



Renewable Energy Solutions in Cambodia

with focus on Waste to Energy

11th Oct to 14th Oct 2022

Delegation Brochure



Delegation der Deutschen
Wirtschaft in Myanmar
Delegation of German Industry
and Commerce in Myanmar



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Energy Solutions made in Germany

The conference is part of the Energy Solutions Germany Initiative coordinated and financed by the German Federal Ministry for Economic Affairs and Energy (BMWi). To learn more about **Energy Solutions Made In Germany**, please visit <https://www.german-energy-solutions.de> (for English, click on International on top of the website).

The global demand for efficient and environmentally sustainable technologies is high. Germany has a lot of experience in renewable energies and energy storage technologies. With rising production costs due to a strong growing electricity consumption and increasing wages, the topic of Renewable Energies has unfolded an attractive business field in Cambodia. Thus, renewable energies enjoy a high level of acceptance – especially in the industrial and hospitality sector. German expertise could help to level up here. Subsequently, there are numerous opportunities for Cambodian-German partnerships in governmental and commercial projects.

An energy delegation trip with six German companies focuses on technologies and solutions in the fields of renewable energies self-sufficiency including waste-to-energy. This delegation trip starts with “4th Webinar on Renewable Energy Renewable Energy Solutions with focus on Waste to Energy” on 11th October 2022.

At the 4th Webinar on Renewable Energy Solutions with a focus on Waste to Energy, the German delegation will present their latest solutions, technologies, and services. This event will target energy companies, factories, and industry representatives from Cambodia, as well as governmental and non-governmental organizations. In line with Cambodia’s national long-term economic and energy ambitions, the Delegation of German Industry and Commerce is hosting the symposium that will provide an opportunity for experts from Germany and Cambodian decision makers to discuss opportunities for cooperation.

At the core of the energy delegation trip are talks with potential cooperation partners and customers in Cambodia, which are organized individually for the German participants. Over a period of two to three days, they will hold virtual meetings with potential business partners and establish personal contacts. In this way, they can gain a comprehensive impression of the respective company or institution.



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4th Webinar on **Renewable Energy Solutions in Cambodia**

with a focus on **Waste to Energy**

11th October 2022, 15:00h (Cambodian time)

14:55 **Open Virtual Conference Room to Participants**

Welcome Remarks

- 15:00
- Dr. Martin Krummeck, Delegate, Delegation of German Industry and Commerce in Myanmar and Regional Coordination Laos & Cambodia
 - Mr. Caspar Schulze, Consultant, eclareon
-

15:10 **Speaker 1: Prof. Dr. Simone Graeff-Hönninger, University of Hohenheim**

Renewable Energy Solutions: technologies and future developments

15:25 **Speaker 2: Mr. Natharoun Ngo Son, Energy Lab Cambodia**

Cambodia's Renewable Energy Potential and Government Initiatives

Panel 1: Waste to Energy Technology

Mr. Roman Koepl, Richard Kablitz GmbH
Biomass and waste for renewable energy

15:40 Mr. Alfred Schulze, StrawTherm GmbH
Energy from Straw, trash, and leaves

Mr. Hans Westphal, Bioenergy Germany
Easy, robust, high efficient – the perfect biogas technology for Waste to Energy in Cambodia

16:05 **Speaker 3: Mr. Lor Lytour, Dean of Faculty of Agricultural Engineering, Biogas Technology, and Information Center, Royal University of Agriculture**

Potential Biogas Market & Practical Experience in Cambodia

Panel 2: Energy Solutions: Technologies and Engineering

Mr. Frank Riedel, Inter Engineering
*No-Residue Treatment and Disposal of mixed, unsegregated Municipal Solid Waste “CombiTech”
Combined Anaerobic Digestion and Gasification Technology with Conversion into Electricity”*

16:20 Mr. Christian Daniel, INTEC Engineering GmbH
Process heat and renewable power generation

Mr. Alfons Kuhles, Grenol Equity GmbH
Hydrothermal Carbonization (HTC) and Vaporothermal Carbonization (VTC). Key Technologies in Global Waste Treatment

16:45 **Q&A and Closing**

Dr. Martin Krummeck, Delegate, Delegation of German Industry and Commerce in Myanmar



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Conference Speakers

Dr. Martin Krummeck

Delegation of German Industry and Commerce in Myanmar

Dr. Martin Krummeck is the Delegate of German Industry and Commerce in Myanmar. His mandate also comprises the Cambodian and Laotian markets. The Delegation supports German companies seeking information and advice on market entry and works in close co-operation with local institutions, especially the national chambers and fosters contacts with local companies. Before joining the Delegation in Myanmar, he was deputy managing director of the German-Indonesian Chamber of Commerce and Industry in Jakarta for 12 years. He headed the EU-Indonesia Business Network, a trade and business support program initiated by the European Commission, as executive director for five years. He holds a PhD degree on the topic of sustainable economic development in the tourism sector.

Contact :

Email: martin.krummeck@myanmar.ahk.de

Website: www.myanmar.ahk.de

Caspar Schulze

Eclareons

At eclareon GmbH Caspar Schulze manages projects for the German Energy Solutions Initiative on behalf of the Federal Ministry of Economic Affairs and Climate Action. He is mainly responsible for Energy trade missions to Asia. Before he helped small businesses with digitalization during the pandemic. He holds a master's degree in management and economics with a focus on energy and environmental policy and also finished an apprenticeship as IT-professional for systems integration.

Contact :

Email: cs@eclareon.com

Website: www.eclareon.de

www.german-energy-solutions.de/en



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Prof. Dr. Simone Graeff-Hönninger

University of Hohenheim, Chair of Agronomy, Stuttgart, Germany

Prof. Dr. Simone Graeff-Hönninger holds the chair of Agronomy at the University of Hohenheim, Germany. The University of Hohenheim is the leading University in agricultural research and food sciences, as well as strong in natural, social, business, economic, and communication sciences. Prof. Dr. Graeff-Hönninger has studied agricultural biology at the University of Hohenheim and holds a PhD degree in agricultural sciences. As the chair of Agronomy, the focus of her research is on crop growth and crop physiology, development and improvement of cropping systems as well as the utilization of crops for food, feed, fiber and bioenergy. Her major research questions address the use of different crops in combination with different crop management strategies to produce high yields and the best possible raw material quality to meet market requirements. The group has access to the research stations of the University of Hohenheim, where greenhouse and field trials can be carried out under different conditions. She is leading a couple of research projects also in an international context (e.g. China, Canada).

Contact :

Email: simone.graeff@uni-hohenheim.de

Website: <https://www.uni-hohenheim.de/en>

Natharoun Ngo Son

EnergyLab Cambodia

Natharoun Ngo Son serves as EnergyLab Country Director since April 2022. EnergyLab is an independent and non-profit organization building clean energy markets and innovations in Cambodia. Natharoun holds 18 years of private sector development and inclusive business practice, working with Ernst and Young Consulting and Cap Gemini in Europe in early 2000; consulting in Southeast Asia since 2005 for the IFC, The Asia Foundation, and working in leadership positions for 10 years with the UNDP. He holds an MBA from Paris XII University and an MPA from the Harvard Kennedy School. He is a member of the Asia Society Global Council, and the (pro-bono) co-founder of an Impact Enterprise called Platform-Impact.

Contact :

Email: natharoun@energylab.asia

Website: www.energylab.asia



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Lor Lytour

Royal University of Agriculture

Mr. Lytour is a senior agricultural engineer with over 15 years of experience in management and technical work. He has led faculty of agricultural engineering since 2004, as a vice dean and a dean of the faculty in 2017. With the support from UNIDO, Mr. Lytour setup BTIC and has worked as the coordinator to lead the project work in biogas technology.

In addition, he extensively involves in project design, project management, research and development, and training development with regard to biogas, Agro and food processing. Mr. Lytour received Master of Engineering from Asian Institute of Technology (AIT), a bachelor of Agricultural Engineering from Royal University of Agriculture, and an advance study on integrated watershed management and rural development from Germany.

Contact :

Email: lor_lytour@yahoo.com

Website: www.btc-rua.org



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Bioenergy Germany



BIOENERGY
Germany

Anni-Eisler-Lehmann-Strasse 3

55122 Mainz

Tel.:

Web: www.bioenergy-germany.com

Mail: hans.westphal@retech-energy.com

Represented by Retech Energy

Head Office in Thailand

Mr. Hans Westphal

tel: +66 2 6788921-2

Company Profile

BioEnergy Germany combines more than 15 years of experience in the design, manufacturing, operation and financing of biogas plants worldwide, as well as the know-how of biological support of world-wide more than 300 biogas plants. Since 2015 BioEnergy Germany is located in SEA too (head office in Thailand). Here the technology was adapted and developed further to fit the requirements of the SEA environment and available feedstocks.

Very common and perfectly known feedstocks are, on example, by products from Palm Oil Mills like POME, POM-DC but also EFB. Further feedstocks are several kinds of by products from other sources like cassava pulp, starch wastewater, fruit waste (like pineapple) but also energy crops (like napier grass), animal manure (cattle, chicken, and so on) and the organic fraction of MSW.

Based on the extensive experiences in biogas technology and the local conditions and challenges of SEA the technology of BioEnergy Germany guarantees the successful operation of biogas plants in SEA.

The line of products and/or services include:

- Engineering and construction of agricultural-, industrial waste and MSW biogas plants
- Plant expansion
- Biological services
- 24/7 monitoring service
- Service & maintenance
- Consulting & Development

In Cambodia, the representative of BioEnergy Germany would like to meet:

- Any kind of business partners
- Customers
- sales partners
- investors and
- interested parties in general



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Grenol Equity GmbH

Artztbergweg 6
40882 Ratingen
Tel.: +49 21042145153
Web: www.grenol.de
Mail: alfons.kuhles@grenol.de



Mr. Alfons Kuhles
Managing Director



Company Profile

GRENOL has been in existence since 2007 and is one of the pioneers in the field of hydrothermal carbonisation (HTC) and vaporthermal carbonisation (VTC). GRENOL holds some patents that include different reactor designs for HTC. Over the years, GRENOL has developed market-ready industrial plants and built and implemented them together with partners. In addition to the development of continuous plants with a capacity of up to 45 tonnes of biomass per day, GRENOL also plans, builds, and sells batch reactors for research institutions and laboratories, such as the Zurich University of Applied Sciences a.s.o. In addition to the planning, conceptual design, and sale of plants for hydrothermal carbonisation, GRENOL is also involved in the design of overall concepts for the utilisation of (waste) biomass for the decentralised supply of electricity/heat and fertiliser. For the conversion of the produced biochar into electricity and heat, gasification technologies are developed for the overall network with connected CHP. GRENOL's overall concept also includes closing the nutrient cycle by treating the process water to produce fertiliser for targeted application in agriculture or horticulture.

The line of products and/or services include:

- Plants for converting biomass to energy and plastic to fuel
- Waste disposal and decentralized energy supply
- Consulting (including approval procedures) and engineering

The representative of Grenol Equity GmbH is interested in:

- Waste streams of biomass
- Local manufacture of our equipment in the country itself

In Cambodia, the representative of Grenol Equity would like to meet:

- Decision-makers from politics and business in the field of renewable energies
- Local manufacture of our equipment in the country itself
- Potential end customers (who must have sufficient investment capital)
 1. Disposal of biomass (sewage sludge, leftover food, manure, fermentation residues etc.)
Requirement profile: The contact has the long-term availability of such biomass and has a disposal problem.
 2. Equipment manufacturers
Requirement profile: Steel construction companies, that can also manufacture pressure equipment and ideally, also have a design department.
 3. **Project developer**
Requirement profile: This contact should have excellent networking so that he can link the above-mentioned trades with each other and make many projects possible. Sufficient investment capital is required.
 4. **Food Manufacturer**
Requirement profile: In the production of food, a lot of waste biomass is produced, which the manufacturer has to dispose of. Grenol Equity GmbH could do that with its systems and in addition produce the required energy in a renewable way.



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INTEC Engineering GmbH



John-Deere-Str. 43
76646 Bruchsal
Tel.: +49 (0) 9324312
Mobil: +49 (0) 15114809733
Web: www.intec-energy.de
Mail: christian.daniel@intec-energy.de

Mr. Christian Daniel
Sales Director

Company Profile

INTEC Engineering GmbH is an international company recognized for excellence in the design, manufacturing and delivery of energy systems. INTEC plants represent state-of-the-art technology.

INTEC energy plants universally use thermal oil as the heat transfer medium. Thermal oil boasts significant advantages compared to steam or hot water, particularly that it can be heated at atmospheric pressure up to temperatures of over 300°C with mineral oils, or 400°C with synthetic oils. Thermal oil is consequently the predominant medium used in the supply of process energy for a majority of industrial processes.

INTEC energy plants supply process heat for various industries: Wood industry, Textile industry, Palm oil industry, Chemical industry, Shipbuilding industry, Food industry, Pulp and Paper industry

Core components like coils, waste heat boilers, secondary control loops etc. are manufactured and assembled through our subsidiary INTEC Rohrtechnik GmbH in Bruchsal, Germany which guarantees fast and flexible solutions to customer needs.

The line of products and/or services include:

- Thermal oil heaters
- Molten salt systems
- Steam and hot water boilers
- Natural circulation boilers
- Waste heat boilers for different media
- Solid fuel firing systems
- Thermal and electrical power plants
- ORC power generations
- Thermal sewage sludge utilisation
- Concepts and planning for process heat and energy generation systems
- Service

The representative of Intec Engineering GmbH is interested in:

- Business opportunities and business development in Cambodia

In Cambodia, the representative of Intec Engineering would like to meet:

- Partner for business development
- Industrial partner
- Utility company
- Waste management company



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Inter Engineering

Niedere Str. 23
78050 Villingen
Tel.: +49 7219165221
Mobil: +49 1735615323
Web: www.Interengineering.de
Mail: Intereng.riedel@t-online.de



Mr. Frank Riedel
CEO



Company Profile

Inter Engineering in cooperation with Solventure Ltd. is an engineering company specialized in planning and implementation of turnkey waste to energy plants. Initially Inter Engineering has installed 25 Biogas-Plants with its own proprietary technology. Soon however it became evident that the separation of the waste stream into a biological and non-biological fraction was expensive and never became 100% pure. In addition, a Biogas Plant can treat only the organic fraction of the waste and it soon became evident that the energy output was rather limited. Accordingly, the company Inter Engineering developed its own patented "CombiTech" technology which allows the direct use of mixed, contaminated, dirty and wet waste without segregation/separation and with practically no residues (except a small mineral fraction of stones, sand, ceramics, glass etc.).

The entire waste will be 100% converted into renewable energy and the energy output will exceed that one of a biogas plant by 4 - 5 times. There are no liquid effluents, and the flue gases consist of only water vapor and CO₂. The plants are completely enclosed and work under slight negative pressure so that no smell emissions will escape. CombiTech plants can be safely located near to human settlements with emitting nasty smells. The principal competing technology in waste disposal is incineration, however our energy output exceeds that of the incineration technology by about 30% and investment costs are 35% lower.

The line of products and/or services include:

- Basically, CombiTech plants will generate a clean synthesis gas (mixture of H₂ + CO) which usually will be converted into renewable electricity but may also be used directly as a chemical base product.
- In addition, the process will yield thermal and/or cooling energy.
- Further the process may yield a high-quality compost fertilizer. However, this compost may also be converted into Synthesis gas thus increasing the energy output, whatever may be more economical.
- The technology further allows a clean separation of all metals from the waste stream which then can be sold on international metal exchanges thus increasing the revenues by about 30%.

In Cambodia, the representative of Inter Engineering would like to meet:

- Companies involved in treatment of municipal solid waste of any kind
- Companies involved in collection and disposal of municipal waste
- Engineering companies involved in planning and implementation of complete plants of any kind
- Companies involved in transport and disposal of waste



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Richard Kablitz GmbH

Bahnhofstr. 72-78
97922 Lauda-Königshofen
Tel.: +49 (0) 93437901248
Web: www.kablitz.de
Mail: Roman.Koeppel@kablitz.de



Mr. Roman Koeppel
Export Manager



Company Profile

Kablitz stands for environmentally friendly energy production from waste and biomass. As plant engineers we design and deliver complete biomass and waste combined heat and power plants, boiler plants and hot gas generators as well as apparatus for heat recovery. The heart of our plants is the Kablitz grate, which allows the thermal use of almost every kind of combustible biomass.

The medium-sized long-established company, with over 120 years of history, has been family-owned for many generations and operates its own foundry and steel workshop to meet the high-quality standards of its products. A team of over 90 employees works worldwide for our customers who work mostly in wood and sawmill industries, energy suppliers and contractors, as well as municipalities. Kablitz plants are found all over the world: in Europe, Asia, South and North America, Australia and New Zealand.

Aside from pure plant engineering, we also see ourselves as a service provider to our customers. As a medium-sized company, we aim to be on-site within a few hours if there is trouble to offer our clients customized solutions for their needs.

Objective to the target market and project Cambodia:

In Cambodia, the company would like to get in contact with decision makers, project developers and end-clients to support Kablitz in local sales and service. We are happy to offer solutions relevant to Cambodia, with a view to the available fuel and needs. We are willing to establish cooperation with local suppliers, in our opinion, it would only be possible to make such a joint venture with a local partner, otherwise there is no chance to reach benchmark. Kablitz is looking for discussion partners for plant operations, planning/architecture and sales.

The line of products and/or services include:

- In the thermal range from 5 MW to 100 MW we supply complete boilers for: steam, hot water or thermal oil heating and for hot gas generation in configurations and if required incl. power generation technology:
 - water tube boilers (up to 150 t/h, 120 bar, 520 °C), for power generation with a turbine;
 - firetube/smoke tube boilers (up to 25 MW), for power generation with a turbine;
 - thermal oil plants (up to 50 MW), for power generation with an ORC cycle (organic Rankine cycle).
- Multi-fuel combustion systems: reciprocating grates with air and/or water cooling, overthrust grates, post-combustion grates
- Gas-gas type heat exchangers: cast-iron gilled heat exchangers, glass tube heat exchangers

In Cambodia, the representative of Richard Kablitz GmbH would like to meet:

- An EPC company that realises such projects and is interested in a high-quality European technology.
- A company that can organise local sales for Kablitz. However, the company should have experience and certain contacts in this sector.
- A company from our sector that does construction/assembly, planning, project development or component production for such plants. We would like to talk about potential projects and possible cooperation.



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StrawTherm GmbH

Im Gröber 8
88662 Überlingen
Tel.: +49 (0) 1722060006
Web: www.strawtherm.com
Mail: alfred.schulze@strawtherm.com



Mr. Alfred Schulze
Managing Director

StrawTherm

Company Profile

StrawTherm GmbH is active in the field of dry biomass, producing and selling gasification boilers, used to generating heat from dry biomass such as straw, hay, reeds. StrawTherm GmbH has been active in this business for 12 years.

The line of products and/or services include:

- Heat exchangers for hot water, steam, hot gas, drying gas, downstream ORC units for generating electrical energy
- Gasification boilers used to generate heat from dry biomass such as straw, hay, reeds. But also, from shells (nuts), dry leaves, etc. Heat as hot water, steam, industrial heat, drying heat, hot gas up to 900 °C.
- USP: Flawless combustion, without soot, without slag, without deposits inside the boiler.

The representative of StrawTherm GmbH is interested in:

Rising energy prices are also increasing interest in alternative, inexpensive, renewable fuels. In most countries there is enough straw or shells, which is not needed for cattle breeding and other things. On the other hand, heat is needed for heating and industrial processes in all countries. Unfortunately, the heat from straw is not very well known. You can even use it to generate steam or hot gas at temperatures of up to 900°C.

- Local partner companies are sought for production under license or in partnership, whereby these must also take over distribution. Cooperation also for the area of further developments (power generation e.g., ORC, drying system for fruits).
- Contact with associations and authorities, like ministries of energy, economy, agriculture, cities and municipalities and industry associations, is important.

In Cambodia, the representative of StrawTherm GmbH would like to meet:

- Partner company for production and distribution
Manufacturer boiler construction, metalworking shops
- Professional association
Agriculture and canning industry
- Authorities
Agriculture and Energy
- End user
- Companies that need energy in the form of steam, hot air, electrical energy



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Since its establishment and official opening by German Federal President Joachim Gauck in February 2014, the Delegation of German Industry and Commerce supports German companies seeking information and advice on market entry in one of the most exciting countries worldwide. Since November 2018 we also have the official mandate for two more very exciting markets, Cambodia and Laos. All three countries have started an ambitious process of reforms and economic development. Challenges remain in a market, where legislative frameworks and the local business structure undergo rapid changes.

The Delegation of German Industry and Commerce works in close co-operation with local institutions, especially the national chambers and fosters contacts with local companies. It works alongside the German Myanmar Business Chamber (GMBC). AHKs (German Chambers Abroad) are closely linked to the network of German Chambers of Industry and Commerce (IHKs) in Germany. Together, IHKs and AHKs support German companies in establishing and expanding their business relations with foreign countries. The umbrella organisation of the IHKs is the Association of German Chambers of Industry and Commerce (DIHK), which also coordinates and supports the AHK network. The close cooperation with the German trade associations also ensures that the AHKs are networked close to the companies and markets.

Based on a resolution of the German Bundestag, the AHKs are pro rata supported by the Federal Ministry of Economics and Energy.

Supported By Cambodia Chamber of Commerce (CCC)



The Chamber of Commerce is established under the Law on Chamber of Commerce promulgated in 1995 and its relevant amendments and regulations of the Kingdom of Cambodia. Since then, the Phnom Penh Chamber of Commerce was established. By nature, Chamber of Commerce is a voluntary membership-based and is a not-for-profit institution representing private sector interests in commercial, industrial, service and agricultural sectors and dedicates to the economic well-being of their territory and of the country as a whole. Large, medium and small legal businesses from every profession across the nation could join the Chamber of Commerce. The Chamber of Commerce work to make their voice heard and contribute to the efficiency of the government, thus, making business environment friendlier to businesses.

Cambodia Chamber of Commerce (CCC) was established in 2005 with countrywide network and regional and global partnership.

For further information and request, please do not hesitate to contact:

Dr. Martin Krummeck

martin.krummeck@myanmar.ahk.de

Delegate of German Industry and Commerce in Myanmar



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