

Paper Number: ICR0143

Title of Paper: Comparison of Heat Pump Dryer and Mechanical Steam Compression Dryer

Presenter: L. Palandre, D. Clodic, Ecole des Mines de Paris, Center for Energy Studies, France

Session: E2-1

Person Contributing Discussion or Question: Pucciano, Frank J., 769 Bruxton Woods Ct., Lilburn, GA 30047

Comment or Question: Is there an added first cost for start-up heat requirements? And, can the start-up heat be supplied from the final exhaust of another dryer in commercial applications?

Presenter's Reply: (1) Yes, there is an electric heater for start-up but it is not an additional cost referring to the reference usual dryer. (2) Yes it is very relevant idea to use the exhaust heat at the end of the process of Dryer 1 to heat up Dryer 2, definitely a good idea.

Paper Number: ICR0294

Title of Paper: Heat Pump Drying – Potentials for Energy Saving with Heat Pumps in High Temperature Applications

Presenter: O. Jonasse, SINTEF Energy Research, Norway

Session: E2-1

Person Contributing Discussion or Question: C.G. Carrington

Comment or Question: Would it be feasible to change the process temperatures to enable the heat pump to operate with a higher COP?

Presenter's Reply: Yes, it would. This was not a part of the present presentation which focused on a heat pump-based energy system to replace the existing system in commercial dryers, without altering the drying process. If there is freedom for the engineer to redesign the dryer, better solutions are easily found with better system integration of the HP.

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Presenter: O. Jonasse, SINTEF Energy Research, Norway

Session: E2-1

Person Contributing Discussion or Question: V. Minea, Hydro-Quebec, Canada, 600 de la Montagne, Shawinigan G9N 7N5, CANADA

Comment or Question: What type of R-123 compressor do you expect to use for the 1st stage of the cascade system for drying?

Presenter's Reply: The pressure side (compressor) gas temperature is the limiting factor. The calculated gas temperature was 158EC and it is then possible to use commercially available lubricating oil. Ordinary refrigeration compressors could then be installed, reciprocating or screw.

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Presenter: O. Jonasse, SINTEF Energy Research, Norway

Session: E2-1

Person Contributing Discussion or Question:

Comment or Question: Would it not be appropriate to supply the lower temperature half of the air heating with the 123 cycle, at higher efficiency?

Presenter's Reply: Yes, this would save energy and size of the high temp. side of the plant. Also direct heat exchange of air should be evaluated.

Paper Number: ICR0540

Title of Paper: Opportunities for Heat Pump Drying in Industrial Processes

Presenter: G. Carrington, University of Otago, New Zealand; N. Hewitt, University of Ulster at Jordanstown, United Kingdom; P. Bannister, Exergy Australia Pty Limited, Australia; J. Anderson, Energy Group Limited, New Zealand

Session: E2-1

Person Contributing Discussion or Question: E.L. Schmidt, University of Essen, Germany, Beckstadt Str. 13, D-45472

Comment or Question: In the course of development of the laundry dryer heat pump we did optimisation calculations of the fan-power and came up with a fan power of CA. One third of the compressor tower.

Presenter's Reply: The fan optimization problem depends on the product, the geometry of the stack, and the kiln chamber. I would agree that 33% is a reasonable target.