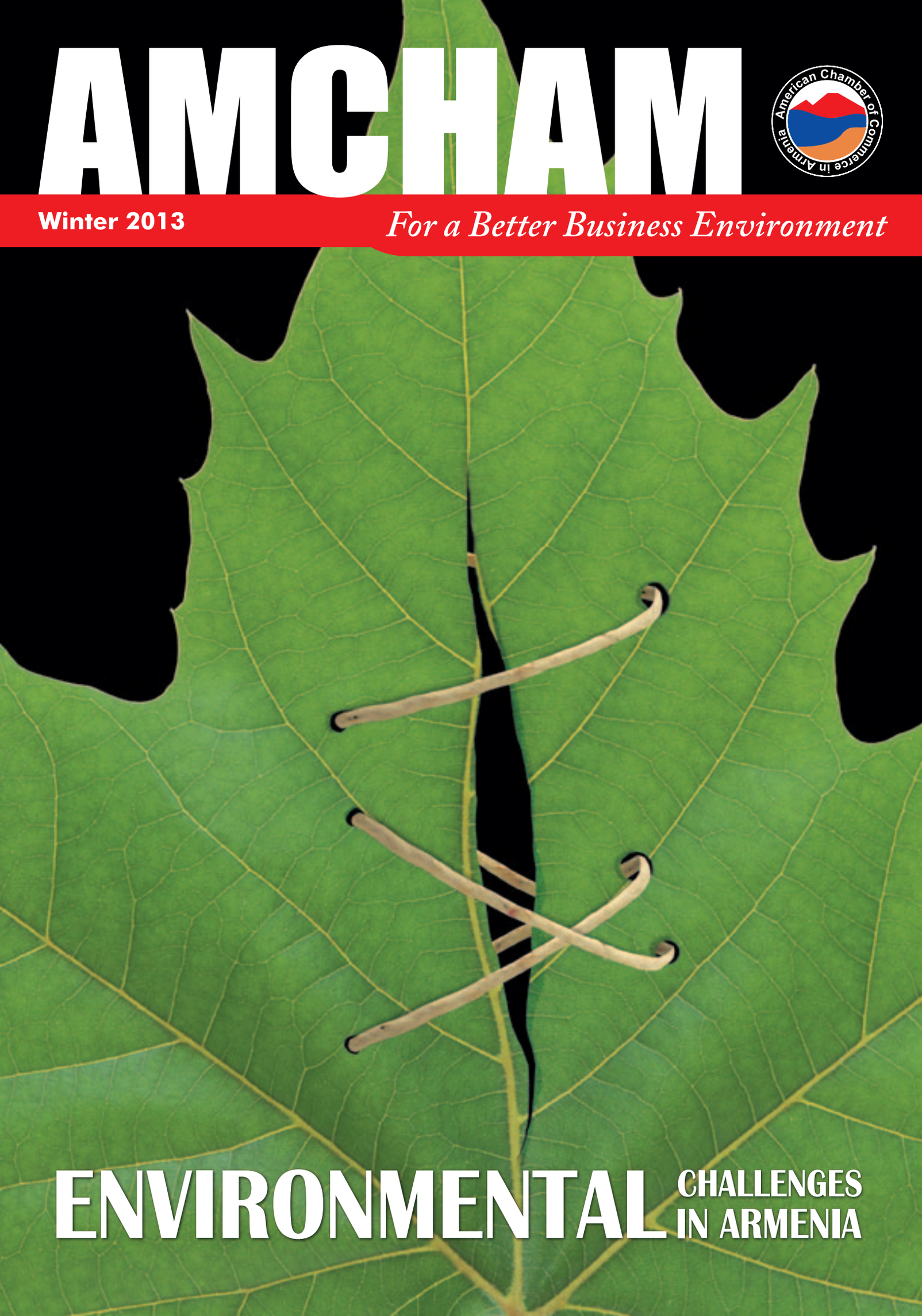
AMCHAM

Winter 2013

For a Better Business Environment



ENVIRONMENTAL CHALLENGES IN ARMENIA

Combined Heat and Power (CHP) Technologies from CATERPILLAR

Over the past decade, the interest in combined heat and power (CHP) technologies has significantly grown among energy customers, regulators, legislators, and developers over the past decade. Consumers and providers seek ways to reduce energy costs while improving service and reliability.

CHP is a specific form of generation distribution, which refers to the strategic placement of electrical power generating units at or near customer facilities to supply on-site energy needs. CHP enhances the advantages of generation through the simultaneous production of useful thermal and power output, thereby, increasing the overall efficiency.

CHP offers energy and environmental benefits over electric-only and thermal-only systems in both central and distributed power generation applications. Combined heat and power systems have the potential for a wide range of applications and higher efficiency results in lower emissions than separate heat and power generations. The advantages of CHP broadly include the following:

- The simultaneous production of useful thermal and electrical energy in CHP systems lead to increased fuel efficiency;
- CHP units can be strategically located at the point of energy use. Such on-site generation avoids the transmission and distribution losses associated with electricity purchased via the grid from central stations;
- CHP is versatile and can be coupled with existing and planned technologies for many different applications in the industrial, commercial, and residential sectors.

With the efforts of Zeppelin Armenia (the official distributor of Caterpillar in the Republic of Armenia) the combined heat and power systems are available in Armenia. The 90-5000 kw capacity generation offered by Zeppelin Armenia, provides various heating and power projects, including co-generation (the simultaneous production of heating and electric power) and tri-generation (the simultaneous production of electricity, heating and cooling), which are specified for the production of CO2, for the usage of biogas in landfill, bird farms, etc.

The CHP of Caterpillar offers significant fuel and emissions savings, achieving an overall coefficient of 90 percent.

The first cogeneration station has been operated in Armenia six years ago. The power station of the State University after M. Heratsi is the first CHP not only in Armenia, but it is also in the region. In the station, which was built in 2007, there are two Caterpillar CATG3520C sets installed with a capacity of 2000kW each.

The station, the assembling of which has been performed by the engineering team of Zeppelin Armenia, covered the heating demand of the University's four buildings during the first years, and presently, the coverage is provided for almost all hospital buildings near to the Abovyan park. Meanwhile, the thermal load accounts for some 3.7 megawatts during the winter period, representing only about 80 percent of the capacity.

In another part of Yerevan, Avan community, one CAT G3520C set is successfully operating in the power station, supplying centralized heating and electricity for more than 76 dwelling houses (more than 5,000 inhabitants).

IIn the cases of electricity supply disruption that causes serious problems, and slight variations that pose danger for the human lives, Zeppelin Armenia offers to use Caterpillar emergency power systems.

The diesel gensets are currently in serious demand. There are already more than 120 deisel gensets operating in the hospitals, supermarkets, banks and other locations of vital importance in the Republic of Armenia.

The diesel gensets of Caterpillar have some 10-6000 kW in capacity, which means that in case of emergencies they can supply electricity from the small apartments up to small communities.

You can rely on our experience with power system, diesel gensets, and gas engines for co-generation. You can entrust our know-how in power supply with diesel or gas engines.

All systems satisfy EPA (Environmental Protection Agency) and EU emission regulations - powerful, low in pollutants and environmentally friendly.