We consult, design and implement the future with innovation.

INNOVAS

Innovative Energy





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INNOVAS

Partnership and accountability

Innovative energy concepts

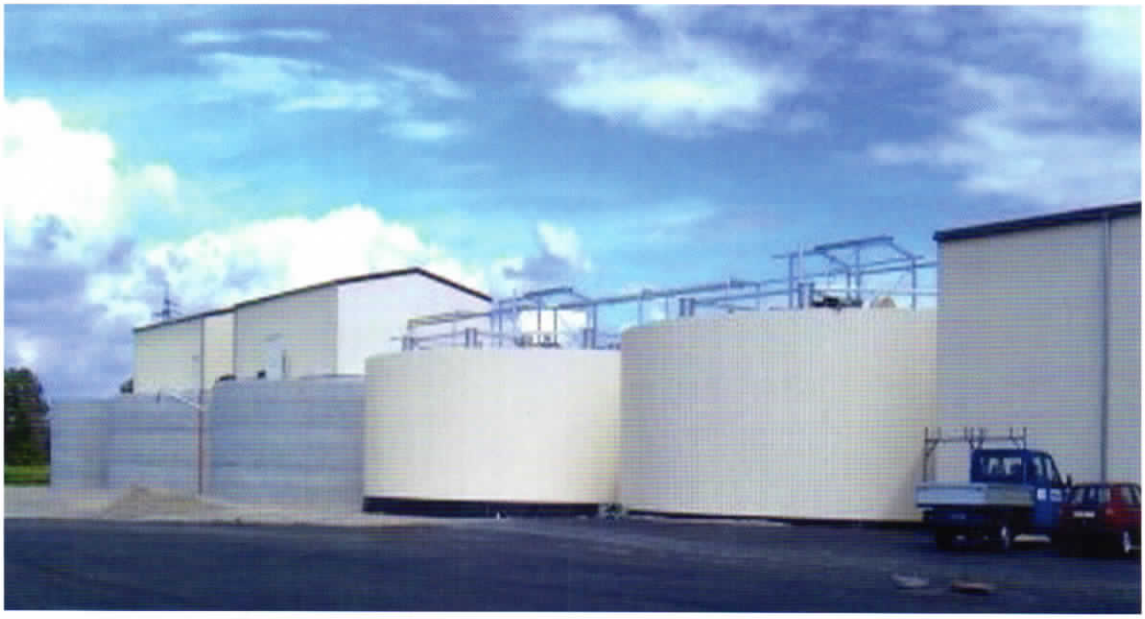
Small steps lead to big outcomes. Our experience with this approach has defined how we have been operating ever since we founded our company to provide innovative energy solutions. This philosophy has guided us since the beginning - solutions on a small scale enable the successful outcome to the whole. Often it is simply that an "intelligent appraisal of a situation" with focused effort, will lead to surprisingly simple solutions and profitable outcomes. Our clients can always expect innovative and environmentally compliant energy solutions from us, tailored specifically to their individual requirements.

We take for granted that partnership and accountability form the basis of our relationship with clients in order to consulting solutions, competent designs and high quality project implementation that totally meet their objectives and requirements.

At the same time we pay close attention to efficiency, and the protection of both natural resources and the environment. We are able to offer these services with a highly qualified team of engineers, technicians and business graduates. We continue to nurture an intensive program of know-how exchange with the best institutes, universities and experts in a variety of fields. This ensures immediate access to the latest available and relevant research outcomes and their practical application in the commercial environment.

Transferring knowledge of this kind allows us to transfer it into useful project applications. The way we draw up on these sources and the ideas that are stimulated by that interaction is reflected in the name of our organization.

Anselm J. Gleixner (left),



4 Energy from waste

Anaerobic treatment of waste

With the help of biogas technology allows a huge potential for renewable energy production. In principle, all organic and aqueous residues and waste in the field of food and beverage industry, the dairy and meat processing, catering and municipal waste disposal (organic waste) within to agricultural waste materials such as manure and uneaten food, are predestined for anaerobic digestion.

By the use of two-stage high performance biogas plants, the available raw materials are treated efficiently and safely and would close the circle of utilization in a ideal manner. Two-stage biogas plants, which have spatially separated hydrolysis stage has naturally a very high efficiency with outstanding biogas production, and are especially extremely reliable and flexible.

Such good installations are planned and designed by us as holistic concepts which meets the individual requirements.

Even the optimal utilization of the energy produced is our concern and would part of the designed plant concept. As independent specialists we must not consider to any suppliers interests or deliveries. The only concern is always finding the best solution for our customers.

Biogas

Biogas is a high value energy source that can be produced from plant matter or organic wastes. New opportunities have opened up for distilleries, the agro-industries, and food and beverage manufacturers by utilising state-of-the-art biogas technologies. Wastes,that were previously discarded and remained unutilised, can now be converted into an energy source that is comparable with natural gas.

The economic advantages and feasibility of biogas facilities has long been proven. Reduced disposal costs and savings in the consumption of fossil fuels result in demonstrable and financially positive project feasibility.

The production of biogas results from the conversion of organic matter in the feed stream by bacteria to a mix of methane, carbon dioxide and some trace gases. The biogas produced can be converted through co-generation engines into electricity and heat. Such facilities, through intelligent and simple design and construction considerations, are inexpensive to build, economically feasible, and at the same time makes a positive contribution to the environment.

Energy production with the helping hand of nature

Biomass

The utilisation of biomass for energy production is as old as our civilisation. Just as the biogas process is the obvious solution to recover energy from biomass that has a high water content, so is combustion the ideal way to recover energy from solid or relatively dry biomass, such as wood, straw and the like. In principle these dry forms of biomass can also be carbonised or pyrolysed. In order to optimise the energy recovery from these types of biomass they need to be pre-treated.

Wood, straw or fibres that are wet need to be dried in order to deliver their highest possible heating value. Depending on the chosen combustion or gasification process, the material needs to be reduced in size into manageable pieces or into a powder form. For example wood chips for fuel that is to be utilised in a biomass power plant; and wood pellets that have been manufactured from sawdust for automated biomassfed central heating systems in buildings.

INNOVAS offers clients opportunities for improved business through its extensive experience, over many years, in the utilisation of biomass. We are independent of any manufacturers - all the positives and negatives of each pre-treatment technology option will be assessed and matched to the situation into which it is to be applied. We have access to leading specialists in each field of application when we design biomass-based energy systems. We will find the optimum solution for your situation-whether the best technology for you is a grate-fired or fluidised bed system, and whether it is better for you to produce steam, process heat or a combustible gas.

Biodiesel
Bioethanol

High value liquid transport fuels can be manufactured from domestically grown vegetable oils that can be substituted for fossil diesel fuels. Biodiesel, sometimes also referred to as plant-oil methylesters (PME), has to undergo strict quality controls before being allowed into the transport fuel pool.

In many cases by utilitation of existing onsite equipment and infrastructure of process plants low cost and economically viable ways to produce this fuels could be developed. It also goes without saying that we can design completely new grassroots production facilities.

Bioethanol is becoming more and more significant as an alternative fuel for the petrol engine. We can design andbuild highly efficient bioethanol facilities with an excellent eco-footprint based on our years of experience in the alcohol industry and in the production of energy from distillery slops.

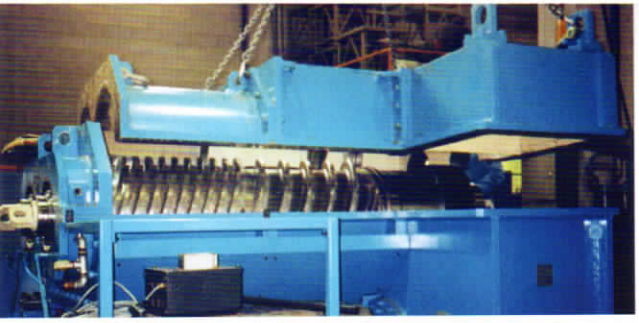
6 Recycling rubbish and waste materials

Recycling MSW

Most MSW incineration facilities have a low operating efficiency because they have to incinerate wet MSW immediately it arrives on site, as MSW cannot be stored for any length of time. However, from a financial point of view it would be better to incinerate the MSW for electric power production at a constant rate during that period when there is a high demand for the electrical energy. The heat energy that is produced in the generation of electric power could then either be distributed into neighbouring industries that need it as process heat or to dwellings to be utilised as space heating.

Landfilling household wastes and MSW is definately a thing of the past. European law and landfill disposal regulations decree that only wastes containing less than 5% organic carbon may be deposited in landfills. Reductions in the organic content can generally only be achieved using thermal treatment processes. The technical basis for achieving this is therefore given. The process technology to do this is called MSW briquetting. Converting the waste into briquettes turns the lose material into a form that can be easily handled, making it easy

tes and MSW then no longer needs to be incinerated as soon as it is collected, but can be used to produce thermal energy at a time when the energy is needed. The briquetting process results in reduced and minimised storage area requirements, odour is neutralised and the MSW has been rendered hygienic.



The waste briquetting process developed by *INNOVAS* enables the optimum use of waste as an energy source, relevant to the needs of our times.
Combustible waste burns better by transforming it into a dry briquette. Higher combustion temperatures and more efficient combustion technologies can be utilised as a result of this transformation.
A number of important environmental accounting issues are also improved through the transformation of wastes into briquettes. Higher combustion temperatures result in measurable reductions in harmful by-products, combined with reduced requirements for the cleaning of exhaust-gases.
To summarise, innovative and advanced future waste disposal concepts are available that are both cost effective and generally result in lower waste disposal charges. Many other materials can also be briquetted using these techniques: for example, all types of fibres and dust materials.

Expertise

Quality is determined by people

A competent team of specialists is at your disposal to provide successful solutions and out. comes in the areas of our expertise: energy and environmental technologies. Through our experience in the fields of mechanical engineering and plant design, architecture, construction, in the determination of operating costs and also in financing, we offer our clients everything from consulting through to the delivery of turn-key projects. What determines our success is the close working relationship that our team has with our clients, the interest that our employees have in their work, and their understanding of our client's project objectives and requirements. Partnership and accountability to our clients

Know-how networks with R&D and industry

We nurture an intensive dialog and interchange of experiences with universities, public authorities, institutes and individuals in various areas of relevant expertise. At the same time we have close contact with leading industrial companies in the areas of environmental and process engineering. This ensures that we have immediate access to latest research and can make full use of that available information by incorporating the latest advances that are available from major industries in our design considerations. This means that our clients get the best possible quality in project design and implementation: for example: use of the latest materials of construction and

References are the best business cards

A whole range of successful projects world-wide have profited from our know-how. Prominent amongst these projects are those in the food sector, which by its nature produces large volumes of organic waste and which also has a high demand for process energy. We offer advanced waste management and energy concept solutions that are tailored to suit the individual requirements of large industrial companies, through middle-sized and small operations, right down to agricultural co-operatives and private individuals. We offer you the benefit of our services, that are not only flexible and fast, but also when it comes to the crunch - and its important to have a

- Biogas plants
- Biodiesel plants
- Bioethanol plants
- Biomass combustion
- Digestion of organic wastes
- Waste briquetting
- Energy consulting
- Consulting to industry

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