

The First Degree – Ominous Threshold Reached as Leaders Meet in Paris to Discuss Global Warming – Again

The Met Office, the UK's official office of meteorology, recently announced that, based on data acquired over the first 9 months of the year, 2015 is likely to be the first year in which the average global temperature exceeds by more than 1°C the average temperature for preindustrial years before we began to burn significant amounts of fossil fuels. Although the annual average temperature will fluctuate from year to year, the overall upward trend is well established and +1°C average temperatures are likely to become the norm. This is halfway to the 2°C threshold at which most scientists agree damaging consequences are likely to occur, including the possibility of runaway warming in which no amount of reduction in industrial emissions would be able to reverse the trend. 2014 was the warmest year on record and 2015 looks to be even warmer. Reaching this ominous threshold should give new impetus to world leaders meeting this month (COP21) in Paris to attempt once again to reach an agreement on how best to address the issue of global warming.

It has been nearly 20 years since the signing of the Kyoto Protocol in which 192 countries committed to a real effort to reduce the industrial emission of greenhouse gases (GHG), which the protocol explicitly acknowledged as the cause of global warming. It was not until 2010 that the same group of nations recognized the 2°C threshold as the maximum acceptable increase in global temperature. The meeting in Copenhagen the previous year, where there was an attempt to force limits on individual countries, was largely a failure. At this year's meeting in Paris the focus has shifted to securing voluntary reduction commitments from participants. Unfortunately, a UN analysis of commitments submitted prior to the meeting concluded that they would result in an unacceptable increase of 2.7°C. Still, there is room for optimism. The political climate has shifted significantly in favor of emission limits, particularly in the world's two largest emitters, the US and China. Also, technological advances have significantly reduced the cost of renewable energy sources, such as solar and wind.

Our own industry, semiconductor manufacturing has shouldered its share of the responsibility. While we are not a major contributor to overall GHG emissions, we have made good progress in limiting our emissions of perfluorocarbon (PFC) gases, a particularly powerful GHGs. In 1999, the World Semiconductor Council (WSC) agreed to reduce PFC emissions by at least 10% by the end of 2010. In actuality, we far surpassed this goal, achieving a reduction of 32% for the period. In 2011, the WSC announced a new voluntary PFC agreement for the next 10 years. The goals of the new program include an additional 30% reduction by 2020 in the normalized emission rate expressed as kilograms of carbon dioxide equivalent (CO₂e) per square centimeter of processed silicon.

At Edwards we are committed to playing a leadership role in the field of vacuum pumping and abatement by applying technology, products and services to benefit the environment for future generations. Over our products' lifecycle we are in fact carbon equivalent negative. In a typical year our own operations, our supply chain's and our customers' operation of our equipment might generate 2 million tons of CO₂e. In that same year our abatement equipment will remove 6 million tons of CO₂e. The net result is the removal of 4 million tons of CO₂e from the environment. We strive constantly to reduce the energy intensity of our manufacturing operations and the energy consumption of our products. We have programs in place to reduce waste, both by eliminating landfill waste and by promoting the reuse of our products through service and remanufacture, and to reduce our own

consumption of electricity by the increasing use of energy-efficient LED lighting in our facilities. And we seek every opportunity to reduce water usage.

At Edwards we are extremely proud of our record of successful and conscientious environmental stewardship and it will continue to receive the highest priority at all levels of our organization.