

Key words: natural snow production | fluffy snow crystals | snow making system | artificial cloud

The Dendrite Generator is an apparatus for low energy artificial snow production. The properties of the produced snow are close to natural fluffy precipitation particles (stellars and dendrites): high porosity and low density. The low energy consumption of the device enables the technology to be used for a wide range of purposes outside the conventional snow production for ski slopes.

## Background

Existing technologies of artificial snow production are characterised by a high energy and water consumption. Ecological drawbacks for flora and fauna on the ski slopes can be observed due to the high density of the produced snow (more than 300 kg/m<sup>3</sup>). The invention claims a natural snow production (high porosity, low density of less than 200 kg/m<sup>3</sup>) with reduced energy and water consumption per cubicmeter snow compared to conventional techniques.

## Technology

The developed technology for natural snow production is based on cloud physics. A box with a given volume is used to simulate the natural conditions of a cloud. These conditions can be controlled and thus enables a controlled snow production.

Cold and moist air are mixed in the box and crystal growth starts. Due to a continuous feeding of the initial ice crystals with moist and cold air, ice crystals are increasing in size and volume. An air stream keeps them floating and favours a continuous growth of all kinds of snow crystals.

Once the snow crystals have reached a critical size they are blown out of the device through its upper opening and get distributed to the environment. The low density of the produced snow (ca. 150-200 kg/m<sup>3</sup>) enables a far less powerful nozzle or propeller to reach the surrounding area within a radius of 15-25 m. Reducing overall energy consumption significantly.

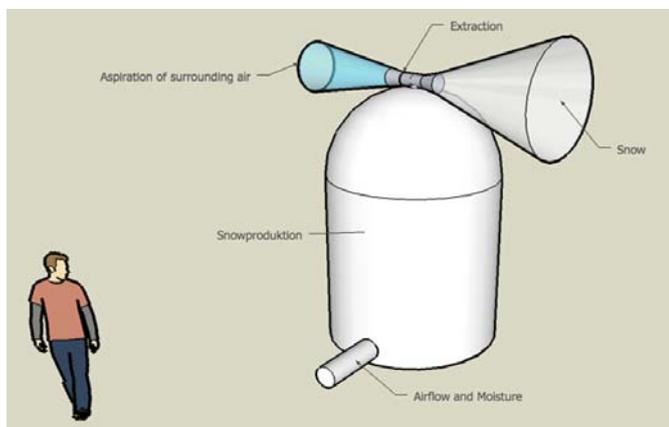


Figure 1: Sketch of the Dendrite Generator

The box of the Dendrite Generator is made of light weight construction with wall elements for isolation.

The floor space and the height of the device can be varied according to the needs of the customer. The volume of the device is generally about 2m x 2m x 3m (b x l x h) and it can be installed on horizontal areas.

## Applications

- Snow making for ski resorts (also indoor) and other winter sports.
- Optimizing agriculture techniques
- Snow making in a smaller scale for apartment buildings, parks or schools for sports and recreation
- Influencing the local bio- and micro-climate (increase of albedo)

## Benefits

- Production of snow with low density (powder snow)
- High level of acceptance by skiers
- Lower water consumption per m<sup>3</sup> snow
- Lower energy demand
- Reduced noise generation

## Status quo of the development

Prototype development

## IPR

Austrian (AT) patent filed

## Options

R&D-collaboration, license agreement, patent selling

## Inventors

Meinhard Breiling  
Fred Best  
Michael Bacher  
Sergey Sokratov