Siemens Turbomachinery Equipment GmbH

Hessheimer Strasse 2,Postfach 17 28,67227 Frankenthal / Germany

Company - About the Company

The "Aktiengesellschaft Kühnle, Kopp & Kausch" was founded in 1899 with the merging, since 1774, of three family owned companies. In the course of the past century, we have always been able to adjust quickly to changes - especially by setting new technical standards.

With the goal to again put the focus on our traditional core-business, we have sold our turbocharger-division in 1998. Since then, with steadily growing success, we have been concentrating on the development, production and distribution of turbomachinery - steam turbines, compressors and turbo-fans.

All of our activities are determined by the customer and his individual needs. As a result of this customer orientation, all of our actions can be characterized as a cooperation - a cooperation with the customer, the co-worker and the shareholder.

Our business-success results from a well balanced combination of motivated personnel, modern business processes, strategic farsightedness, business circumspection and a world-wide cooperation with competent partners. For us, this combination confirms our view of being well prepared for the future.

In addition to the active pursuit of business goals, it is very important to us that, with our products, we can actively make a contribution to the protection of the environment. This is documented by our choice of the words 'Clean Air', 'Clean Water' and 'Clean Energy' as strategic guidelines for our business actions.

The satisfaction of our customers, our personnel and finally our shareholders is what we define as confirmation that we have managed to effectively bring together all factors that are relevant to being successful in the turbomachinery business.

Company - History

Interesting History - Dynamic Future

1774 The Prince-Elector Carl Theodor supports the manufacturing of metal and lays the corner stone for mechanical engineering in Frankenthal. By granting a license to cast bells, the first precursors of the "Aktiengesellschaft Kuehnle, Kopp & Kausch" emerge.

1847 Georg Adam Kuehnle joins the company "Hamm & Co.". His first position is acquisition and financing. In 1859 he takes over the company and carries on under the name "Kühnle'sche Maschinenfabrik".

1879 Hans Kopp buys the forge for boilers and copper-products from the brothers Glossier and achieves unexpected success.

1890 Rudolf Kausch becomes a shareholder of the forge for boilers "Velthuysen & Co.". After having taken over the management of this company, he invests in new production tools and leads the company to an historic boom. Soon he is looking for partners.

1899 By merging the three companies to "Frankenthaler Kesselschmiede und Maschinenfabrik Kühnle, Kopp & Kausch Aktiengesellschaft", the public stock-corporation (Aktiengesellschaft) is founded.

1909 The company name is changed into "Aktiengesellschaft Kühnle, Kopp & Kausch" (AG KK&K).

1935/39 The company starts up a large and modern test stand for turbines and blowers. Axial blowers of the "Schicht-type" are produced.

1948 The focus is on steam turbines and the construction of turbines for the German Navy. The company founds a development department for turbines and blowers.

1952 AG KK&K succeeds in developing an exhaust-gas-turbocharger for small diesel-driven truck-engines.

1960 A turbocharger factory is built in Kirchheimbolanden.

1983 "Motoren- und Turbinenunion" (MTU), Munich, acquires the majority of shares in AG KK&K.

1985 After the takeover of MTU through Daimler-Benz AG, AG KK&K becomes a member of the Daimler-Benz-group.

1994 Penske Transportation International Corporation becomes majority shareholder of AG KK&K.

1996 AG KK&K sells the fan-business to "Turbo-Lufttechnik GmbH".

1997 Borg Warner Automotive Europe Corporation becomes majority-shareholder of AG KK&K.

1998 The turbocharger-branch is sold to 3K-Warner and AG KK&K concentrates on its core-business turbomachines (turbines and compressors). In the course of this orientation, AG KK&K acquires "Schiele-PGW Turbomaschinen GmbH" in Leipzig and Frankfurt. During this year, the order income for the AFA and TWIN steam turbines reaches a record high.

1999 AG KK&K celebrates its 100th anniversary.

2000 The Danish company HV-Turbo becomes a 100% subsidiary of AG KK&K.

2003 Acquisition of TLT-Turbo with facilities in Zweibrücken and Bad Hersfeld

(Germany).

2005 TurboGroup GmbH acquires AG KK&K shares from BorgWarner Inc.; MBO of over 95% of AG KK&K shares in conjunction with the private equity fund German Equity Partners II.

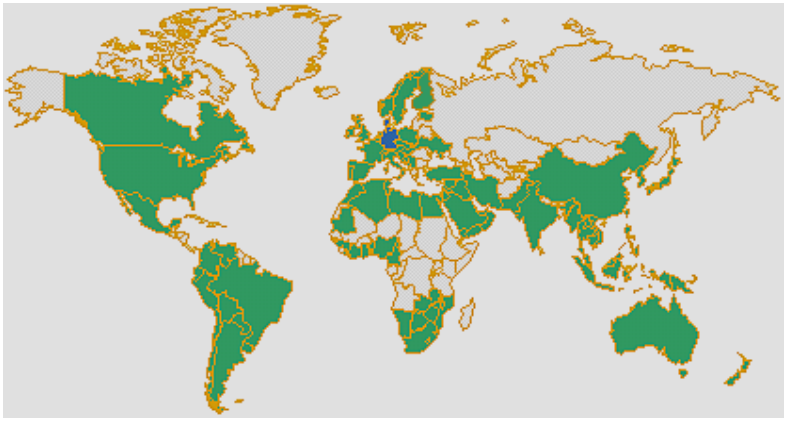
2006 TurboGroup GmbH - and thereby the KK&K Group - becomes part of the Siemens subsidiary "Power Generation, Oil & Gas and Industrial Applications".

2007.06 Siemens Turbomachinery Equipment GmbH

You will find an extended version of the company history in our **image brochure** that you can order at our headquarters for free.

Contact - Locations

Frankenthal	Zweibruecken	Helsingør	Leipzig	Frankenthal
(Germany)	(Germany)	(Denmark)	(Germany)	(Germany)



KK&K is also represented in your country:

Choose your country here:

Contacts - Location - Frankenthal

SiemensTurbomachineryEquipment GmbH

Hessheimer Strasse 2

Postfach 17 28

67227 Frankenthal / Germany

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Fax: +49 (0) 62 33 - 85 - 25 48

E-Mail: contact@agkkk.de

How to find us:

Road Map / City Map

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67227 Frankenthal / Germany

Phone: +49 (0) 62 33 - 85 - 22 91

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E-Mail: turbines@agkkk.de

STE-Turbines - Sales - New Machines			
Name	**Phone**	**Fax**	**E-Mail**
Daniel Tislaric Manager Sales	+49 (0) 62 33 - 85 - 24 43	+49 (0) 62 33 - 85 - 26 60	tis@siemens.com

Products - Quality, Safety, Health and Environmental Protection

Quality

CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Aktiengesellschaft Kühnle, Kopp & Kausch
Hefßheimer Str. 2, 67227 Frankenthal
Germany

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

DIN EN ISO 9001:2000

The Quality Management System is applicable to:

Design, manufacture and service of compressors, turbines and fans.

Approval Certificate No: KLN 0932022-20

Original Approval: 17 December

Current Certificate: 31 January

Certificate Expiry: 31 December

Issued by: LRQA GmbH

The high quality of our products and services is very important to us. In order to ensure the quality, we make use of a quality-system that is certified according to ISO 9001.
In addition to this, we use a confirmation-system according to KTA 1401.

Quality Assurance and Testing Methods

In order to ensure the quality of our products and services, we apply the following testing methods: dimensional test (3-D inspection, measuring of shape and position, roughness inspection), electrical and mechanical run-out, density test, pressure test, test of mechanical qualities, metallurgical tests, positive material inspection, chemical analysis, X-ray test, ultra-sound test, crack test, magnetic and penetration inspection.

CERTIFICATE OF APPROVAL

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Aktiengesellschaft Kühnle, Kopp & Kausch
Hefßheimer Str. 2, 67227 Frankenthal
Germany

has been inspected and approved by Lloyd's Register Quality Assurance to the requirements of the Safety Checklist Contractors (SCC) Rev. 2002:

*SCC***
non-restricted certificate

The Safety Assurance System is applicable to:

Customer service of compressors, turbines and fans.

Approval Certificate No: KLN 932022-16

Original Approval: 7 March

Current Certificate: 7 March

Certificate Expiry: 31 March

SCC Coordinator

Managing Director

Lloyd's Register Quality Assurance Cologne

Test Benches

Our test bench in Frankenthal is used for mechanical test runs of turbines - pressure of fresh steam, maximum live steam pressure: 35 bar, maximum live steam temperature: 300°C, exhaust steam pressure: 0,5 - 1 bar.

Our Leipzig test facility is fully described in our **brochure**.

Quality of Production

Due to the high qualification and the extended experience of our skilled workers, we are in the position to steadily prove a high level of quality.

Safety, Health and Environmental Protection

Safety, health and the protection of our environment are as important to us as our products and services. Hence, we are certified according to SCC, as well.

Products - Turbines

events

Welcome!

The business unit turbines introduces itself.

Permanent development results in innovative machines for reasonable prices. In most cases, our products clearly are differentiated from products of other manufacturers.

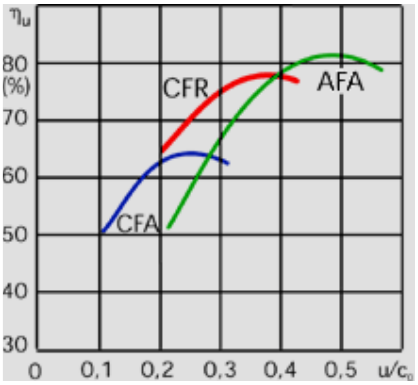
From five different **series**, we build a machine that is an optimized solution for your particular application. In addition to that, our modular construction allows us to offer a wide range of **models**.

KK&K-turbines are used for many different **applications**, for example renewable energy - e.g. from biomass -, for combined heat and power generation, expansion of natural gas and for geothermal applications.

The following ranges are covered:

Live steam pressure:	3-131 bar abs.
Live steam temperature:	dry sat. up to 530°C
Exhaust steam press.:	0,05 - 29 bar abs.
Speed (rpm):	500 - 23 000 1/min
Power:	up to 10 000 kW

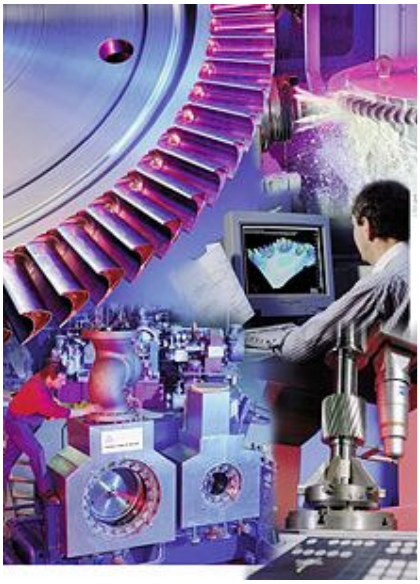
Our **service-team** offers many different services: installation, starting up the machine, revision, general service, overhauling, etc.
Concerning our products, we will always be there for you.



Please contact us or send us your **inquiry**.

Applications - Turbines

The Applications of Our Turbines



The applications of STE-Turbines are numerous. Important applications are: cogeneration, waste disposal, waste incineration, wood and paper manufacturing, chemical and petro-chemical industry, refineries, steel industry, textile industry, sugar and palm-oil industry as well as expansion of natural gas.

A few actual examples:

Cogeneration

In a company that produces milk, for both an evaporation plant and the heating of air, steam is needed at a pressure of 6 bar. For cheese making, cleaning and pre-heating of condensate, a steam pressure of 3 bar is needed. The expansion of the steam from the medium pressure saturated steam main is usually done by regulation stations - without generating electrical power!

In order to enhance the efficiency, parallel to these regulation stations turbo generators were brought into the expansion process. As a result, an additional 500kW electrical power is generated. This means savings of approximately 100,000 Euro per year.

Generation of Energy and Heat from Biomass

In a company, that commercializes waste, among other materials, a large amount of wood is processed. In a nearby plant, there is a regular need for steam, up to 20 tons per hour. For both, the provision of steam and the generation of electrical enegry, a combustion plant with a KK&K-turbine was installed. The turbine provides 3,3 MW electrical power.

Utilization of Exhaust Heat

In a glass manufacturing plant, the heated glass vat provides exhaust heat at a very high level, that remained unused. This exhaust heat is now fed into a large boiler that feeds a 1.6 MW-KK&K-turbine with high pressure steam. The turbine`s operation time is over 8,000 hours per year and it reduces the yearly external consumption of the plant up to 750,000 Euro.

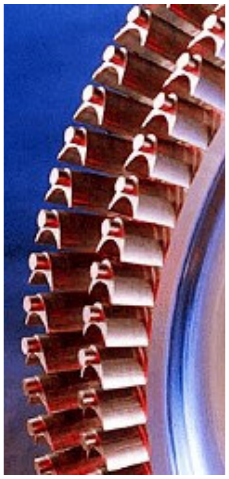
The total expenses for the boiler, the KK&K-steam-turbine, the condensator and all the attachments paid off after only two years.

Products - Turbines - Series

STE Turbine-Series *

Series	BF 3,5	BF 4	AF 3,5	AF 4	CFA 4
Power [kW]	45	225	300	750	1600
Speed - rpm [1/min]	4 500	4 500	11 000	10 500	10 500
Live steam pressure [bar a.]	101	46	101	101	41
Live steam temperature [°C]	500	500	500	500	450
Exhaust steam pressure [bar a.]	1-8	1-11	1-17	1-17	1-17

Series	AFA 3,5	AFA 4	AFA 6	CFR 3	CFR 5
Power [kW]	600	2200	5000	2500	5000
Speed - rpm [1/min]	13 600	18 000	11 400	23 000	14 000
Live steam pressure [bar a.]	65	131	41	65	65
Live steam temperature [°C]	500	530	450	480	480
Exhaust steam pressure [bar a.]	1-17	0.05-29	0.05-11	1-17	1-11



** All the values in the table are maximum values; we choose the gear unit according to your operation data.*

Due to the overhung design (turbine wheel mounted outboard of the bearing housing), it is possible to start the machine from cold to full power extremely rapidly.

This type of construction reduces the purchase costs as shaft seals are only needed on one side of the shaft.

The simple modular construction means that it is easy to optimize the output for your particular application. We would like to give you further information and are looking forward to receiving **your inquiry**.

Loading a low-loader-vehicle with a AFA6 G5a

Assembly of a AFA4 G4a

CFA4 G3a for palm oil industry

CFR5 D - KK&K-Turbine as a direct drive

BF 4/80

AFA6 Da - driving a KK&K-compressor

Products - Turbines - Models

The Variety of STE-Turbines

Due to the thermodynamic limits and the construction of the gear-boxes, the KK&K-turbines are able to deliver a coupling output of approximately 5 000 kW.

The KK&K-**TWIN-turbine** is a cost-effective and efficient version of our single-stage steam-turbine design concept.

For plants where higher electrical output is required, or for combined heat and power generation schemes requiring a regulated extraction for heating purposes, we have developed the highly effective **Tandem-series**.

The adaptability of our turbine-program becomes evident when our TWIN- and Tandem-series are combined. This combination of the turbines makes it possible to supply three steam mains with pressure regulation at the same time.

Our turbine-program offers further opportunities: expansion of natural gas at gas pressure regulations stations (**gas-expansion turbine**) and our **EPM**.

You will receive more information from our **distribution-department**

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or: send us your **inquiry**.

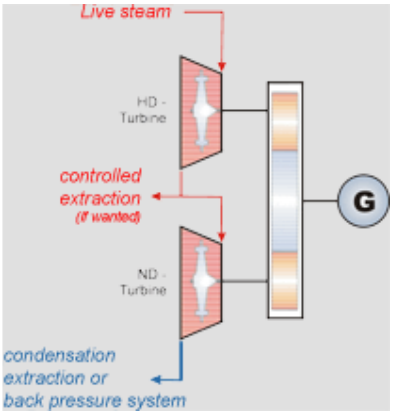


Photo and application example of a TWIN-AFA 46

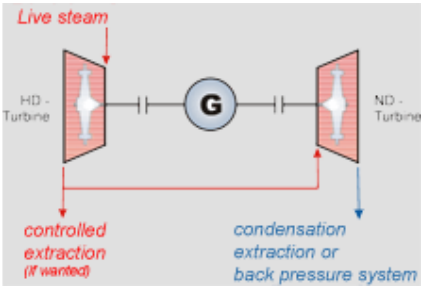
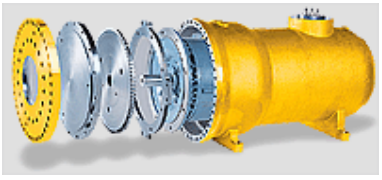
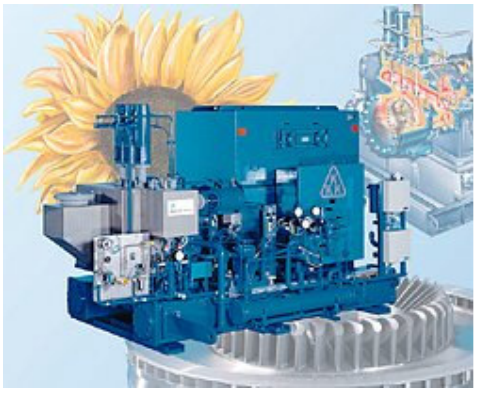


Photo and application example of a Tandem-turbine

For an economical utilization of the available pressure energy in gas pressure regulation stations, AG KK&K has developed a new turbine for the expansion of natural gas - the Expansion Power Module (EPM).

The turbo-generator with output ratings ranging from 75 to 110 kW is located inside the natural gas pipeline.
The modular construction makes it possible to adjust the EPM to many different application cases.





With very little technical changes, the STE-turbines of the AFA- and CFR-series can be used for the expansion of almost all kinds of gases.

They are frequently used for natural gas expansion at gas pressure regulation stations.

Projects that are both ecologically and economically sensible do not any longer have to suffer from high investment-costs.

Contact Point in Korea

STELL Corporation
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Fax.+82 2 3273 7719
E-mail: hy.lee@stell.co.kr

History : 1 st of July, 2007 STELL Corp. has been estabilished in Korea as an agent of Siemens Turbomachinery Equipment GmbH in Germany

Main Product for Sales : Compressors, Fans, Steam Turbines, Gas holder