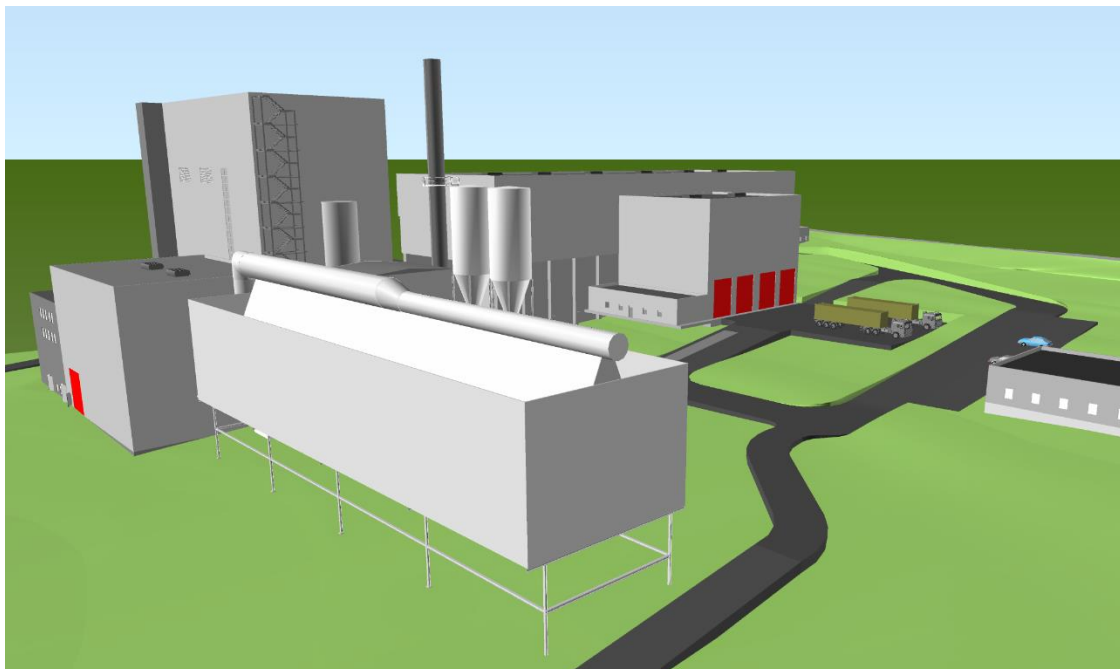


Press Release. Aalborg, Denmark, 22 January 2020

## **Aalborg Energie Teknik a/s has secured an order for a 35 MWe chicken litter-fired and environment friendly power plant in Turkey**

**Aalborg Energie Teknik a/s (AET) will assist MAV Elektrik to achieve cleaner air, prevent water and soil contamination in addition to providing a commercial income from chicken litter which was previously seen as a waste product.**

With the high efficiency power plant, called MAV Elektrik Üretim Sanayi ve Ticaret A.S. (MAV), located in the agricultural Bolu District, the power from the plant will be produced from waste, for which there is no waste management system today. MAV is a special purpose vehicle (SPV) owned by Gülsan Holding. MAV has an agreement with local farmers to collect the chicken litter and transport it to the site where it is burned and converted to green power. The investment is part of Gülsan's strategy to grow and diversify into power generation.



*3D arrangement of the MAV project in Bolu, where a major chicken litter-fired plant will be built.*

The Turkish Government motivates for green electricity and encourages chicken farmers not to dispose of chicken litter. The authorities are environmentally concerned regarding uncontrolled disposal of chicken litter, excess use of fertiliser, soil and water contamination, spread of viral/bacterial chicken diseases, risk to human health and odour from current disposal methods.

The plant will annually combust around 250,000 tonnes of biomass, which would otherwise be disposed of, and produce 35 MW<sub>e</sub> of green electricity for export to the grid instead. At the same time, the plant will produce about 35,000 tonnes ash per year, which will be used as a bacteria-free and nutrient-rich fertiliser.

Chicken is the main meat protein source in Turkey and the industry is growing rapidly. The number of farms in the region around the Bolu District is concentrated, and there is a growing waste problem from these farms. The waste from the chicken breeding cycle needs to be removed from the bird raising sheds. This bedding waste is typically a mixture of rice husk and wood chips, mixed with the chicken manure and this will provide the fuel for the new plant.



AET is responsible for engineering, procurement and construction of fuel handling system, AET Combustion System, AET Biomass Boiler, AET SNCR DeNOx System, boiler house, flue gas treatment, steam turbine, air cooled condenser, mechanical and electrical balance of plant and the overall control system. MAV will supply civil works and buildings.

The AET Biomass Boiler will burn chicken litter and will be designed for a fuel heat input of 99,5 MW<sub>t</sub> and a boiler efficiency of 92%. The AET Combustion System and AET Biomass Boiler will be optimised for the chicken litter. With high chloride and high alkali levels in the chicken litter, all necessary precautions are taken to minimise slagging, fouling and corrosion to have a reliable and continuous operation of the plant. The AET Biomass Boiler is therefore designed almost without refractory, which also reduces the cost of maintenance considerably and at the same time increases availability.

The plant is designed with redundancy in several areas to ensure a high availability and the steam parameters and superheater materials are chosen to secure a long lifetime.

The combination of the AET Combustion System and AET Biomass Boiler ensures low emissions, which comply with the European emission limits. The plant is designed in accordance with WID to guarantee the high fuel flexibility in the future.

The in-house power consumption for the power plant is only approx. 2,5% of the fuel heat input, and this increases the net power output. This enables MAV to produce more power for export to the grid.

The plant is planned to start power generation in second half of 2021.

Yusuf Özgül, Project Director, Gülsan: *"We are pleased to announce that AET will be the EPC supplier for MAV. AET have the technology competence and know-how for similar sized plants and their plants have more than 25 years' operational experience with handling and combustion of chicken litter"*.

Erik Flemming Hansen, Sales Director, AET: *"It's a great step for AET to move in to the Turkish market, and AET could not have chosen a better partner than Gülsan Holding to make this move with. It has been a pleasure to develop the MAV project together with the MAV Gülsan team - from the first day there has been a constructive cooperation in a very positive spirit"*.

*"At AET we are very happy to be part of expanding the green energy portfolio for Gülsan Holding. The 35 MW<sub>e</sub> produced at MAV will supply green energy in Turkey to approx. 100.000 households, equivalent to a reduction of around 200.000 tonnes CO<sub>2</sub> per year, if substituting a coal fired plant"*, says CEO of AET Lars Kristensen.

AET's employees have previously supplied chicken litter-fired plants to the United Kingdom: FibroPower/Eye Power Station (world's first chicken litter-fired plant) and FibroGen/Glanford Power Station.

## END

For further information about the project:

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## **About Gülsan Holding:**

Gülsan Holding is conglomerate with production of yarn, non-woven materials, hygienic film and carpets. The company is further active in construction and rental of buildings for residential and office use, dealer and rental service of cars and producing energy from hydroelectric and thermal power within Turkey. Internationally Gülsan Holding have a large factory for non-woven in Egypt. Gülsan Holding works towards quality, hygiene, environment, job health and safety rules performing all of the works accurately for the first time and continuously by meeting the satisfaction of workers at the top level and be the leader in all sectors that is operated. Gülsan Holding is based on basic values of the company of confidence, honesty, respect and leadership.

[www.gulsanholding.com](http://www.gulsanholding.com)



## **About Aalborg Energie Teknik (AET):**

The Danish company AET is a leading, independent engineering and contracting company supplying biomass-fired boiler plants, power plants, and combined heat and power plants (CHP) in the size range of 25 to 170 MW.

The AET business comprises design, engineering, delivery and service of plants fired with all types of biomass. The well-proven AET Biomass Boiler and AET Combustion System are based on more than 30 years of hands-on experience with industrial processes, steam generation and biomass combustion.

The company has a well-known and recognised reputation for supplying biomass-fired boilers and plants with exceptionally high efficiencies, high availabilities, high fuel flexibility and low emissions. Moreover, with very low maintenance costs, the AET biomass-fired plants ensure the investor a viable business case.

[www.aet-biomass.com](http://www.aet-biomass.com)