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Date: 30 October 2015

To: Kevin Flynn  
Brooks Automation

Dear Kevin,

Thank you for forwarding you letter regarding proposed legislation to me for comments.

You are correct that Brooks Polycold chillers play an important role in the manufacturing of photovoltaic devices for the production of solar power. Here are two examples. First Solar, one of the most successful manufacturers of Solar Panels, has these chillers operating at their manufacturing plants worldwide and development center in California. SolarCity has 4 units operating in California, and soon will have 32 operating in New York.

These devices are used to control water vapor in the manufacturing of Solar Cells. Without this control the efficiency of the cells would be compromised, resulting in lower power production. Further, the manufacturing machines, which operate under vacuum, need to be maintained from time to time. Bringing the machines back into manufacturing after maintenance requires removing enough water vapor from the vacuum environment to allow manufacturing to resume: The time from starting maintenance until manufacturing resumes is called Green-to-Green-time. The shorter the Green-to-Green time, the more efficient is the manufacturing operation, because more solar panels are produced per month. That brings the cost down, and helps spread the use of solar panels. Brooks Polycold chillers play an important role in minimizing the Green-to-Green time in Solar cell production.

I agree with your assessment that replacing the Polycold chillers with alternative technologies is at least at the present time, unworkable and will have the opposite effect from what the initiative desires. Replacing the chillers with LN2 (liquid nitrogen) is a massive infrastructure project for the solar cell manufacturers. Plus, LN2 would be an ongoing consumable during manufacturing, and an expensive consumable, greatly increasing the cost of solar cell production. Polycolds are a one-time investment, because they recirculate the chilling fluid, and drastically lower cost compared to LN2. In addition, based on your analysis, the manufacturing of that LN2 will require so much energy that the use of LN2 instead of Polycolds will result in a great increase in greenhouse gas emissions.

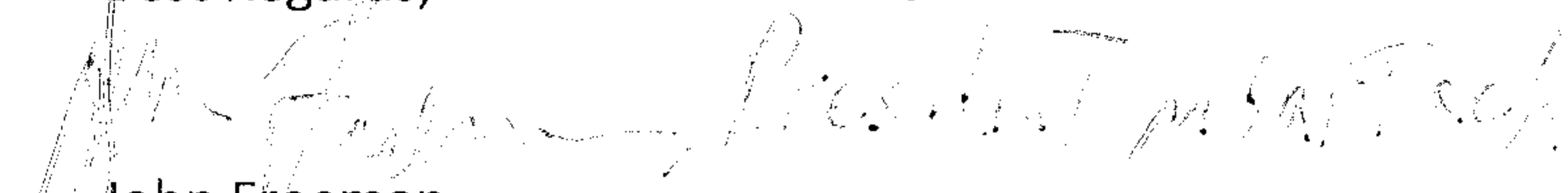
Replacing Brooks Polycold chillers with helium based systems is also not an option on existing solar cell manufacturing equipment. Current helium systems lack the power needed and the ability to distribute the cooling power to the locations where it is needed to control water vapor during the manufacture of solar cells.

In summary, I agree with your analysis, and recommendation that any legislation provides an exception for products such as the Brooks Polycold chillers. I gave solar cell manufacturing as an example of the negative impact that such legislation can have on the reduction of greenhouse gases, but these chillers are used in other industries that bring benefits to humanity as well.



I hope that the people working on the initiative take the time to totally think it through, because if it is implemented without proper precautions, it will have a negative impact.

Best Regards,

  
John Freeman  
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Representative for Brooks Automation and other companies, and consultant.