of the first two-stroke reverse-piston gas machine  
- application for a patent on calorimeter, developed to determine the calorific value of combustible gases  
- patent on the reverse-piston gas engine is granted  
- Junkers founded in Dessau his first own company *Hugo Junkers, Civil Ingenieur* (production of calorimeters for the gas industry)
- 1894** - development of the continuous flow water heater (hydraulic heater), the first standing gas-fired heater on the basis of calorimeter
- 1895** - factory for gas water heaters *Junkers & Co (ICO)* was founded in Dessau
- 1897** - Hugo Junkers is appointed as Professor of Thermodynamics at the Technical University of Aachen. At the same time he becomes a director of the engineering laboratories there.  
- foundation of *Experimental Institute Professor Junkers*
- 1899** - Junkers opened *Drawing Office for Water Heaters*  
- development of the bath water heater with commulatur bars  
- development of gasiator on the principle of calorimeter
- 1903** - patent for the automatic calorimeter is granted
- 1908** - foundation of calorifer factory *Kaloriferwerk Hugo Junkers* in Aachen
- 1914** - the calorifer factory was moved to Dessau
- 1928** - Junkers developed gas radiator, sometimes also called "gasiator"  
- housing estate Wiesenhof in Stuttgart was equipped with Junkers' heating and hot water appliances
- 1932** - because of economic and financial problems *Junkers & Co (ICO)* was sold to *Robert Bosch AG*

## Some exhibits from the field of heat technology and gas appliances

### - Calorimeter



The heat produced by gas or liquid fuel is led to the constant water stream, which temperature is measured while flowing and the calorific value is shown on the scale.

Professor Slaby, H. Junkers' teacher, considered the direct measurement to be impossible.

On 31<sup>st</sup> October 1892 ,Junkers founded his first company *Hugo Junkers, Civil Ingenieur* to produce and sell calorimeters.

From 1893 to the end of 1895, Junkers sold only 60 calorimeters. Till 1925 he was selling about 40 units a year at the price of 40 German marks per unit.

Automatic calorimeters have been offered since 1903.

The company sold calorimeter to gasworks, cooking plants, factories of gas engines and universities.

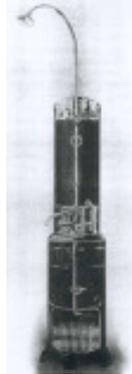
### - Coal-burning bath stove



The first Junkers' standing coal-burning bath water heater worked on the principle of a hydraulic heater with an extended heating surface.

The next technical improvement was the installation of gas burner instead of coal heating.

## **- Gas-fired water heater with commulator bars**



H. Junkers installed commulator bars into the gas-fired water heater to make full use of the heat produced.

At the same time the new-constructed boiler became so small and light that it was possible to hang it on the wall over the bath.

In 1901, Professor Junkers applied for a patent on this wall bath water heater.

Initially, he had sales problems and counted them with expensive advertising of hygienic advantages of hot water in the bathroom.

Due to mass production prices were reduced and 9,000 bath water heaters were sold in 1910 and over 20,000 in 1913. 1,100 workers were occupied at the factory of bath water heaters in 1929.

## **- Continuous flow water heater**



Now water heaters could supply the bathroom with hot water, but more and more hot water was also needed in the kitchen.

A water heater was supposed to supply several taps in a flat.

The taps could be situated on a different distance from one another and from the boiler and the boiler should have been able to resist the pressure of the running water. That is why the boiler was replaced by a coil.

Professor Junkers developed a continuous flow water heater in 1900 and applied for a patent in 1906.

## **- Fast Water Heater with Ring Sprinkler L12**



This combination was developed for flats without a bathroom in 1928 and it enabled a large part of the population the use of this wall-thermal for their personal hygiene.

This ring sprinkler could be used in all flats, which had gas and water supply.

The person who wanted to take a bath, was standing in an arrangable collect pan located, for example, in the kitchen, and put this ring sprinkler over his shoulders.

The warm water coming out of the thermal washed off the suds from the body and then it was caught in the collect pan.

As this method made a contribution to hygiene, this water heater with ring sprinkler was awarded at the International Hygiene Exhibition in Dresden.

## **- Water Saving Bathtub**

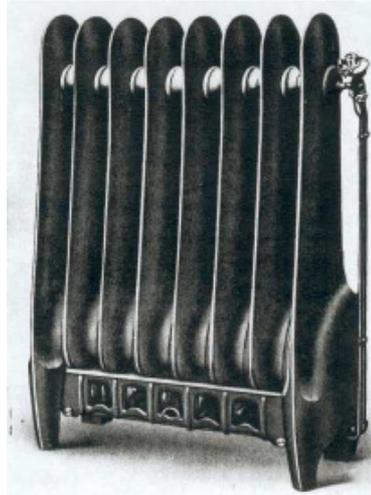


The water saving bathtub was firstly developed for the purpose of saving water, solid fuels and later gas as energy sources, all this in order to make bathing cheaper for consumers.

By making the bathtub narrow in the feet's area, its water capacity was reduced, but enough space was still left for the feet.

The specific shaping of the bathtub can be considered as an environmental acceptable method, as the quantity of emissions emerging through combustion was reduced.

## **- Gasiator**



Gasiators were developed to heat accommodations and were based on the combustion of heating gas.

The combustion takes place in a combustion chamber, from which the hot emissions are conducted through a heating pipe in order to heat the jacket of the gasiator. The warmth is released by the jacket into the living space.

The emissions are finally conducted out through a fuel outlet .

These gasiators work with an efficiency of 80-85% - on purpose not increased - to assure the pull-off to the chimney by means of an appropriate flue gas ascendancy.

The gasiators were equipped with temperature controllers to achieve an economical gas consumption.

## **- Calorifer**



The calorifers were developed for heating larger accommodations. For example: churches, schools or halls. They work according to the gas combustion principle.

The air heated by these gas burner series is transported by means of ventilators and blown into the room to be warmed.

The demand for the calorifer was so high that two separate factories were founded. The first one in Aachen in 1908 and the other one in Dessau in 1914.

## - Product advertising

Different strategies and advertising media were employed to increase and assure the sale of Junkers' products.

You can see some of them below

- Poster advertising of Junkers' products with illustration of attractive women.

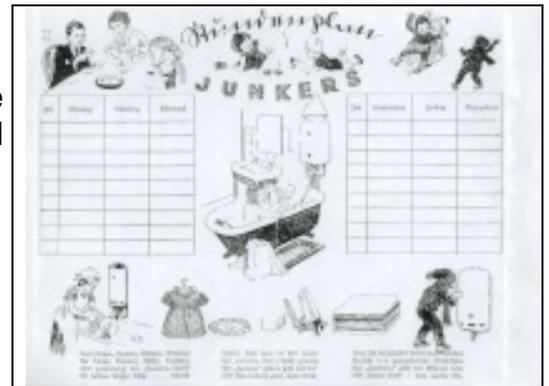


- Poster advertising, illustrations of Junkers' products where children are involved. Initially, a part of the citizens was afraid to install gas appliances in their household because of the contamination and explosion risk associated with them.

The illustrated poster here with a child in the immediate proximity to a thermal should suggest to the potential customer that such appliances can not be dangerous if children can stay near them.



- Another example of advertising, where children are involved, is the publication of a colourfully designed timetable with Junkers' products.



- *Junkers and Co Dessau* also published documentary and advertising films, where health necessity and importance of hygiene were effectively connected with the presentation of the products of this company.



## **Remark**

It can be stated that Junkers' product advertisement was effectively promoted in order to increase sales. In our times, this is still an important component of a good marketing strategy.