



The V-jet nozzle unit of the SnoTek MEDUSA double-head lance facilitates a water flow rate of up to 15 l/s under optimal conditions. • The triple-head “marginal temperature wonder” TRIDUSA is extremely popular thanks to enormous coverage and snow volumes of more than 20 m³/h from a wet bulb temperature of -2 °C. • The characteristic elongated design of the Bächler NESSy technology. Here as the SnoTek TRACK model.

## Bächler Top Track AG: Lance specialist for over 35 years

*Their excellent efficiency at marginal temperatures, high flexibility for integration in existing systems and short response times for commissioning make snow lances more relevant than ever. Swiss company Bächler has specialised in the slender snow guns exclusively since 1985, making a significant contribution to the technology.*

Recent industry studies show: over 70 % of the operating hours of all snow guns are in the critical marginal temperature range (wet bulb temperature of -2.5 °C to -6.5 °C), during which more than two thirds of the annual snow volume is produced, especially before the season begins. At the same time, “ideal” snow windows with low temperatures are getting ever shorter, which causes major logistical and economic challenges for operators. The industry is responding and increasingly turning to efficient and economic lance technology with

its good marginal temperature characteristics for new installations, replacements and retrofits.

“Bächler focused on lance technology from the start and did so from conviction”, explains Mario Koch, COO of Swiss company Bächler Top Track AG. Snowmaking with lances is no longer about compromise and hasn’t been for a long time. In fact it’s a promising option from an economic and ecological perspective. “We have worked steadily to turn a once niche product into powerful system technology, which truly meets all snowmaking requirements”, says

Mario Koch, who now runs the company in Emmenbrücke near Lucerne alongside Claus Dangel (CEO) and Bruno Koch (CTO).

### Basic principles and research

When company founder and cross-country track expert Toni Bächler imported the first snow lances from Overseas and Scandinavia in the mid-1980s, the slender “sticks” were still rather exotic next to ground-level high-pressure units with costly central air and powerful fan guns. Hundreds of single installations and various full ski resort systems later, Bächler – now under the current

management – presented VANESSA, its first snow lance developed in-house in 2000. With several different performance levels, the system, which has been modular since the start, already met the high standards for production of specific snow qualities (dry/compact) and is still in use in many places thanks to its ease of use, robust technology and efficiency, even under the toughest conditions.

Even with the VANESSA lances of up to 10 m in height, the focus remained on making the best possible use of the cold ambient air, by keeping the water droplets in the flight phase for longer – a simple physical principle that also led at the time to the first fan guns on massive snow towers. In order to exploit the technology’s potential to the full, however, from the mid 2000s Bächler began cooperating with scientists from renowned Swiss universities, who were meticulously investigating the basic principles of snow-making technology for the first time.

Bächler also brought in nozzle specialists, who helped to optimise the nucleation and crystallisation processes. The results of this mental labour were not only published as 150 pages of scientific documentation, but also and especially fed into the “New Energy-efficient Snowgun System” NESSy, which forms the foundation of Bächler lance technology with its characteristic elongated arrangement of air/water nozzles and can now boast more than 25 patents.

### Expanding the niche

“We now understood the adjusting screws we could use to influence the snow-making process to meet the desired requirements”, explains Mario Koch. The company established its own lance production facility in parallel to this, which ensures its own expertise and the traditional Swiss quality standard with a vertical integration of over 90 %, but also guarantees the necessary flexibility for continual development of the company’s own products.

Things soon really took off: while the low compressed air requirement of the NESSy (at the time -80 % of comparable systems) allowed simple “upgrading” of existing central air systems with additional snow-making points, light on-board compressors also made Bächler lances truly mobile. The NESSy double-head lance launched in 2011 and the SnoTek technology introduced at the same time with range-optimised V-jet nozzles made lances into a real alternative in large-scale snow-making for the first time. “We were now able to maximise water flow rate systematically to produce enormous volumes of snow under ideal conditions. At the same time, we were a match for the fan guns in terms of starting snow-making early and use in wind-exposed areas”, says Mario Koch of the crucial developments. This also includes the NESSy ZeroE introduced in 2014: operating with no compressed air connection, the jet pump technology only requires a water supply.

Cost-effective snow-making is now possible even in undeveloped or hard-to-reach areas without compressed air or a power supply.

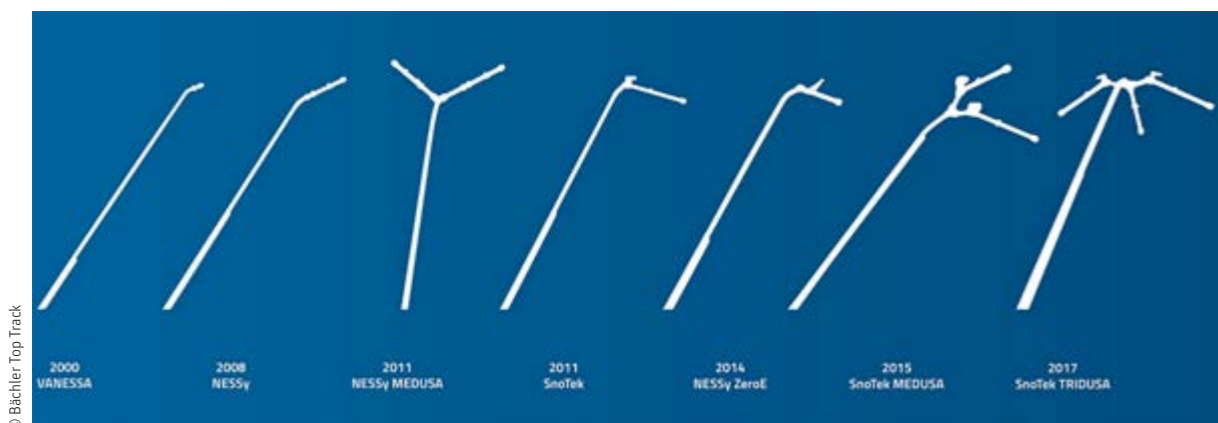
### Broad product portfolio

Bächler currently offers a total of eight model ranges: from the single-head NESSy and SnoTek models in standard or lighter “TRACK” design and the multi-stage MEDUSA double-head versions for high performance under ideal conditions to the TRIDUSA triple systems launched in 2017. According to Bächler, these are considered a true “marginal temperature wonder” among operators with documented snow volumes of more than 20 m³/h and that’s at a wet-bulb temperature of -2 °C: “Many of our customers have massively reduced their snow-making time and opened all slopes much faster with TRIDUSA. The high efficiency of our triple-head technology really pays off, especially with many resorts having to get their slopes ready for the longed-for visitors after delayed openings due to coronavirus.”

The current Bächler lances still feature a modular design: “A Bächler grows with its operator’s requirements – whether in the first configuration or a retrofit”, declares Mario Koch, also referring to the connection adapters that are now available for most common products from other manufacturers. tb



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The history of the Bächler snow lance from the VANESSA to the triple-head SnoTek TRIDUSA.

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