Hungarian
National
Trading House

KNOW-HOW AND TECHNOLOGY TRANSFER IN AGRICULTURAL, FOOD AND ENVIRONMENTAL TECHNOLOGIES





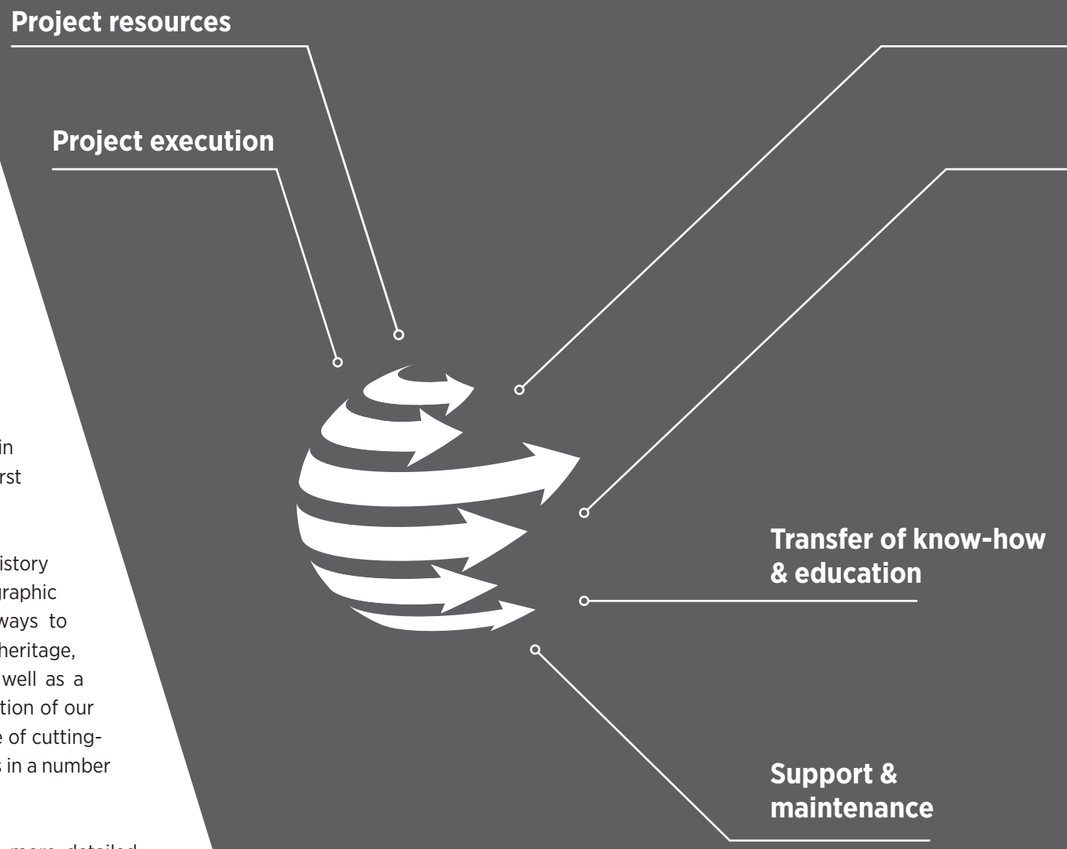
LEVENTE MAGYAR
Minister of State for Economic Diplomacy
Government of Hungary

DEAR PARTNER

Hungary, with a population of 10 million, is situated in the heart of Europe. It was established among the first European states more than a thousand years ago.

Over the centuries, our rich, albeit turbulent history has taught us how to exploit our unique geographic characteristics and cultural qualities best, and always to strive to achieve the seemingly impossible: this heritage, coupled with skillful and entrepreneurial spirit, as well as a deep inclination for innovation has been the foundation of our subsistence, whilst it has also produced a wide-scale of cutting-edge products, expertise and technological solutions in a number of fields ranging from agriculture to industry.

Our team is at your disposal to provide you with more detailed information on the technologies presented in the catalogue or in identifying further partners, know-how, products or technology in the agro-, food or environmental sector or in other sectors such as smart city, ICT, healthcare, logistics, transport or infrastructure.



This booklet provides you with brief overviews of some of our world class Hungarian innovations, technology solutions and proven business models for investments within the agro- and food technology, and environmental technology sectors.

All companies presented herein constitute a part of the the portfolio of companies represented by the Hungarian National Trading House on behalf of the Hungarian Government.

Besides the representation and promotion of leading Hungarian technology companies, the activities of the Hungarian National Trading House cover the whole value chain from acquisition of new technology partners, transfer of knowledge and expertise to project management services, including project financing and transaction support, or the implementation of complex, full-scale solutions.

Thanks to our expertise in commerce, business development, finance and project management, our team and portfolio companies are at your disposal to identify the best matching solution for enhancing your business and delivering high quality, innovative projects that meet cost, schedule and quality targets.

TABLE OF CONTENTS






AGRICULTURAL TECHNOLOGIES

CROP PRODUCTION AND HORTICULTURE

- Fruit plantation design using virus-free propagules 10
  Hungarian Horticultural Propagation Material Non-profit Ltd.
- Potato propagule technology transfer 11
  Hungarian Horticultural Propagation Material Non-profit Ltd.
- Implementation of turnkey greenhouse horticultural projects 12
  Global Glasshouse Ltd.
- Agro-IT aided hydroponic cultivation with resistant paprika varieties 13
  Bakó-Kertészeti Ltd. / Sys-Control Ltd. / Duna-R Ltd.
- Construction of grain treatment plants 14
  Hevesgép Ltd.
- Full-scale agriculture machinery solutions 15
  Hungarian Association of Agricultural Machinery Manufacturers
- Irrigation systems 16
  Agroázis Ltd.

ANIMAL HUSBANDRY

- Waterfowl husbandry and processing chain technology transfer 20
  Tranzit-Ker Ltd.
- Yield boosting poultry lighting 21
  Dilaco Lighting Ltd.
- Pig farm technology transfer 22
  Stallprofi Hungary Ltd.
- Cattle shed planning 23
  Stallprofi Hungary Ltd.
- Fish farm know-how transfer 24
  National Agricultural Research and Innovation Centre - Research Institute for Fisheries and Aquaculture

FOOD PROCESSING

- Turnkey dairy plants 28
  Agrometal
- Mushroom-biogas complex agro-system 29
  Pilze-Nagy Ltd.
- Crude vegetable oil processing 30
  ÉLITI '92 Ltd.
- Distillation technology transfer 31
  Hagyó Ltd.
- Brewery systems and equipment engineering 32
  Agrometal
- Intelligent fermentation system for wineries 33
  Hagyó Ltd.
- Poultry slaughterhouse and processing 34
  Sampo Ltd.
- Pork and cattle slaughterhouse and processing 35
  Korax Ltd.
- "Ultra Low Oxygen" cooling technology 36
  Rotte Group Ltd.
- Multi-fruit and vegetable processing 37
  Maurer Gép Ltd.

ENVIRONMENTAL TECHNOLOGIES

WATER MANAGEMENT AND TREATMENT

- Comprehensive water management solutions 42
  Budapest Waterworks Plc.
- Eco-friendly water treatment technologies 43
  Hidrofilt Ltd.
- Waste water and biogas plant technology 44
  Inwatech Ltd.
- GE water & process technologies 45
  General Electric

SOLAR ENERGY

- Solar panel production 48
  Korax Solar Ltd.
- Design and construction of solar plant structures 49
  Olp-Tech Ltd.

ENERGY EFFICIENCY

- Renewable energy from waste water heat utilization 52
  Thermowatt Ltd.
- GE private and public lighting solutions 53
  General Electric

GEOTHERMAL ENERGY AND HYDROPOWER

- Geothermal energy utilization 56
  Aquaprofit Plc.
- Mini hydro power plant 57
  Ganz EEM Ltd.

WIND ENERGY

- Horizontal axis wind generators 60
  Lakics Ltd.
- Vertical axis wind generators 61
  Infinite Energy Ltd.

BIOMASS

- Energy crop for the biomass industry 64
  Arundo Cellulóz Farming Ltd.
- Containerised biomass and wood chip boilers 65
  Dolina Ltd.
- Biomass and wood chip boilers 66
  Altherm Ltd.

SOLID WASTE ENERGY

- Waste-elimination combined with energy productions 70
  Kis Ltd.

AGRICULTURAL TECHNOLOGIES









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CROP PRODUCTION AND HORTICULTURE





FRUIT PLANTATION DESIGN USING VIRUS-FREE PROPAGULES

BACKGROUND

Since its foundation in 1949, the Hungarian Horticultural Propagation Material Non-profit Ltd. (HHPMN Ltd.) has been able to originate and implement high quality practical solutions in both R&D and execution of innovative plans that have contributed to the competitiveness and sustainability of the Hungarian agricultural sector.

We perform R&D in cultivation practices which fulfil the genetic potential of cultivars and yield higher economic returns. The adaptation and examination of cultivars are geared towards meeting the expectations of the modern food industry. As a public entity, we provide full national coverage in the field of production and distribution of horticultural propagation materials.

KNOW-HOW

The expert team of HHPMN Ltd. has several decades of experience and an outstanding scientific track record in the fields of planting and cultivation, and provides consultancy services in areas of plantation design, cadastral classification, site quality evaluation, laboratory testing, planting consultancy, cultivation consultancy.

Besides consultancy services, the company produces propagule for more than 19 species and 290 varieties and cultivars. To fulfil the needs of the constantly changing market environment, the propagule production can be expanded to a wider range. The company plays an important role in technological research regarding woody plants and berries, and in supplying virus-free propagule to tree nurseries for cultures like sour cherries, sweet cherries, plums, apricots, peaches, nectarines, berry fruits, potatoes, walnuts, hazelnuts, almonds and roses.

SERVICE AND VALUE PROPOSITION

Extensive R&D activities, full scale plantation design including consultancy, laboratory testing, classification as well as delivering high-quality propagules for a broad range of fruit varieties.

- Technological research for woody plants and berries.
- Production of virus-free propagule for more than 19 species and 290 varieties and cultivars.
- Vast capacity and expertise in the micro-propagation of fruit trees and essential forestry trees.
- 350,000 scions, 450,000 seedlings and 350,000 berry shrubs annually.





SOLUTION PROVIDER:

mkszn
Magyar Kertészeti Szaporítóanyag Nonprofit Kft.



POTATO PROPAGULE TECHNOLOGY TRANSFER

BACKGROUND

The Potato Research Centre in Keszthely is the only Hungarian institution specialised in potato-research and is today the research centre and scientific hub supporting the whole potato production sector in Hungary. Its core activity consists of breeding varieties that provide high yield capacities and qualities which do not decrease even after several years of field-propagation due to their pathogen resistance. In this way resulting outstanding economic returns.
The research centre's activities embrace the whole range required by the industry, from fundamental research to experimental development aimed at resolving practical issues. The most important ones include breeding program for variety production and the pathology and genetic research addressing directly breeding activities.

KNOW-HOW

Due to its activity, 12 qualified varieties can be found in the variety list of the European Union, namely: Balatoni Rózsa, Katica, Lorett, Góliát, Riója, Hópehely, White Lady, Vénusz Gold, Luca XL, Kánkán, Ciklámen and Somogyi Sárga Kifli. All varieties represent excellent table quality food potatoes with high yield capability. Except for the Somogyi Sárga Kifli, all of them are extremely resistant to the dominant economic damage causing infections with potato Y (PVY) and PVA, PVX viruses. Like their immunity to scab, their plough-land resistance to the potato leafroll virus (PLRV) is also high. Out of the 12 varieties 8 are also resistant to the nematode and potato wart and 2 to potato blight (Phytophtora) as well.

The centre's main activity contains maintenance and propagation of its own varieties. There for it is set up with an in vitro tissue culture, pathology and quality control laboratory, several hundreds of square meters of green house and isolation tent area and a 70 acres' large irrigable plough-land area. The facility produces around 4-500 tons of super-elite quality seed tubers.



SERVICE AND VALUE PROPOSITION

Extensive R&D activities in potato research, full scale plantation design with resistant propagules with special regard to the target market needs.

- Consulting services for agricultural entities, cooperation in research projects.
- Providing of materials from in vitro potato gene bank for breeding, research and education.
- 12 own, resistant and EU qualified varieties with high yield capability.
- Large green house capacity, isolation tent area as well as irrigable plough-land area to support intense R&D and business activities.



SOLUTION PROVIDER:

mkszn
Magyar Kertészeti Szaporítóanyag Nonprofit Kft.



IMPLEMENTATION OF TURNKEY GREENHOUSE HORTICULTURAL PROJECTS

BACKGROUND

Within closed cultivation installations and controlled conditions, an ideal environment can be provided for the given plant, in order to maximize the benefit from the genetic potential of a variety. Our greenhouse technology further optimizes the use of all required input materials (light, irrigation water, nutrients, heat energy) for the most economic production in an environmentally aware, sustainable manner.

Based on our experience and construction practice in building several dozens of greenhouses, we contribute to the success of our partners' horticultural investment from the start and preparation to the implementation. With our extensive international cooperation network of professional partners, we can carry out any design and implementation task at the high standards.

TECHNOLOGY

We deliver different types of greenhouse heating systems tailor made even for special or extreme climates, as well as modern hot water boilers with efficient gas and/or oil burners, in combination with an adequately designed pump and pipe systems to guarantee a low energy consumption, reliable operation and a minimum of maintenance.

Greenhouse climate is monitored and controlled with a wide range of systems and devices from traditional measuring boxes to highly sensitive sensors and from air treatment to advanced controls. All this equipment assist our partners in creating the ideal internal climate.

The fully automated links allow dosing, decontamination and management of water supply, both in the greenhouse and the tanks. The water management system - either drip irrigation, ebb and flow system or overhead irrigation - can be controlled with ease to save costs of workforce.

Different controls in terms of work and productivity simplify the process of analyzing and interpreting data that is collated in the greenhouse during the growing and harvest period.

The climate management system can be expanded to integrate further automated systems like water and process management, cultivation and harvest recording and analysis, labor recording and analysis and management information.

SERVICE AND VALUE PROPOSITION

Design, implementation and technical assistance of turnkey energy-saving greenhouses.

- Modern greenhouse with an eaves height of 5.5 m to 6.5 m.
- UV lamp operated drain water disinfection, recirculation.
- Thermal water control, gas and biomass fueled boilers.
- Workforce and production record systems for better insight and increased management efficiency.
- Integrated automated systems for process and resource optimization.



SOLUTION PROVIDER:

Global glasshouse
Szervizszám: 30/488-2593



AGRO-IT AIDED HYDROPONIC CULTIVATION WITH RESISTANT PAPRIKA VARIETIES

BACKGROUND

Hydroponic cultivation, that is growing plants without soil, means to grow high quality paprika (capsicum), in an environmentally friendly, clean, and easily manageable ecosystem with efficient use of variable resources. For this, a unique combination of technologies, nutrients need to be fitted to specific environmental conditions.

For many years, we operate a pilot garden in close cooperation with our Hungarian plant breeding and agriculture ICT partners to put in practice the digitally optimized cultivation. Because of the successful cooperation and experimenting with various varieties, we have identified virus- resistant paprika varieties, which are most suitable for integrated greenhouse cultivation and meet the most diverse consumer needs.

KNOW-HOW AND TECHNOLOGY

The combination of technology with know-how creates the ideal environment for growing paprika (capsicum). Environmental factors (temperature, optimal water supply) are precisely adjusted to the needs of the plants and reduce the stress factor exposure of plants. Under these ideal conditions, ripening of plants occurs earlier.

Greenhouse production prolongs the marketing period, and so the product is available for consumption most of the year. Nutrients are supplied according to plant needs in the different development stage. Water usage is reduced due to precision regulation of irrigation water supply. Similarly, the low risk to disease of resistant varieties reduce needs for chemical plant protection and reduce the risks of adverse effects to the environment and consumer.

Biological control, or plant protection methods are used for cultivation, which are based on various natural antagonists, such as naturally occurring bacteria, fungal diseases and viruses, insects, mites and nematodes, as well as plant essences, to eradicate or limit pests and diseases.

In integrated cultivation, biological control is on the the rise. The efficiency of this is proven by reducing the use of chemical plant protection products, diminishing their negative environmental impact from harmful residues, and finally growing healthier paprika.

SERVICE AND VALUE PROPOSITION

Know-how transfer and technical assistance to create a sustainable and energy saving growing environment with hydroponic technologies, biological control, ICT solutions and resistant varieties.

- Setting the ideal conditions for resistant paprika varieties with special regards to environment factors.
- Integrated pest management and biological control for sustainability.
- Resistant varieties with low-risk to diseases.
- Agro-IT aided cultivation with measurement and control systems.



SOLUTION PROVIDERS:

Bakó Paprika
WWW.SZENTESIPAPRIKA.HU

AgroSense

duna-r
vetőmag



CONSTRUCTION OF GRAIN TREATMENT PLANTS

BACKGROUND

An essential condition for the safe and long-term storage of grains is the proper cleaning and drying after harvesting. Our plants are equipped with a highly automated and machinery based system which requires minimal human resources to receive, clean, dry, store and move the harvested grains (cereals, maize, sunflower, etc.) between the different processing steps.

TECHNOLOGY

To achieve comprehensive seed-safety, the removal of impurities guarantees the quality of the end products, by reducing ash content, specks, and factors influencing odor and flavor. Our grain-cleaning machines separate defects from grains with maximal precision based on variable physical properties with cleaning performance ranging between 10-60 t/hour/machine. The laminar spreading and effective circular swing movement contribute to high capacity of each unit.

Our drying machine is a cylindrical, vertically arranged continuous drier, equipped with a large heat exchanging surface, operating consequently with a low air velocity. The velocity of air passing through the grain is low, resulting in a minimum level of dust contamination emitted. The wet grains are fed into the drier above, regulated by level indicator probes monitoring the grain level. Drying takes place in the upper section of the cylindrical part, while cooling of the grain and recuperation of the thermal energy in the section situated beneath. The system could be operated both manually or by PLC. Drying performance could range between 3.5-32 t/hour/machine, with a gas consumption of 80-450 m^3/machine.

In terms of storage, our plane-floor steel silos are made of galvanized steel sheets, with or without ventilation floor, temperature control sensors, level indicators and dumping system with a storage volume of 50-20,000 m^3/silo of which total plant capacities of up to 100,000 m^3 can be constructed. The ventilation system of the silo is designed as a system operated with compressed air provided by mobile, portable fans delivering the air through ventilation channels built into the floors. The temperature control system is available both with manual or centrally computerized data control and registration.

SERVICE AND VALUE PROPOSITION

Conception, planning, design and assembly of agribusiness facilities. Manufacturing of a wide range of galvanized steel silos and hoppers, water tanks, mechanical handling equipment and cleaning, weighing and drying systems.

- Optimized storage conditions for the grain by controlled temperature, insects, mold to avoid critical economic loss.
- Cleaning performance up to 60 t /hour/ machine, drying performance up to 32 t/hour/machine, storage volume up to 20,000 m^3/silo.
- Monitoring and process management functions can be set up as manual controls or fully automated systems.





SOLUTION PROVIDER:

HEVESGÉP



FULL-SCALE AGRICULTURE MACHINERY SOLUTIONS

BACKGROUND

The Hungarian Association of Agricultural Machinery Manufacturers (MEGOSZ) integrates and represents most of the Hungarian manufacturers. Machinery developments are carried out following the “market-aware technology development” system - that is, for a given production goal all relevant circumstances are considered - from the seed to the grain.

Consequently, the manufactured machinery achieves a very competitive value for money ratio and 83% of Hungarian machinery production are exported; which is supported by the openness of Hungarian manufacturers to all forms of trading and cooperation. You will share this experience, when you buy “Made in Hungary” branded agricultural machinery.

TECHNOLOGY

Hungarian agricultural machinery manufacturers can deliver complete technological machine lines, divided into horizontal and vertical machine systems. Horizontally, we offer a broad range spectrum of technologies including tillage machines, fertilizer distribution machines, plant-protection machines and different adapters for harvesting. Vertically, we intend to maximize effectiveness of our partners with grain storage and treatment technologies, animal feed production, by-product and biomass management, equipment for biomass harvesting and utilization, material handling, carrying and loading machines.

Complete machine lines for tillage, plant-treatment and fertilizer application have been developed by our partners with special regard to ensure optimal operation under diverse environmental and soil conditions. Most recent developments include intelligent or smart machinery, compatible with the ISOBUS system. We offer reliable machineries for both conventional and conservation tillage.

One of the emerging export goods are electronics, information technology and innovative developments which could be integrated into the controlling and monitoring systems and equipment of leading global agriculture machinery manufacturers. Many of our partnering small and medium enterprises can compete with world-class producers and service providers in their respective field.

SERVICE AND VALUE PROPOSITION

Consulting services for agricultural entities, cooperation in research projects. Providing complex agriculture machinery solutions including technologies from tillage to combine harvesters and everything in between.

- Consulting services for agricultural entities, cooperation in research projects.
- Incorporating ~100 Hungarian agriculture machinery manufacturers to deliver full-scale solutions.
- Set up of complete technology lines and assembly for exports.
- Safeguarding and promotion of the interests of manufacturers and wholesale distributors.
- Co-operation and negotiation with governments and other bodies interested in export or import.





SOLUTION PROVIDER:

MEGOSZ
MEZŐGÉPGYÁRTÓK ORSZÁGOS SZÖVETSÉGE
Együtt, egymásért



IRRIGATION SYSTEMS

BACKGROUND

The role of field irrigation has become more and more prominent since the past few years. It is obvious that the cultivation in profitable cultures is unimaginable without natural irrigation, .whether it is the production of hybrid corn seeds, or the production of raw materials for canning factories. Although the companies and farmers already have routine of several decades in irrigation, there are more and more new producers who take the first steps towards irrigation farming.

TECHNOLOGY AND KNOW - HOW

The aspiration of farmers is to be able to have their first irrigation equipment set up as soon as possible, or rather to change their time-expired technology to a more effective and modern one. We are ready to help during the complete process, starting with consultancy and project planning and also recommending the best fitting technical solution to our client needs, the terrain's characteristics and vegetation. With GPS-based localization, we provide up-to-date, precise picture about the hydrography, terrain aptitude of each plate and through this the optimal irrigation development solution. Following the delivery of the irrigation equipment, our work is only completed with expert assembly, systems built up and proper installation and quality control.

In the core of our irrigation projects, we deliver multiple varieties of irrigation systems and technologies including linear- and rotating irrigation machines, drip-irrigation technologies, hose reels, centrifugal pumps as well as motor pump units.

Our main competences has been acquired in the field of pivots systems. We deliver technologies that are built up with galvanized-steel angular profiles and the bolts are anchored to a square reinforced concrete platform. Both result in a remarkable sturdiness and stability which allow it to handle the turning movements of the machine. Multicentre pivots can be transported automatically to irrigate 2, 3, or more positions, providing a high increase of irrigation area with only one machine. The self-propelled system requires no machinery to change its position. The pivot moves sideways, and may be guided with alignment performed by means of a furrow or a cable.

Also, we undertake not only the designing and licensing of irrigation and pumping stations but also manufacturing, installation and turnkey construction of plumbing. Besides marketing world-class equipment and spare parts related to our project, we execute the full-installation and deployment of pumping stations and large diameter plumbing.

SERVICE AND VALUE PROPOSITION

Irrigation design services, planning of innovative water & energy efficient irrigation systems, distributions and installation of world class technologies.

- Consulting services for agricultural entities, cooperation in research projects.
- Know-how transfer of techniques for saving water in local irrigation systems for the minimization of the operational cost for water supply infrastructures.
- Facilitation, support and deployment of innovative solutions to water challenges.
- Exclusive distribution of top irrigation manufacturers of high-end



SOLUTION PROVIDER:

AGROAZIS



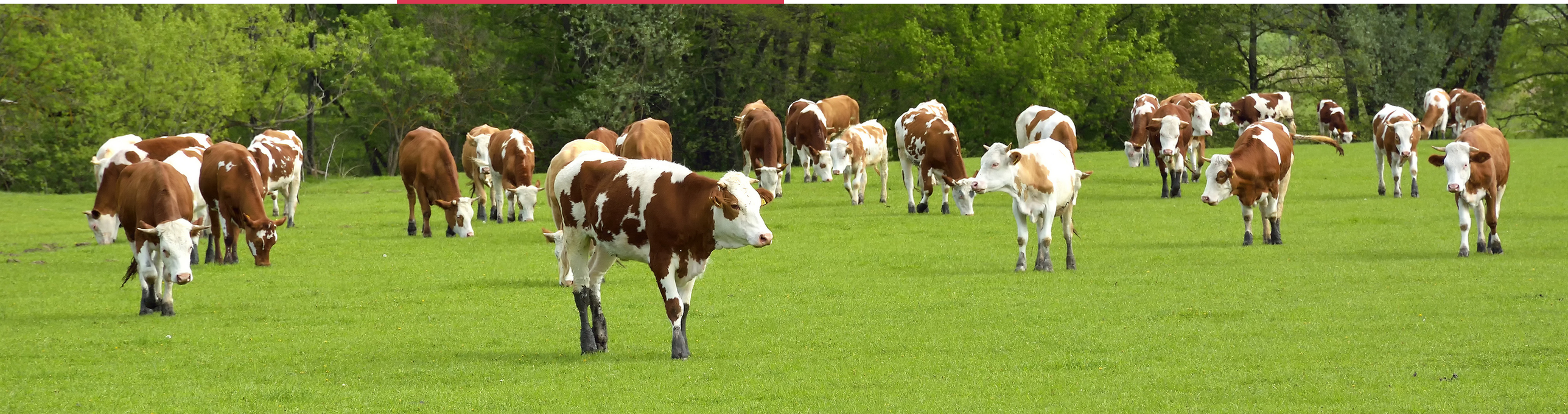






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ANIMAL HUSBANDRY





WATERFOWL HUSBANDRY AND PROCESSING CHAIN TECHNOLOGY TRANSFER

BACKGROUND

The main characteristic of a product chain is that it contains all important phases of the production process from breeding and processing to sale. Our integrated product chain contains our own goose genetics and duck phyla, brooder, livestock farm, feeding supporter mixer. Our slaughterhouse and post-processing plant completes the whole processing. Production processes are coordinated using an ERP system, while the quality and traceability of the products are regulated by a strict quality assurance system.

TECHNOLOGY

Ducks are reared in indoor systems, while geese are reared both indoor and in free-range systems with a capacity of 30,000 m^2 in case of geese, and 10,000 m^2 in case of ducks. Pasture capacity is 100 geese/ha. Indoor systems' technical equipment consists of insulated buildings, overhead feeding and watering systems, ventilation, and an illuminance system of 60-70 lux/m^2 in case of geese, and 20-25 lux/m^2 in case of ducks. Egg production cycles are the following: in case of geese, the main cycle is between January and May, the summer cycle is between March and September, while in case of ducks, the production cycle is 52 weeks long (that is, any time of the year).

The brooder capacity requirement of the section is 80 incubators and 20 brooders requiring an area of 5,000 m^2. Farms produce mainly meat ducks and geese, adapted to the seasonality of goose farming. Meat goose is produced in two phases: after 3-4 weeks spent in pre-nursery, the animals are moved to post-nursery for fattening.

Area requirement for nursery: in case of geese, the pre-nursery school requires an 30,000 m^2 building, while post-nursery requires 40,000 m^2, including yard. In case of ducks, the pre-nursery area requirement is 50,000 m^2, while post-nursery requirement is 60,000 m^2.

Stock, young fowl and fat stock breeding require about 46,000 tons of mixed fodder. Design capacity of fodder mixing plant is 60,000 tons. About 40,000 tons of mixed corns must be produced to obtain the required quantity for feeding goose stock and young fowls.

The processing capacity of the slaughterhouse for the safe process of fat stock is 1,000 pieces/hour in case of geese, and 2,000 pieces/hour in case of ducks. It requires at least 300 employees per shift for proper operation. A cold store capacity of 2,000 tons is necessary to store processed goods.

SERVICE AND VALUE PROPOSITION

Transfer of waterfowl husbandry and production chain technology covering all essential process steps for the optimal production process from breeding to final food processing.

- Product chain contains all stages of the production process, including brooder, fodder mixing plant, slaughterhouse, and post-processing plant.
- Fully elaborated production facility for a livestock of 60,000 geese or 20,000 ducks.
- Traceability provides safety and guarantees high quality from breeding to the consumer's table.
- Slaughterhouse processing capacity of 1,000 gees/hour or 2,000 ducks/hour compliant with international standards.



SOLUTION PROVIDER:



YIELD BOOSTING POULTRY LIGHTING

BACKGROUND

New generation agricultural lighting systems improve poultry welfare and production yields by increasing feeding values, weight gains, egg production intensity, egg weights, vitality, furthermore reduce sexual maturity age, stress levels, scraps, and extend the laying period.

The differences between the visual systems of birds and humans call for completely new lighting systems to meet the special requirements of birds. Our in-house developed system is in line with the strictest animal welfare guidelines and European Union directives and is suitable and is tailorable to the characteristic of all breeds and farming methods.

TECHNOLOGY

With more than 30 years of experience in fowl breeding lights, we use the latest LED technology, especially High-Power and COB LEDs. We supply lighting systems with very long life spans, extraordinary cost-effectiveness and low environmental impact. These state-of-the-art lighting systems are designed to simulate natural light characteristics such as sunrise and sunset.

With a range of 0-100 Lux, minimum lighting starts at from 0.4 Lux or even below and the system achieves uniform light exposure values measured at the eye level of the birds for at least 80% of surface area eliminating dark spots and unnecessary light pollution even in multi-layered caged and volière type barns.

Brightness is regulated without flashes and in a minimum of 50,000-100,000 steps, while color temperature at 2,800K-3,000K. The frequency of the lighting systems is kept as high as possible and falls at least in the range of 400 KHz-2MHz, while the Color Rendering Index (CRI) must be at least 90, with preference of 96-97.

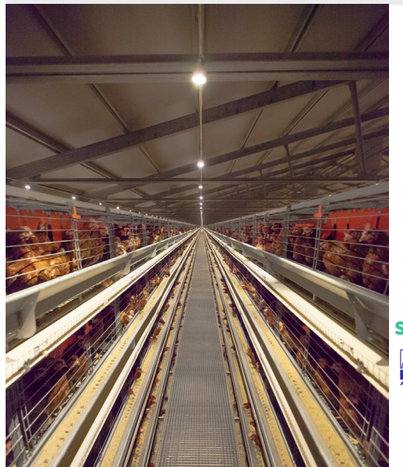


SERVICE AND VALUE PROPOSITION

Design, manufacturing, distribution and technical assistance of complete energy-saving „High Power LED" lighting system tailored to fowl specific breed and breeding technology.

Especially the high-end systems have a low payback period of 1-2 years and incorporate multiple advantages:

- Long lifetime (50,000 h) with up to 90% of energy-savings to traditional system.
- Low current reception, 3 watts/lamps and fully dimmable (0-100%).
- High operation reliability, low voltage circuit, and manually modifiable.
- Space-saving, cost-efficient technology, available in a wide range of colors.
- AGRO-LIGHTCOMPUTER" simulates natural light settings per breed and keeping technology.
- Delivered in a ready to use IP65 protected switch box with pre-installed breeding programs.



SOLUTION PROVIDER:



PIG FARM TECHNOLOGY TRANSFER

BACKGROUND

Competitiveness of pig farming is partially determined by the development level of husbandry technology; thus, it is essential to increase effectiveness. Our portfolio consists of sophisticated farming rotation, capacity in accordance with animal welfare, and energy-saving solutions. During the planning of our husbandry technology, we pay close attention to choose the most modern, most hygienic and animal-friendly solutions for ventilation, heating, cooling, feeding, and controlling.

TECHNOLOGY

Individual boxes are designed to adapt to the comfort demands of the sow, while helping the job of the inseminator. Feeding in the breeder is centrally programmed; a telescopic downpipe helps easy cleaning; and a customized ventilation system provides proper air flow calculated for the whole livestock (after the quantity of animals is input). Ventilation is accurate due to the measurement of air quantity, while paneled or evaporative cooling can decrease the inner temperature by 5°C.

Grouped sow shelter allows custom feeding per the individual condition and breeding phase using a unique identification capable computer-controlled feeder. The sow is fed 4 or 5 times per day using programmatic feeding due to the breeding husbandry technology. Quantity can be accurately set on the feed bin, and the opening of the bin handled by a servo-motor is managed by a controlling unit of the feeder computer.

Piglet nurseries are designed by considering aspects of hygiene, safe supplies, appropriate effective temperature and ventilation, and internal organization criteria (feeding, resting, place of fertilization). Up to 500g/day of increase in weight, and mortality below 1 percent can be achieved due to this technology.

SOLUTION PROVIDER: Tallperi

SERVICE AND VALUE PROPOSITION

Modernization of existing operational porcine farms; planning and construction of new farms. Preparation of product chain concept of the farm, project management, and professional installation.

- RPM control of fans using 3-stage frequency changer, resulting up to 60-70 percent of energy saving.
- Installation of agricultural IT systems (PIR motion detection, swing doors with sensors, recording of breeding data, etc.) for safe and effective production.
- Establishment of wireless network for querying and uploading real- time data.
- Up to 500g/day of increase in weight, and mortality below 1 percent.





CATTLE SHED PLANNING

BACKGROUND

Milk and meat yields are considered as the value metrics for cattle. To achieve profitability, the aim is to realize the highest number of offspring for each cow and the highest weight for beef cattle, while for dairy cattle highest milk counts.

The real benefits of the modern byre are surfaced in the summertime, when there is only a few percent decrease in production in contrast with the 20 percent decrease of the 25-30 years old, typically closed buildings. Natural airing in our properly designed buildings is sufficient to provide protection against heat stress. We pay close attention to the height of the walls, the openings and the construction of ridge ventilation when building new constructions. We are aware of the fact that concrete levels, sleeping box sizes and design, the bedding, the width of passages, and the placement of watering troughs are all in conjunction with the expected yield.

TECHNOLOGY

In case of trapezoidal plate cover buildings, we utilize the experiences gained from building halls with traditional structural steelwork to construct pitched roof cattle sheds. Characteristics of the building include large span, corrosion resistant and hot-dip galvanized design, preparation for curtain type and ridge ventilation. Our canvas covered sheds have large span without internal support, making it ideal for covering machine-sheds and storages as well. The special white PVC cling film used for construction reflects heat entirely, while its lacquered surface provides UV resistance, and guarantees fire safety.

We attach particular importance to design natural ventilation of the buildings, because it may contribute to balanced yield throughout the year. We offer a ventilation system, which can help manage heat stress itself if installed along the whole length of the ridge, and which also functions as UV resistant skylight.

SOLUTION PROVIDER: Tallperi

We put great emphasis on appropriate building construction, the form and appropriate strength of steelworks, and the quality of bonding units and clamps in consideration of air bed or straw beddings when constructing sleeping boxes.

SERVICE AND VALUE PROPOSITION

Modernization of existing operational livestock farms; planning and construction of new livestock farms. Preparation of product chain concept of the farm, project management, and professional installation.

- Plan and construct whole cattle farms, sheds, and milk-houses using 3D planning software.
- Planning in compliance with professional guidelines and animal welfare acts.
- Online remote monitoring system for ventilation systems and uniquely identified fodder stations for safe production and immediate intervention.
- Detailed 3D planning, shipping and installation of each technical unit.





FISH FARM KNOW-HOW TRANSFER

BACKGROUND

The NARIC Research Institute for Fisheries and Aquaculture is focusing its multidisciplinary research work to provide the scientific base for the development of various fish culture technologies and for the proper use and protection of the aquatic environment. The five major fields of research are: development of aquaculture systems, applied aquatic ecology, fish biology, genetics and fisheries in natural waters.

KNOW - HOW

Research work at NARIC is carried out in the frame of specific projects such as: fish genetics and gene bank maintenance; management and restoration of aquatic ecosystems; structure and function of integrated aquaculture systems; fish feeding and feed technologies; fish biomonitoring and environmental friendly prevention; fishery management of natural waters; and development of water saving fish production systems.

The scientific work is closely related to the development of sustainable fish production systems, and aquatic ecosystem management. The scientists of the institute are actively involved in various aquaculture and fishery development programs in the frame of national and international projects through consultancies, extension services and training but the institute also provides laboratory services, and high value fish seed for these projects.

SERVICE AND VALUE PROPOSITION

In cooperation with our partners we offer research, development, training and consultative assistance for responsible utilization and protection of water resources, improvement of human nutrition and life quality.

- Genetics and genetic research laboratories as well as indoor experimental fish rearing system.
- Experimental fishpond system; combined intensive-extensive experimental fish pond system.
- Live gene banks of common carp strains and sturgeon species.
- Extension and innovation centre to organize national and international conferences and workshops.
- Ongoing training programs for professionals in the frame of bilateral and FAO programs.
- Involvement in numerous aquaculture and fishery development projects in Asia.



SOLUTION PROVIDER: HAKI











Hungarian
National
Trading House

FOOD PROCESSING





TURNKEY DAIRY PLANTS

BACKGROUND

Our turnkey solutions unite the traditional milking processes with the most up-to-date technical solutions and the hygienic requirements of the 21st century. The technologies developed and applied are at the forefront of the current growth and product innovation in the dairy industry across the region, which contributes to an increasing product portfolio. The success is guaranteed by building modular dairy plants and processing lines, educating operators and sharing both the know-how and the recipes of the best dairy products with the partners.

Our product portfolio consisting of Hungarian state-of-the-art equipment provides innovative solutions for processing milk, including the receipt and storage of milk, thus traditional widely-known dairy products (milk, sour cream, yogurt, kefir, cheese, quark, etc.) and modern products requiring higher level of technology (quark dessert, whey drink, ricotta, etc.) can both be produced.

TECHNOLOGY

Small capacity equipment is characterized by easy usability, while complete production lines and high capacity plants are characterized by high-level automation. Prominent items of our product portfolio are production equipment for products requiring high technology level, such as quark dessert and ricotta production lines.

The automated milk receiving technology and equipment, which comply with all modern standards, guarantee the preserving of all nutritional characteristics of the dairy products. It includes the milk filter. The equipment quickly cools the milk down to 4°C. The homogenization equipment has one-stage or two-stage homogenizing head and electric drive, providing homogeneity and superior flavour quality for dairy products. Our separators with outstanding technical, construction, and operational efficiency metrics make the quality separation of milk components possible.

The complete sour dairy products production line allows the production of good quality classic and flavoured yogurts and kefir with various fat content, and it can also be used to produce sour cream in the required packaging. Ricotta production process is fully automated, but the temperature and other technical parameters can be adjusted. Optimization is made possible by the utilization of the thermal energy of warm products.

Other important equipment of our plants includes fermenters, LAB culture growing lines, CPI stations, salting and refrigerating equipment. Automated technical processes, high level of sterility, and the usage of stainless steel common in food industry together guarantee the high quality of the product.

With the properly selected washing method and washing system, milk processing can be made more efficient, more economical and more secure. CIP washing systems satisfy these requirements, hence manually or automatically operated, electrical, hot water or steam heated, mobile, stand-alone or shelved equipment can be provided for both small and large-scale processing plants.

SERVICE AND VALUE PROPOSITION

Plan and design of turnkey milk processing lines and whole plants. Manufacturing and installation of custom high-quality equipment. Provision of product know-how.

- Wide portfolio in know-how of classical and modern dairy products.
- Complete design engineering (layout; heating, cooling, and water requirements; compressed air; sewerage plan; air technology).
- Manufacturing of highly automated milk processing machines, manual and automated packing machines, or special technical equipment.
- Set up of plants for the required products and a capacity of 500-100,000 litres/day.

SOLUTION PROVIDER: agro metal



MUSHROOM-BIOGAS COMPLEX AGRO - SYSTEM

BACKGROUND

All organic waste from mushroom production (spent mushroom substrate) are utilized in a biogas plant to decrease the environmental footprint of the production and bolster environmental sustainability.
Generated energy (heat and electricity) can be returned to mushroom growing. The residue of biogas production is a valuable organic fertilizer, which can be applied to fields where the straw for mushroom substrate is grown.
Due to the technology, we could produce substrate for oyster and poplar mushrooms, grow and distribute traditional and organic oyster and poplar mushrooms on wholesale and retail markets. The system provides a whole value chain production in the form of a mushroom-biogas complex agro-system. It is the world's first such system and perfectly embodies all the knowledge, experience and innovative effort of our partnering company.

TECHNOLOGY

By establishing this complex system, the entire problem of the organic waste of oyster mushroom growing has been eliminated, the company turned to be a decentralised renewable energy producer. Further advantage of the development is that a multiple utilisation of an agricultural by-product – the wheat straw – is realised in the mushroom production and energy generation complex system, and at the end of the process the final digested material is given back to the soil as a fertilizer as the flow chart illustrates.

The plant produces 1,2 million cubic meters of biogas annually, for which 7.000-9.000 tons of agricultural organic material is required per year. The produced biogas is transferred to electric power and heat energy in the gas motor, which has a 330 kW electric capacity and 400 kW thermal capacity. A part of the heat energy is necessary to provide the required heating of the fermenter to keep the biological processes running. The remaining energy, an approximate annual quantity of 2,68 million kWh, provides the heat supply of the mushroom producing tents.

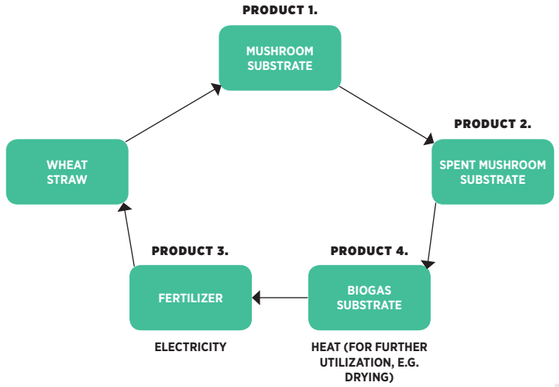
SOLUTION PROVIDER: Pilze Nagy

Thus, we can offer a well-developed straw-based oyster mushroom substrate production technology, an energy saving oyster mushroom growing technology under various climatic conditions and a spent oyster mushroom substrate based in biogas production technology.

SERVICE AND VALUE PROPOSITION

Technology and know-how transfer of the full, complex mushroom agro-system including biogas and mushroom production.

- Possible end-products include fresh oyster mushrooms, black poplar mushrooms as well as processed mushroom products (canned, sliced and powdered).
- Capacity enables distribution of fresh oyster mushrooms in wholesale and retail markets.
- 7.000-9.000 tons of agricultural organic material required per year.
- Production of 1,2 million cubic meter of biogas annually.





CRUDE VEGETABLE OIL PROCESSING

BACKGROUND

Sunflower is the main plant in Hungary, and belongs to the main plants of the world providing food oil. It becomes more and more important in modern and healthy human nutrition, and - according to mid-term forecast - there is an increase in the demand for oil crops and their by-products. We plan and coordinate the establishment of plants, from smaller processing plants to big plants processing several hundreds of thousands of oilseed materials. Our technologies are suitable for pressing rapeseed and sunflower, but can also be used for soybean, flax, pumpkin seed, castor, hemp, mustard seed, paprika seed, and sesame seed.

TECHNOLOGY

We offer 3 basic processing technologies for extracting oil from major oil plants (cold and hot pressing, middling extraction). The method chosen depends on market demands, the investor's plans, and the available raw material.

We also take the conditions of raw material supplies and goods forwarding into consideration when building the plant. We elaborate collaboration plans for selling and/or utilizing by-products (e.g., sunflower pellets), or install a renewable energy system on the premises.

Our high-quality and durable plant oil presses are provided as parts of technical units corresponding to the expectations regarding production, or are adapted to existing infrastructure. They can be operated 24/7, while their capacity ranges between 15-1000 kg/hours. Our filters have stainless filter plates and automated control unit, and can be ordered with capacity of 250/500/700/1000 litres/hour.

SOLUTION PROVIDER: Elliti '92 1951

SERVICE AND VALUE PROPOSITION

Plan and design small and big plants suitable for pressing rapeseed, sunflower, and other oilseed in cooperation with all consultant designers (architect, building services engineer, public utilities, etc.).

- Complete technical engineering, including facility support systems (heating, water supply, sewerage, air filtering systems, A/C systems).
- Creation of feasibility studies for supporting decision-making processes.
- Creation of investment programs, conceptual designs, drafts, planning application documentation, tender plans, and final construction drawings.
- Sunflower seed processing capacity ranges from 1.9 t/h to 83.3 t/h.
- Cold pressed vegetable oil up to 0.7 t/h, extracted vegetable oil up to 35.0 t/h





DISTILLATION TECHNOLOGY TRANSFER

BACKGROUND

We deliver high-quality, innovative equipment and automation for all phases of the distillation process, from raw material processing and fermentation to bottling where it is required to achieve top level products.

Our full turnkey distillery systems for premium-quality eau de vie production include customized solutions, layout design and process integration regardless of size, scale and complexity. As a part of the system, integrated and reliable mash handling and innovative distilling units are provided, which allows any distilleries to be able to maintain continuous production and operations.

TECHNOLOGY

Special software aided automation system helps monitoring the whole distillery processes and allows for remote control. This gives the opportunity of easily achieving best case production scenarios as well as utilizing and reusing the same and exact recipes that had been found the highest quality during testing. It contributes to a constant top level product portfolio.

Steam-powered production stills are 10-15% more energy efficient than the stills produced by other industry-leading European still manufacturers. This means lower operational costs while taking better care of the environment.

Distillery design services and equipment includes energy-saving modules that re-cycle water for mash pre-heating, condenser cooling, and Clean in Place (CIP). All equipment is fully automated and linked to the same central-control system that enables remote distilling operations and monitoring of large-scale, commercial distillery.

SERVICE AND VALUE PROPOSITION

Design of complete energy-saving distillation lines including computerized supervision and control. Manufacturing and technical assistance for customized distillation equipment.

- 10-15% of energy-savings to traditional systems.
- Fermentation systems based on bioinformatics with customized microcomputers and integrated automation.
- Computerized intelligent supervision, 3D interactive realistic dynamic operating surface allows for remote control, logging and alarming.
- Stills and other distillery equipment are built to last long and are known for their exceptional uptime rates of 99%+.
- 3 international and 12 European patents on proprietary distillation technology.





SOLUTION PROVIDER:



BREWERY SYSTEMS AND EQUIPMENT ENGINEERING

BACKGROUND

Manufacturing of extremely delicious beers is based on optimal usage of high-quality natural ingredients, brewing malt, hop, and brewing yeast, made possible by our own technical systems. Traditional brewing methods are in harmonic combination with modern technologies and the strictest hygienic requirements in breweries, which produce classic bottom-fermented and top-fermented, pilsner and bock, pale and dark types of beer.

These modular or complete breweries are designed and manufactured in consideration of the most modern and effective brewing technology currently available, and we also transfer the manufacturing rights and share our experiences about the pale, dark, lager and premium beers.

TECHNOLOGY

Our aesthetic modular mini breweries, which can also be manufactured in containers for easier installation, always provide a wide range of fresh beers. The equipment (also used by industrial breweries) has long lifetime and compact design, is always made of high-quality, mirrored stainless steel, and can be produced with copper cover upon individual request. These industrial type breweries are equipped with CKT fermentation tanks of various sizes—the smallest has a working volume of 1 m^3, while the largest has 100 m^3.

Computer-controlled execution of the malt mashing process enables the accurate set-up of the process, which is required for brewing various types of beer. The highly efficient, automated filtering tun provides wort filtering capabilities, and creates clear wort in high volumes in a short period. The automated, 2-step beer filtering system provides long shelf-life and helps maintaining the flavour.
Our advanced, universal hop boiler and whirlpool tun shortens the period of wort boiling, helps keeping the quality of the wort, and ensures efficient boiling and complete protein coagulation.

The system can be used by installing an external boiler that allows quick and effective boiling on a higher temperature (104-105°C) by isolating the air and the wort.

SERVICE AND VALUE PROPOSITION

Design and completely develop modular mini breweries and turnkey industrial breweries. Manufacture and install custom high-quality equipment. Provide know-how about the product.

- Reference breweries from Germany to Russia complying with the newest and strictest quality standards.
- Know-how for bottom-fermented and top-fermented, pilsner and bock, pale and dark beers.
- Manufacture and distribute highly automated, state-of-the-art brewing equipment.
- ISO 9001 and GOST-R certification.



SOLUTION PROVIDER: agrometal



INTELLIGENT FERMENTATION SYSTEM FOR WINERIES

BACKGROUND

Since its establishment in 1999 as a Hungarian SME, Hagyó Ltd. has become widely known for its innovative world-class technologies in the field of wine-making. These solutions are adapted in a flexible manner to the size, product structure and existing technical and technological background of the plants.

Our full-scale services include the modernization, design and constructions of winery systems, as well as manufacturing high-quality appliances such as plate and tubular heat exchangers, heating and cooling units, full refrigerant systems, cooling storages and cellars or automatic barrel washers. Besides general equipment and solutions, we optimize the efficiency of our partnering wineries with our special, intelligent fermentation controlling system.

TECHNOLOGY

Our intelligent system for supervising and controlling fermentation (Called PASZTOR IEVR) provides the realization of safe fermentation of the properly processed fruit. This is a dynamic, variable, intelligent controlling system, that is flexibly adaptable to the actual microbiological properties of the product, and hereby allows for the possibly most tolerant and safest treatment avoiding an eventual evolution of an irrevocable process.

The system was designed from the perspective of the end-users of the technology, therefore the process controlling system is covered with an intuitive user interface. For the operation of the system, no computer skills are required, since the UI of the system allows for fast learning and adaptation. The central computer of the system is linked to all the input and output signals used for controlling. The interface displays the realistic illustrations of all connected equipment and processes.

The system comes with multiple functionalities including temperature control, mixing, soaking, fermentation monitoring, and inert gas technology. The structure of the system is compiled of control panels, data collection computers, control module, low voltage modules, external equipment, network module and high voltage system.

SERVICE AND VALUE PROPOSITION

Design of complete lines for wineries including computerized supervision and control. Delivery and technical assistance for high-quality equipment and appliances.

- PASZTOR IEVR intelligent system for supervising and controlling fermentation.
- Fermentation systems based on bioinformatics with customized microcomputers and integrated automation.
- Intuitive user interface for easy use of the system.
- Computerized intelligent supervision, 3D interactive realistic dynamic operating surface allows for remote control, logging and alarming

SOLUTION PROVIDER:

Kereskedelmi és Szolgáltató Kft. HAGYÓ



POULTRY SLAUGHTERHOUSE AND PROCESSING

BACKGROUND

Due to our long-time involvement in the poultry-slaughtering industry, we offer complete design, manufacturing and installation of slaughterhouses and meat processing plants with unique solutions. We cover the whole value chain from manufacturing machinery, transfer of knowledge and the implementation of complex, full-scale slaughtering and processing lines.

TECHNOLOGY

The inner technology of the processing plants is designed by harmonizing the state-of-the-art, completely closed and automated systems, from livestock transport to automated evisceration until the hygienic packaging of the final product. All the processes completely comply with the standards on health and on the hygiene of foodstuffs of the European Union, and with CE-standards.

Production of high-quality end products is supported by a broad range of slaughtering, cutting, eviscerating, chopping, and packaging lines equipped with semi- and fully automated transportation systems (overhead conveyor systems, loading systems and elevators, conveyor belts, frames systems, PLC-controlled conveyor systems).

The thoughtful and professional combination of our slaughterhouse and meat processing equipment (stunning and killing machines, bleeding equipment, scalding tanks, de-feathering machines, manual and automated evisceration machines, cut-up equipment, smoke carts and skewers) allows for the processing up to 10 000 broilers / hour.

SERVICE AND VALUE PROPOSITION

Delivering of turnkey poultry slaughterhouses, manufacturing high-quality equipment and modernization of existing plants.

- Processing plants with capacity up to 10,000 pieces of broilers/hour.
- Metal works with an extended pneumatic network on 20 000 m^2 site.
- International references include Hungary, Germany, Ukraine, Slovakia, etc.
- Full compatibility with all European Union health, hygiene and design standards including HACCP, all manufactured products are fully CE certified.
- Top quality semi-automatic and fully automated systems.



SOLUTION PROVIDER: SAMPO Élelmiszeripari Gépgyártó Kft.



PORK AND CATTLE SLAUGHTERHOUSE AND PROCESSING

BACKGROUND

With the spread of large-scale animal farming, there is a growing demand for humane slaughtering technologies and for the compliance with international hygienic standards. We fully align all our slaughterhouse project management and operation services with these modern-time requirements and assist our partners in producing high quality end products. Our experience covers slaughterhouses for pigs and cattle, and includes the design of slaughter line equipment, logistics systems, IT systems, refrigeration plants, packaging systems, retail packing, palletizing, and all necessary service facilities required for the approval of the entire plant.

TECHNOLOGY

We provide complete process equipment from slaughtering, processing, hygiene to sewage water treatment. The installation and start-up of the slaughterhouses are carried out by our highly qualified technical staff with over 30 years of experience, who takes care of the installation of aerial transferring lines, the ground equipment up to the commissioning, testing and training of personnel in charge with the use and management of the plant. Our slaughterhouses are supplied with top-level equipment and machinery such as stunning and killing machines, bleeding equipment or cut-up equipment.

Besides, we also fit our plants with processing equipment for the food-products in accordance with the most recent international rules on meat processing for low, medium and high-risk products. Our equipment portfolio covers the production of top quality meat stuff (bacon, sausages, salami, dried ham, cooked ham) and other added-value products, including raw material handling, standardization, curing, minced meat, filling processes, roasting and cooling lines, smoking and cooking systems, fermentation systems, slicing and packing.
We gained unique knowledge of production planning, animal welfare, traceability, food safety, quality assurance and control systems, all of which meets international standards.

In addition, we have great focus on hygienic design including waste water technologies, sewage water treatment equipment, floor drains, filters, as well as chemical dosing systems.

SERVICE AND VALUE PROPOSITION

Delivering turnkey pork and cattle slaughterhouses, manufacturing high-quality equipment and modernization of existing plants.

- Slaughtering of 800 pigs or 150 cattle per shift, production of 20 tons of meat products.
- Metalwork's on 5 000 m^2 site contributes to fast manufacturing of equipment.
- International references include Hungary, Romania, Moldavia, Russia, Laos, etc.
- 30 years' experience in designing small and medium sized pig and cattle slaughterhouses and broad range of meat processing machines.
- Quality/Patents: ISO9001 2008, ISO, CE, FDA.



SOLUTION PROVIDER: KORAX



“ULTRA LOW OXYGEN” COOLING TECHNOLOGY

BACKGROUND

After harvesting or processing, each product type requires different refrigeration conditions. Depending on factors such as climate, weather, soil, growing conditions and harvest time, the optimal conditions differ not only per year, but also by product and even by breed.

Besides delivering general turnkey cold and freezing rooms we provide our customers with tailor-made solutions including ULO or CA (“Ultra Low Oxygen” or “Controlled Atmosphere”) storage technology to extend the lifespan of fresh products. ULO storage is designed to keep your product fresh as long as possible after harvesting. This is because some fruits can be stored longer if not only the temperature but also the oxygen level is lowered, in so-called ULO rooms.

TECHNOLOGY

Ultra-Low Oxygen conditions can contribute to an extended storage period which is achieved by creating an atmosphere with a higher CO_2 (carbon dioxide) and lower O_2 (oxygen) concentration together with the required temperature / humidity level.

Our ULO technique requires additional equipment, such as nitrogen generators, gas equipment, fully gas-proof rooms and doors and a set of controls. With a CA scrubber (nitrogen generator), fruits can be quickly brought under ULO conditions. CO_2-scrubbers are used to manage the CO_2 levels in the cool cell. Air from the storage area is removed by the scrubber, and the CO_2 purified air is then fed back.

A control system measures and registers O_2 and CO_2 and operates the CO_2 and O_2 scrubbers. In addition, the same control system regulates cooling (switching on/off, defrosting, machine room regulation), carries out ethylene measurements and operates the ethylene converter. Fruit that is stored in a CA/ULO cell always loses moisture. This moisture loss of fruits is reduced with a humidification system to keep humidity above 90%.

SERVICE AND VALUE PROPOSITION

Designing turnkey energy-saving cold storages with top-quality components including CA/ULO technology.

- Operating systems for regulating O_2, CO_2, ethylene, temperature level and moisture balance.
- Combination of cooling technology and ULO can lengthen storage time 2-4 times longer than classic cold rooms.
- Diminished loss of acids, sugars and vitamin C.
- Commercialization period can be extended up to the maximum storage potential of the fruit.
- Safe and healthy alternative to chemical treatments after picking.



SOLUTION PROVIDER:

ROTTE Group



MULTI-FRUIT AND VEGETABLE PROCESSING

BACKGROUND

Semi-finished agricultural goods cover almost sixty percent of the world’s food product market. Examples of this product sample are fruit and vegetable pulps, purees and powders. There is a sharp increase in the demand for powdered fruit and vegetable types, since it is associated with lower transportation and storage costs compared to the use of apple pulp and concentrates.

Hungarian experts have gained considerable experience and know-how in designing and supplying multi-fruit and vegetable processing plants with a wide variety of end-products. Due to the technical capability of processing multiple classes of fruits, such plants can be operated for longer periods of time, avoiding seasonal stopovers.

TECHNOLOGY

Technological production lines are assembled depending on the desired end-product and the amount and type of the raw material. Installation of fruit and vegetable processing plants necessitates larger storage capacity and continuous supply from the raw material producers. The end-products of the process are typically fruit and vegetable juices, fruit and vegetable pulps, the aseptic condensates of these (puree), fruit and vegetable powders, and lyophilized products.

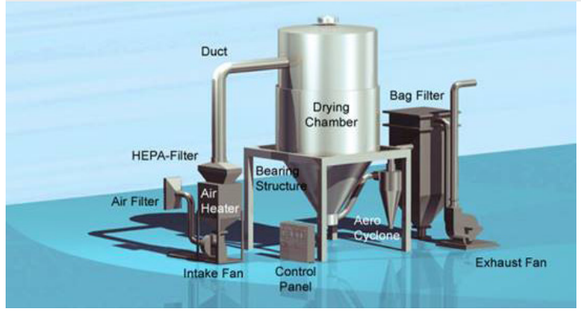
Our fruit processing plants meet the most stringent food standard specifications and have a high degree of automation that substantially reduces operating costs. In case of appropriate circumstances (sufficient number of by-products) the processing plant may also be combined with renewable energy systems partially covering the plant’s energy supply. The capacity ranges from very small plants (mobile processing devices capable of processing a few 10 tons of raw material) to plants processing hundreds of thousand tons based on individual design, calibration and concepts.

End products may be very diverse in terms of packaging: they range from a few hundred grams / litres through sack (5-100 kg) or barrels and large aseptic containers to be mounted on trucks (25 m^3). An important aspect of the technology is that the plant should be operating continuously for the longest possible time: this aspect is also considered during the design process.

SERVICE AND VALUE PROPOSITION

Designing turnkey multi-fruit and vegetable plants including processing lines and equipment.

- Know-how of processes for many fruits, from various berries and fruits like apples, plums, cherries to special ones, like buckthorn.
- High level of automation to reduce operating costs.
- Wide variety of end products, like juices, juice condensates (brix 23-70), fruit and vegetable powders, dried fruits, jams and lyophilized products.



SOLUTION PROVIDERS:

MAURER GEP

ENVIRONMENTAL TECHNOLOGIES









Hungarian
National
Trading House

WATER MANAGEMENT AND TREATMENT





COMPREHENSIVE WATER MANAGEMENT SOLUTIONS

BACKGROUND

With almost 150 years of experience in potable water treatment, potable water production, pipe network operation and potable water services as well as sewage treatment and related services, we offer world class technologies and our expertise and experience in the design, construction and operation of your water supply system as well as in reorganization and process management, customer service processes and non-revenue water management.

TECHNOLOGY

Using our expertise in water treatment, our product portfolio includes mobile water purification systems usable in emergency situations, treatment of water resource contamination or water packaging systems to provide healthy potable water supply.

We select the technology most suitable for local circumstances at-all-times, and as system integrators, we are not committed to any supplier but offer our customers good value for money without any concealed costs.

We aim to improve our partners' operation and security of supply, as well as financial management to have satisfied customers through the most sophisticated technological and company management solutions tailored to local expectations.

SERVICE AND VALUE PROPOSITION

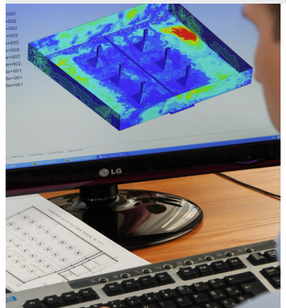
Complete support in development, manufacturing and implementation of potable water and treatment systems.

ENGINEERING:
- Network reconstruction planning.
- Pipe reconstruction technologies (NO-DIG) without the need for trenching.
- Establishment of Geographic Information System (GIS).

OPERATION:
- Establishment of workflow monitoring and operation systems.
- Technological process control (SCADA).
- Waste water collection and waste water treatment.

EFFICIENCY IMPROVEMENT:
- Reducing ratio of non-revenue water.
- Establishing water-metering strategy, calculation of water production-consumption balance.
- Introducing reporting systems, identification of performance indicators.
- Setting up sophisticated customer service systems.
- Work force management.

MAJOR REFERENCES
- Sri Lanka: Water Supply and Drainage Board, reconstruction works of two water treatment plants (Expansion of daily capacity of 71,000 m^3 to 90,000 m^3 and from 40,000 m^3 to 60,000 m^3).
- Indonesia: 'IKK Water Supply Program and Small Water Treatment Plant for Water Scarcity Area' building of water treatment units (20 pieces of 72 m^3/h capacity and 14 pieces of 144 m^3/h).
- Azerbaijan: AZERSU Public Limited company, implementation and introduction of an electronic work force management system and signing of a 10-year-long IT strategy and cooperation.



SOLUTION PROVIDER:

BUDAPEST WATERWORKS



ECO-FRIENDLY WATER TREATMENT TECHNOLOGIES

BACKGROUND

Potable water is usually produced by the cleaning of natural water sources, subsoil water bases, surface water bases (lakes and rivers) and high salt concentration (seawater) water bases. Environment-friendly potable water supply solutions for local governments, institutions and companies engaged in energy utilization, food processing, chemical industry, agricultural or pharmaceutic activities.

TECHNOLOGY

The company's expertise covers all areas of water treatment and management, including treatment of polluted water [such as brome, arsenic], planning, building and operation of fresh water supply systems and plants, as well as innovative, cost-efficient and mobile solutions for desalination.
There is a unique knowledge in the production of industrial water, creation of special cooling water for power plants and the use of thermal water in food, beverage, juices and other drink production. Built-in and container-based technologies are both available.

SERVICE AND VALUE PROPOSITION

With the company's in-house engineer training school, strong R&D department and engineering teams, offer full-service change. Solutions for all your requirements: from tailor-made engineering solutions to the operation of plants, to proprietary technological solutions for irrigation and a pre-installed container solution for the easy deployment of complete water treatment plants.

- Water analysis, laboratory measurements.
- Research, development.
- Planning, licensing.
- Manufacturing.
- Commissioning, system operations.
- Maintenance and servicing.
- Remote control and monitoring system.
- Internationally accepted vocational training.

CAPACITY
- Technological water purification: 50 m^3/h.
- Water purification in the pharmaceutical industry: 50 m^3/h.
- Complete desalination: 840 m^3/h.
- Ground water treatment: 25 m^3/h.
- Containerised desalination capacity: 20-140 m^3/d.

CONTAINERISED SOLUTION

Capacity					Footprint	Shipment
Daily capacity	Hourly max.	Person Equivalent				In containers
in case of 22h op.t.		Minimum	Optimum	Full usage		
		3 l/p/d	10 l/p/d	80 l/p/d		
20.000 l/d	960 l/hr	6.667 ps	2.000 ps	250	5 m^2	10' (7.2 m^2)
60.000 l/d	2.800 l/hr	20.000 ps	6.000 ps	750	7 m^2	10' (7.2 m^2)
140.000 l/d	6.500 l/hr	46.667 ps	14.000 ps	1.750	10 m^2	20' (14.4 m^2)



SOLUTION PROVIDER:

HIDROFILT



WASTE WATER AND BIOGAS PLANT TECHNOLOGY

BACKGROUND

Sludge from waste water cleaning systems, together with other agricultural and food industry wastes may provide a strong basis for a sustainable and environment-friendly way of planning the future. Mutual planning of waste water cleaning, sludge handling and biogas production technologies may result in economically more effective environment protection systems, and should bring significant positive effects to the environment.

TECHNOLOGY

The biogas plant offers high quality, complex planning and production competencies. The planning and implementation of projects are managed with a common and optimized solution with guarantees. Fermentation systems are developed by the company, and are made of high quality components using modern technology. Produced biogas can be used as energy source or to create electric energy.

SERVICE AND VALUE PROPOSITION

The company offers turnkey and custom state-of-the-art solutions for biogas generation. They design and manufacture equipment, and operate plants for industries, municipalities and agriculture.
The company's waste wautomation and usage of high tolerance biotechnologies. It requires part-time staffgh tolerance biotechnologies, and the requirement of part-time staff in a full-time facility.

- Complete service from planning to operation.
- Highly efficient, customized and low-cost solutions.
- Capacity:
  - 5 t to 50 t/d of raw material processing.
  - 0.1 to 5 MW/h electric energy production.
- Raw material:
  - Agricultural waste.
  - Waste from food and food processing industry.
  - Communal wastewater.
  - Food industry waste.
- Mesophilic systems (33-40 °C production heat range).







SOLUTION PROVIDER:



GE WATER & PROCESS TECHNOLOGIES

BACKGROUND

From municipal customers facing growing populations - evolving complex regulations driven by climate change and budget challenges - to industrial customers who need improved uptime and yield, facing tighter budgets and increased regulatory pressure, GE has the expertise, technology, and breadth and depth of expertise to solve a wide range of water and process challenges. We're focused on solving our customer's most difficult problems so that they have the peace of mind and confidence to grow their businesses and communities.

TECHNOLOGY

Short term solutions (0-90 days) are for planned outages, unexpected demand, system failure and rough weather conditions. Mobile solutions for failures include pre-treatment systems, water treatment plant components as well as regeneration / effluent handling. Unexpected demand solutions compensate for bad regenerations / poor quality, tube leaks / high demand and changing feedwater quality.
Medium term solutions (90-360 days) are used to prepare for outages, steam blows, commissioning and seasonal cyclic production. Planned demand solutions include plant commissioning, cycling production runs and condensate polishing, while solutions for water demand changes comprise of seasonal peaking, emission reduction and change feedwater quality.
Long Term (360+ days) flexible solutions are for total cost ownership, water reuse, water recycle, water reduction and plant cost optimization. Efficiency solutions include water reuse, reduction and recycling technologies. Operational cost improvements cover plant optimization, high purity boiler water feed, total cost ownership reduction and cost optimization.

SERVICE AND VALUE PROPOSITION

As a strategic business partner, GE offers innovation, expertise and global capabilities to solve tomorrow's water, wastewater and process challenges.

- Innovation, expertise and global capabilities in the field of desalination technologies, municipal solutions, industrial wastewater solutions, process chemicals, utility solutions, zero liquid discharge, monitoring & control solutions.
- The broadest portfolio of water and process technologies, including equipment solutions, chemical and knowledge management solutions, as well as applications.
- Equipment solutions include advanced ultrafiltration, membrane bioreactor, reverse osmosis membranes and membrane chemistries, drinking water treatment, advanced anaerobic digestion, municipal waste water treatment, advanced biological metals removal.
- Chemical solutions include integrated solutions for refining, advanced cooling solutions, wastewater treatment, cool handling & dust control, remote monitoring & diagnostics.

SOLUTION PROVIDER:

Hungarian
National
Trading House

RENEWABLE ENERGIES

SOLAR ENERGY





SOLAR PANEL PRODUCTION

BACKGROUND

Solar photovoltaic (PV) modules generate electricity from sunlight, which can be fed into the main electricity supply of a building or sold to the public electricity grid. Reducing the need for fossil fuel generation, the growing grid-connected solar PV sector across the globe helps to create jobs, enables families and businesses to save money, and cut greenhouse emissions.

TECHNOLOGY

The company's solar panel production system complies with the most stringent Western European certification systems. The company produces standard and custom monocrystalline and polycrystalline solar panel modules. The company's product range includes solar panels, mounting structures, inverters, monitoring devices and supplementary electronic devices.



Type (solar cell)	Module efficiency	Area required for 1 kWp
Thin film	9%	11 m^2
Polycrystalline	15.4%	6.5 m^2
Monocrystalline	16%	6.25 m^2

SERVICE AND VALUE PROPOSITION

Service is provided to partners in pre-defined processes:

- Manufacturing and sale of monocrystalline and polycrystalline solar cell modules.
- Analysis of consumption data, and preparation processes based on such analyses.
- Assessment, taking into consideration the area, structure and orientation of the useful area of the roof together with shading factors.
- The solar cell system is scaled and designed with simulation software, based on the assessment.

CAPACITY

- 16-18 MW/year production capacity.
- Reliable guarantee system:
  - Material and manufacturer's guarantee: 10 years.
  - Performance guarantee, 90% - 10 years.
  - Performance guarantee, 80% - 25 years.
- Monocrystalline solar cells: 100Wp, 150Wp, 190Wp, 250Wp, 255Wp and 260Wp.
- Polycrystalline solar cells: 250Wp, 255W.



SOLUTION PROVIDER: korax solar



DESIGN AND CONSTRUCTION OF SOLAR PLANT STRUCTURES

BACKGROUND

Sustainability is considered one of the key concepts of the future. We must, however, start building it in the present. The company's expert team and innovative approach bring cost-effective, timely solutions for any solar power plants, and meet EPC needs. The company's project portfolio and references include reference projects of more than 500 MW all over the world, from Chile to Japan.

TECHNOLOGY

For system owners, we deliver PV power plants on time and on budget, designed to maximize their economic performance, and built to provide reliable solar energy over the lifetime of the plant.
For plant builders, we offer pre-engineered solutions with engineering and construction services and superior warranties.

SERVICE AND VALUE PROPOSITION

Design, planning and construction of complete solar plant structures and projects.

- Solar power plants, dual axis SUN trackers.
- Special devices and equipment.
- Complete technology lines.
- Pressure vessels, heat exchangers.
- Pump station, modular products.
- Large storage tanks.
- Faster construction compared to other competitors.



Our references worldwide showcase our contribution to sustainability through our projects:

- Cestas, France: 300MW.
- Arsac, France: 62MW.
- La Huayca, Chile: 30MW.
- Kawasaki, Japan: 20MW.
- Carbunesti, Romania: 20MW.



SOLUTION PROVIDER: OLP-TECH

Hungarian
National
Trading House

RENEWABLE ENERGIES

ENERGY EFFICIENCY





RENEWABLE ENERGY FROM WASTE WATER HEAT UTILIZATION

BACKGROUND

Waste water is a cheap energy source, which is continuously available in urban areas and production facilities. With appropriate technology, waste water heat, which would otherwise end up as waste in the sewage system, can be utilized. Utilizing waste water heat does not affect the composition of waste water, i.e. conditions for cleaning or bioenergy production remain the same. Communal, household and industrial waste water can all be used as energy sources.

TECHNOLOGY

The company provides a technological solution to harness and utilize the energy in waste water to heat and cool buildings in a modern, environmentally friendly and economical way. The main point of the technology is to take out wastewater from the sewer line, direct it to a heat exchanger in mechanically filtered form, then direct it back to the sewer line along with separated solid particles. The heat energy recovered by heat exchangers is transferred into utility heating or cooling via water-heat pumps.

SERVICE AND VALUE PROPOSITION

Due to its virtually constant temperature, waste water heat offers much better energy efficiency than soil heat or groundwater. The system can be used both in heating and cooling modes, and can be easily connected to the existing heating/cooling systems.

- Fast and easy installation.
- High return on investment:
  - In case of new investments: 4-5 years.
  - In case of reconstruction: 8-10 years.
- No water consumption.
- City centre installation is possible.
- Easily accessible and maintainable.
- Low operational costs.
- Integrated control system ensures simple and easy supervision.
- No size limit.

CAPACITY

- Available energy efficiency values with wastewater utilization system:
  - Heating mode: COP=5.5-6.5.
  - Cooling mode: EER=6.0-7.0.
- To recover 1 MW of heating energy, 150-170 m^3/h of available wastewater is required.



SOLUTION PROVIDER:

THERMOWATT



GE PRIVATE AND PUBLIC LIGHTING SOLUTIONS

BACKGROUND

Advances in lighting technology – in particular the arrival of LED alternatives to traditional lamps – make it possible to create dramatically improved lighting systems and at the same time result significant reductions in the carbon footprint and environmental impact of every street, office, retail store or public building.

GE has been at the forefront of every development in lighting from tungsten, HID mercury and fluorescent to quartz halogen and compact fluorescents. And in the same way as we took these breakthrough technologies from the laboratory to the world's streets, homes, stores and offices, we are now doing the same with LED.

TECHNOLOGY

The vastly superior energy efficiency of LED lamps compared with traditional technologies brings immediate running cost savings of up to 90%, and a similar reduction in carbon footprint. Secondly, the outstanding performance of LED lighting – quality of light, output and efficacy (lm/W) – and high reliability means longer life, lower maintenance requirements and reduced relamping costs. In addition to this, the development of advanced control tools such as daylight harvesting and presence detection systems are based on this inherent efficiency to deliver even greater cost and energy savings.

As for indoor solutions, our functional ranges open up the benefits of LED – long life, low energy costs, bright white light – to applications such as retail warehousing, depots and industrial units. Feature or accent lighting creates contrast, defines shape and guides the eye, as a key aspect to the success of any lighting system.

Outdoor solutions make roads safer, public areas more welcoming and buildings more aesthetically appealing.

SOLUTION PROVIDER:

Energy efficiency of LED dramatically reduces the impact of lighting on our environment by cutting energy consumption and carbon emissions, while at the same time delivering a significantly longer working life. In terms of options to tackle climate change while achieving numerous other benefits simultaneously, few if any technology investments are better than LED.

SERVICE AND VALUE PROPOSITION

The company's wide spectrum of available products covers private and public usage, indoor and outdoor lighting and solutions for customers ranging from municipalities and industrial sites to office buildings.

- Up to 90% greater energy efficiency.
- Reduced CO_2 emissions vs. older technologies.
- Longer life and reduced maintenance requirements.
- Environmentally-friendly: mercury free, lead free.
- No UV or IR emissions.



Hungarian
National
Trading House

RENEWABLE ENERGIES

GEOTHERMAL ENERGY AND HYDROPOWER





GEOTHERMAL ENERGY UTILIZATION

BACKGROUND

It is crucial for both society and economy to preserve the quality and quantity of the available water resources. It is important for all communities to search for, explore and utilize new water sources (drinking, mineral and thermal water), and protect the already known water sources. The company has long experience and outstanding results in water source protection and monitoring. They played a key role in the successful implementation of more than 500 development projects.

TECHNOLOGY

This technology provides a solution for energy efficiency projects using renewable energy sources, should it be geothermic energy or energy gained from thermal water, water energy, biomass, or biogas; or for existing installations to implement energy efficiency projects.

Complex utilization of thermal water requires the precise planning of geothermic systems for improving the efficiency of thermal energy, whilst reducing the effects on the environment. During workflow planning, we also provide possible solutions to dispose of used thermal water.

SERVICE AND VALUE PROPOSITION

The company is engaged in several applications of water, including water source protection, drinking water quality improvement, establishment of mineral water bottling plants and development of thermal and medicinal baths.

- Programs to assess, evaluate and improve drinking water quality (planning, design and implementation, including construction).
- Environment and water source protection, sustainable water use (feasibility studies in environment and water basin conservation).
- Hydraulic construction planning.
- Water supply systems.
- Flood protection through regulation plans for lakes and running waters.
- River and floodplain rehabilitation.
- Renewable energy sources – engineering.
- Geothermal energy (Capacity: 0.5 MW to 4 MW).
- Optimise financial resources.
- Project management – coordinating the implementation.
- Monitor the operation of the pipelines.



SOLUTION PROVIDER:

AQUAPROFIT



MINI HYDRO POWER PLANT

BACKGROUND

Utilization of remote areas with economic value is made difficult all over the world by the fact that the construction of the electric network is costly and time consuming process. The company offers a simple, fast and cost-efficient solution for integrating remote areas rich in hydro energy into the economy, using a container-installed turbine solution. The company can provide turnkey solutions. Based on the analysis of the on-site hydrological conditions and needs, they can recommend a plant type, then produce and put it into operation.

TECHNOLOGY

The developed mini hydro power plants which are installed in a standard container are new products designed to meet the electricity needs of remote areas without power grid access. The mini hydropower plant consists of a Francis hydraulic turbine, a generator and a control system (EMS). The generator provides 400 V, 50 Hz three-phase electric current. The machine group and the necessary electric control are placed in standard containers. The project consists of designing, manufacturing and testing of turbine generator units supplied and installed in containers, for generating power for villages

SERVICE AND VALUE PROPOSITION

After transported to the location, the mini HPP can be put into operation in a short time, and can even be remotely operated and monitored through a remote-control system. In case the takeover price is guaranteed by the state, a financial offer can complete our service. Furthermore:

- On-site analysis of the local hydrological conditions and needs.
- Production and installation of complete hydro plants.
- Short delivery time.
- Minor excavation work requirement.
- Easy and fast installation.
- Easy-to-expand modular control system, from the simplest to the highest standard.
- Remote control through satellite.

CAPACITY

- Rated net head: 60-65 m.
- Rated discharge: 1 m^3/s.
- Rated power: 0.5-4 MW.
- Voltage: 3x400 V, 50 Hz isolated.



SOLUTION PROVIDER:

Ganz 1844

Hungarian
National
Trading House

RENEWABLE ENERGIES

WIND ENERGY





HORIZONTAL AXIS WIND GENERATORS

BACKGROUND

In the recent decades, the utilization of wind power and its conversion into electrical energy, became one of the biggest businesses in the world. The industry that has been developed around it - due to the changing atmospheric conditions such as more frequent and stronger winds - can be a solution for the battle against global warming.

TECHNOLOGY

It contains manufacturing of precisely machined, large-sized welded steel structures, which are supplied to the energy sector's key players, and solutions, such as generator houses for wind farms and for other energy industry installations. In the last 30 years, the company has become a well-known and appreciated supplier for the biggest members of this industry like Siemens, General Electric, Vestas and ABB. The company is the manufacturer of complex welded and precisely designed heavy steel constructions for the traditional and renewable energy sector. The development and production of horizontal axis Wind Power Generators are from 5 kW to 50 kW.

SERVICE AND VALUE PROPOSITION

The design and structure of the generator and the associated components entail very low maintenance requirements. Wind power generators are designed for easy servicing. The control system is continuously monitoring the machine's environmental and operational parameters.

- Optimised to fit continental wind patterns.
- Power generation even at lower wind speeds.
- Special wing profile.
- Low maintenance requirement.
- Client-server-based monitoring system.
- Quick servicing.
- Commissioning, system operations.

- Variety of designs.
- Capacity: 5 kW to 50 kW.
- On-grid and off-grid solutions.
- Return on investment: 7-10 years.

	WTW.5	WTW.10	WTW.25	WTW.50
Max power (kW)	5 kW	10 kW	25 kW	50 kW
Max RMP (rpm)	0-210	0-110	0-96	0-52
Min active wind speed (m/s)	2 m/s	2 m/s	2 m/s	2 m/s
Rated wind speed (m/s)	8 m/s	9 m/s	8 m/s	7 m/s
Cut out wind speed (m/s)	22 m/s	21 m/s	23 m/s	25 m/s
Tower height (m)	12 m	18 m	18, 24, 30 m	24, 30, 36 m
Rotor diameter (m)	6.60 m	8.40 m	15.40 m	22.40 m



SOLUTION PROVIDER:

LAKICS™ We love steel



VERTICAL AXIS WIND GENERATORS

BACKGROUND

Wind power generation has been growing worldwide due to its benefits in terms of environmental protection and costs. Wind turbines can generate electricity in nearly half the time of day-use solar cells and operate at night producing a significant amount of electricity in a 24-hour cycle.

TECHNOLOGY

The next generation wind turbines are a source of independent electric power for small capacity users. Because of the development, this extremely low-noise (silent), environmentally friendly, cost-effective, high-capacity, long-life wind generator, requiring no maintenance cycles and capable of generating electric power starting from a wind speed of 0.5 m/s but also working safely in a wind storm, has become a marketable product thanks to its unique installation and setting parameters adjusted to the environmental conditions.

SERVICE AND VALUE PROPOSITION

Wind energy power stations as stand-alone solutions for remote off-grid locations or on-grid environments.

- Independent power supply for families and businesses.
- Power generation starts at a wind speed of 0.5 m/s and is guaranteed even at a stormy wind speed of 50 m/s.
- Wide product range tailored to individual needs, from 1.5 to 50 kW.
- 30-year planned service life.
- Quick return on investment, between 8-12 years.
- Slow speed, vibration-free and noiseless system.

ON-GRID WIND POWER GENERATORS

- 36,000-55,000 kWh of electricity generated annually (running for 8-12 hours daily at maximum power).
- Solutions in the range of 3-50 kW.

OFF-GRID WIND POWER GENERATORS

- In places where the electricity supply is not installed, unstable, or difficult to install.
- To environmentally conscious consumers who wish to be self-suf ficient.
- For boats and as power generation equipment for water facilities.
- In case of off-grid equipment, the customer's electric network can be connected to the operator's grid after disconnecting the off-grid equipment.
- Solutions: 1.5 kW (for ships and yachts), 5 kW, 10 kW and 20 kW.



SOLUTION PROVIDER:

INFINITE ENERGY

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RENEWABLE ENERGIES

BIOMASS







ENERGY CROP FOR THE BIOMASS INDUSTRY

BACKGROUND

Renewable energy replaces conventional fuels in four distinct areas: electricity generation, hot water/space heating, fuels, and rural (off-grid) energy services. Biomass is a biological material derived from living, or recently living organisms. As an energy source, biomass can either be used directly via combustion to produce heat, or indirectly after converting it to various forms of biofuel.

TECHNOLOGY

Production of industry size, virus-free, robust, vigorous, homogeneous Arundo energy crop plantlets in high-tech micro propagation laboratories. These somatic embryo-derived plants are offered at a competitive price both locally and globally for the following industries: biomass power plants, biogas power plants, second generation cellulose-based bioethanol plants, textile industry, furniture industry, paper and pulp industry and phytoremediation purposes.

SERVICE AND VALUE PROPOSITION

Arundo energy crop plantlets can excellently adapt to and thrive on even marginal lands, e.g. on salty, excessively alkaline, temporarily flooded soils, or on soils that are contaminated with carbon, agricultural or industrial chemical substances.

MULTIPLE INDUSTRIAL USES

- High biomass yield (up to 20-55 dry tons/year) for over 20 years.
- Energy content: equivalent to wood (on dry mass basis).
- Excellent raw material for pellet, “bio-brick”, biochar, torrefaction, pulp, and fibre.
- Biomass source for biogas plants of all sizes.

NO BIOHAZARD OR HEALTH RISK

- Non-invasive: no seeds - no aggressively spreading rhizomes, proper agro technology is available for containment and elimination.
- No environmental risks for international markets: the propagation material is free from any viruses, pests and pathogens.

LOW-COST LOW-INPUT CULTIVATION

- Perennial: no annual tillage or replanting is required.
- No specialized pests, no pesticides, low fertilizer requirement.
- Empty cell mass harvested at the end of the growing season, all mobile nutrients sequestered into the rhizomes.





SOLUTION PROVIDER:

ACF
Arundo Cellulóz Farming



CONTAINERISED BIOMASS AND WOOD CHIP BOILERS

BACKGROUND

All countries produce agricultural or forestry waste biomass that can be used in the production of heat without established infrastructure. Drying plants, food-processing plants and heating technologies require heat energy produced on site. The biomass boiler can be modularly built based on the required heat energy.

TECHNOLOGY

Multi fuel boilers from 15 kW are designed in consideration of heat exchangers of custom developed automatic boilers, with the aim to ensure the best possible solution in terms of efficiency and economical operation.

Wood chip boilers with a power between 35 kW and 500 kW are suitable for heating detached homes, institutions or even larger facilities. The main parameters of the heating process are easy to control. Silos with a volume of 1.8-3.1 m^3 for storing and feeding wood chips are also available for the boilers: an automatic feeder system feeds the boiler with fuel.

SERVICE AND VALUE PROPOSITION

The increasing price of gas and the insecurity of supplies generate considerable demand for substituting this energy carrier through the production of biomass boilers, both in homes and larger facilities. The company provide automatic straw, wood chip and briquette boilers with special extras that fully comply with safety and environmental requirements.

- Quick-to install, containerized solutions.
- Modular design.
- Unique additional features: tobacco and fruit dryers (also containerized).

- Capacity: 35 kW-500 kW.
- Suitable for heating detached homes, smaller buildings and workshops.
- Boilers with automatic control.
- Low maintenance requirement and simple ash extraction.
- A wide range of various size raw materials.



SOLUTION PROVIDER: Dolina Kft.



BIOMASS AND WOOD CHIP BOILERS

BACKGROUND

Biomass, as a source of heat energy can potentially be competitive with fossil energies at local level. Each country that has biomass resources becomes more and more important to exploit these resources in a conscious way. The company's systems are heat centres, providing complex solutions to plants and buildings that require heating, including the boiler, and the whole outer (power line) and inner (wiring, additional special interior radiators) heating systems.

TECHNOLOGY

For livestock farmers, it is a great advantage of hot water and hot air systems that—compared to gas brooders and hot air blowers—they do not use up oxygen from the buildings, and less ventilation is necessary, which results in considerable savings in heating costs and the cost of electricity used for ventilation. In the stables there is no condensation and the litter is significantly drier, which improves the welfare of animals.

The boilers have a power between 20 and 800 kW (with cascade control if required), so technologically suitable and economical solutions can be provided to facilities with high heating requirements: animal breeding facilities, crop drying facilities, agricultural facilities and local governments.

SERVICE AND VALUE PROPOSITION

The energy efficiency of the heating systems is further improved by the unique heat recovery chimney, the high-quality district heating pipeline and the special hot water-hot air radiators. A wide range of biomass fuels is available: wheat straw bales, the stalk of maize, barley and rapeseed, wood chips, agro pellet, screenings and sunflower seed shell can all be burned in boilers.

- Various types of biomass fuels.
- Low maintenance costs.
- Simple installation.
- Extended lifetime.
- Capacity: 20 kW - 800 kW.
- Household and agricultural usage.





SOLUTION PROVIDER:

ALTHERM KFT.







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SOLID WASTE ENERGY





WASTE-ELIMINATION COMBINED WITH ENERGY PRODUCTION

BACKGROUND

Because of urbanization, the volume of municipal solid waste has been increasing by 2-3 % annually, and the same tendency can be expected on the long run as well. The waste per capita ratio is approximately 2-6.5 kg per week, depending on the development of the country and the type of the settlement. Due to the increase in waste volume and the low proportion of recycling, the needs for efficient treatment and utilization of waste energy (8,500 kJ/kg on average) are more and more required.

TECHNOLOGY

As a solution, the company offers up-to-date municipal solid waste incinerators that can be operated without harming the environment. The operation of the incinerator is fully automated using computer-based process control system. The consistency setting, extraction, settling and phase separation of the paste and liquid waste is carried

SERVICE AND VALUE PROPOSITION

The company's technology provides solutions not only for municipalities but for most industrial corporations (hospitals, metal industries, research institutes, laboratories etc.) as well. Steam power and heat energy made by the furnaces cannot be used directly anywhere, but the company offers an optional equipment with electric power output for more effective usage of the energy. Utilization of the generated waste heat helps with faster return on investment.

- Medical waste incinerator.
- Hazardous waste incinerator.
- Municipal solid waste incinerator.
- Flue-gas cleaning.
- Waste water technologies.
- Complete service from planning to installation.
- Tailor-made, turnkey plants.
- Local steam and hot water services from incineration plants.

CAPACITY

- Static incinerator: max. 2,000 t/year.
- Rotary kiln incinerator: min. 2,000 t/year.
- Medical (hospital) waste incinerator: max. 2,000 t/year.
- Fluid-bed sewage sludge incinerator: min. 2,000 t/year.





SOLUTION PROVIDER: KCH

Hungarian National Trading House

KNOW-HOW AND TECHNOLOGY TRANSFER IN AGRICULTURAL, FOOD AND ENVIRONMENTAL TECHNOLOGIES



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