Effect of cooling air velocity on dehumidification performance

**Effect of regeneration temperature**

- Adsorbent & Cross-flow heat exchanger type adsorber ~
- Adsorbed air : Cooling air
- Adsorption air : Heating air
- Air velocity : CA = 1 m/s
- Dehumidification air : CA = 1 m/s
- Temperature : 20~70°C
- Humidity : 16~60 g/kg-DA

**Conclusion**

- Air cooling was effective to enhance water adsorption rate (=dehumidification rate) by removing both sensible heat of adsorber and heat of adsorption.
- Adsorber with ALPO zeolite kept a high amount of dehumidified water even at regeneration temp. of 60°C.
- As increasing cooling air velocities, an initial adsorption rate increased and the lowest absolute humidity decreased during dehumidification process.
- Dehumidified air at absolute humidity of 10 g/kg-DA, which is a target of process air for supplying into the room, could be obtained by flowing cooling air at its velocity over 1 m/s.

**Contact**

名古屋大学大学院工学研究科 化学システム工学専攻 空気化学工学システム講座 化学エネルギーシステム工学

窪田 光宏 (KUBOTA Mitsufumi)
E-mail:kubota.mitsufumi@material.nagoya-u.ac.jp