

Dendrite Generator

Production of natural snow.

or

Powder snow for everyone.

A (possible) revolution in artificial snow production

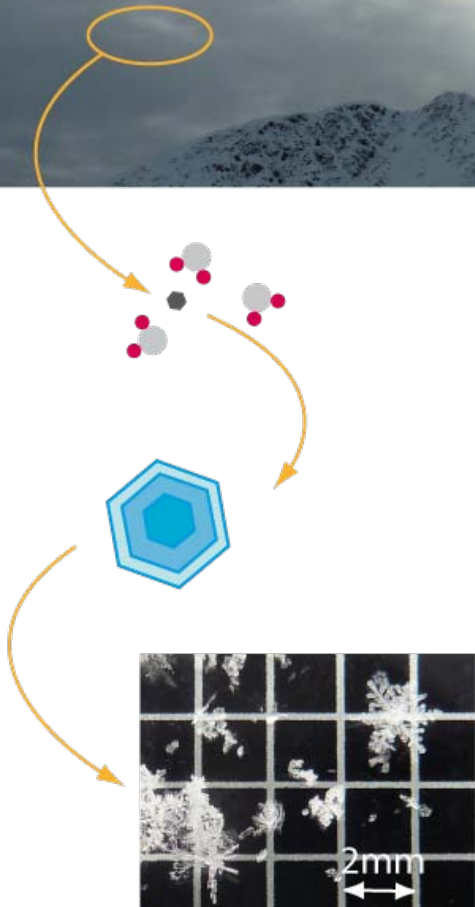
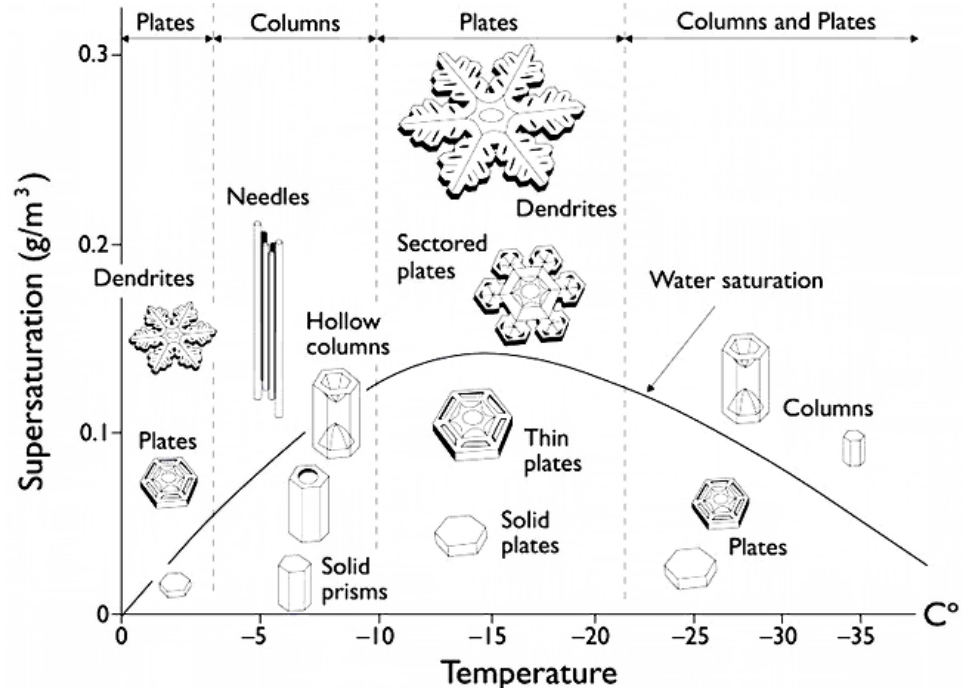
Team:

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Dendrite Generator

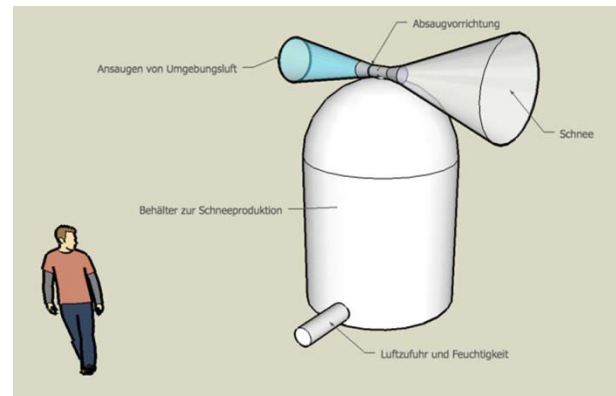
The formation of snow in the atmosphere

- ❄ Starting conditions: high humidity, low temperatures
- ❄ Formation of an ice-nucleus based on an aerosol
- ❄ Growth of a hexagonal prism
- ❄ Further growth to complex crystals as a function of super-saturation and temperature.



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Snow-Guns and the Dendrite Generator



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Comparison of operating mode

Conventional Snow-Gun:

Begin

End

Water -- atomization -- low temperature -- frozen water droplets (snow)

Dendrite Generator: (atomized water is needed)

Begin

End

Ice nuclei -- moisture -- growth of snow crystals -- snow („real“ snow crystals)

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Status quo

artificial snow production

- * very important for winter tourism
- * high energy consumption
- * snow with high density
- * unfavourable for flora and fauna
- * (low) acceptance of ski-tourists

ca. 70% at season start

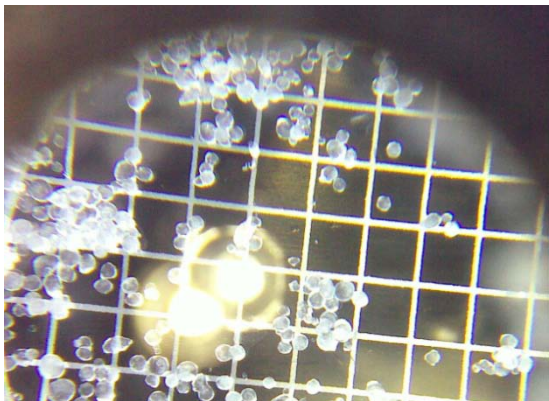
ca. 5kWh/m³ snow

400-500 kg/m³

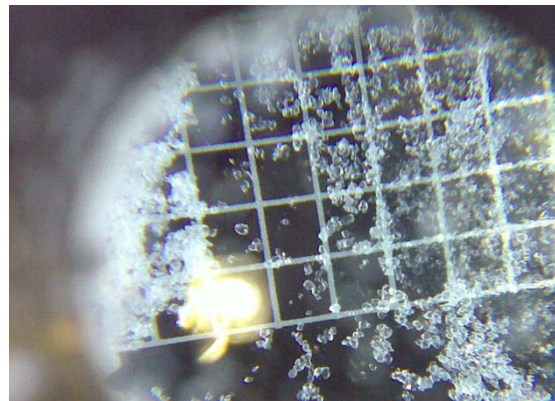
e.g. permeability of air

hard and icy slopes

lance, 2mm grid



Propeller, 2mm grid



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natural snow production

- * snow with low density
- * more snow / m³ water
- * low energy consumption
- * higher acceptance of ski tourists

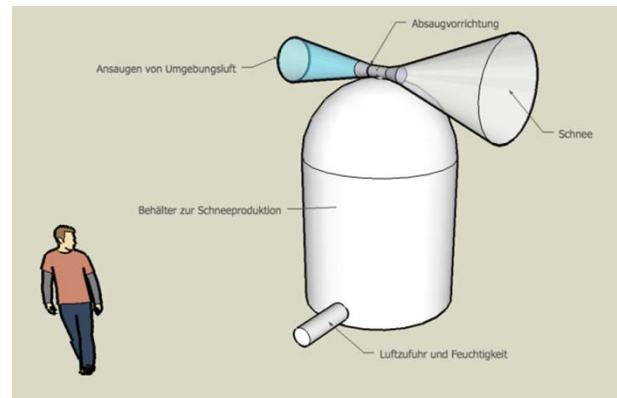
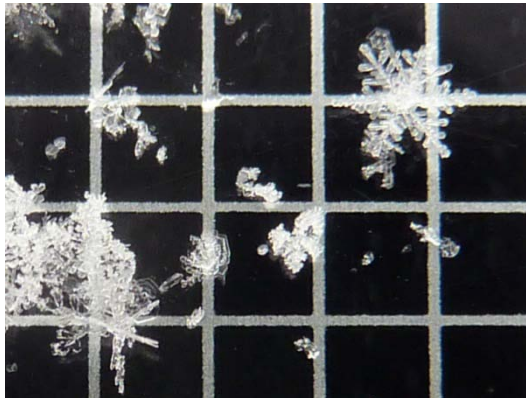
max. 200kg/m³

ratio ca. 1:5

reduction 40-90%

smooth, „fresh“ slopes

2mm grid



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Benefits

snow density $< 200\text{kg/m}^3$ (konv. $400 - 500\text{kg/m}^3$)

reduction of energy consumption 40 - 90% per m^3

high-quality snow production even under 'extreme' conditions ($-1^\circ\text{C} > T > -5^\circ\text{C}$)

higher acceptance: tourism, politics and environment

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Outlook

Start of project February 1st 2010

02/2010 - 01/2011: Development of lab-prototype
(Phase I)

Further development in collaboration with Universities
(Technology transfer institute)

starting from 02/2011: Phase II - prototype development
till marketability (2013)

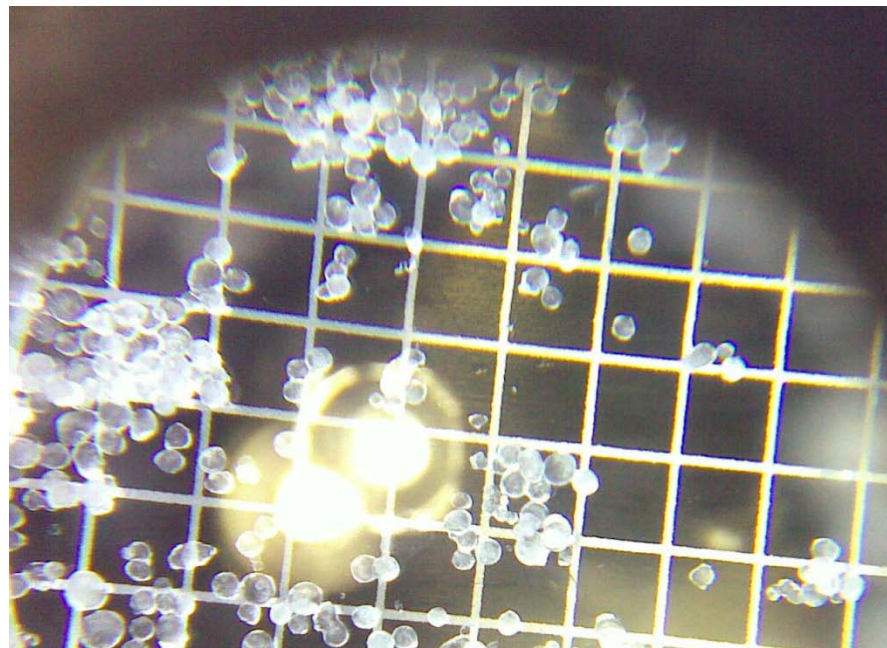


**Thank you for
your attention!**

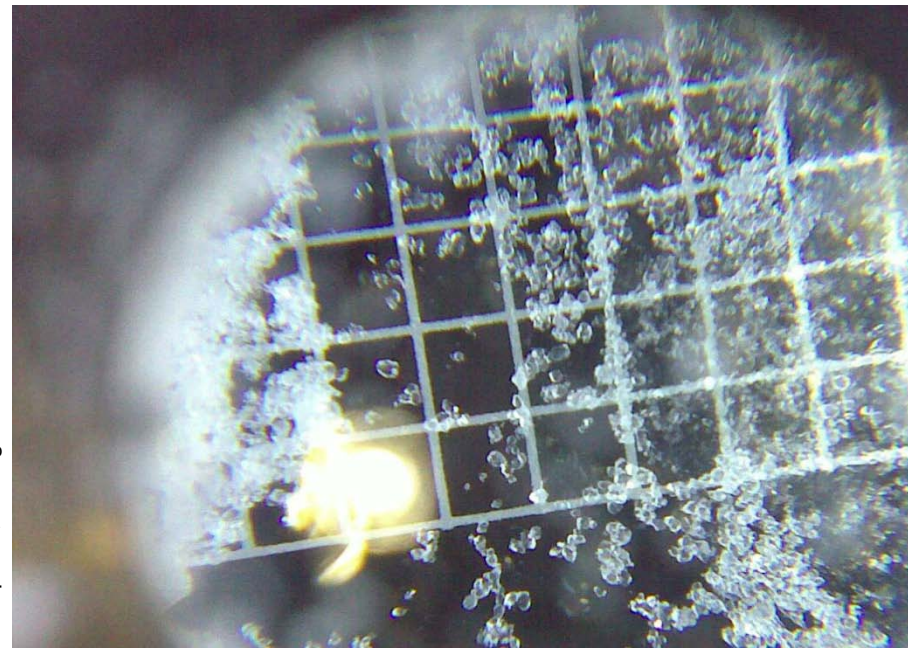
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Add-ons I



lance, 2mm grid



Propeller, 2mm grid

