

ZEK HYDRO

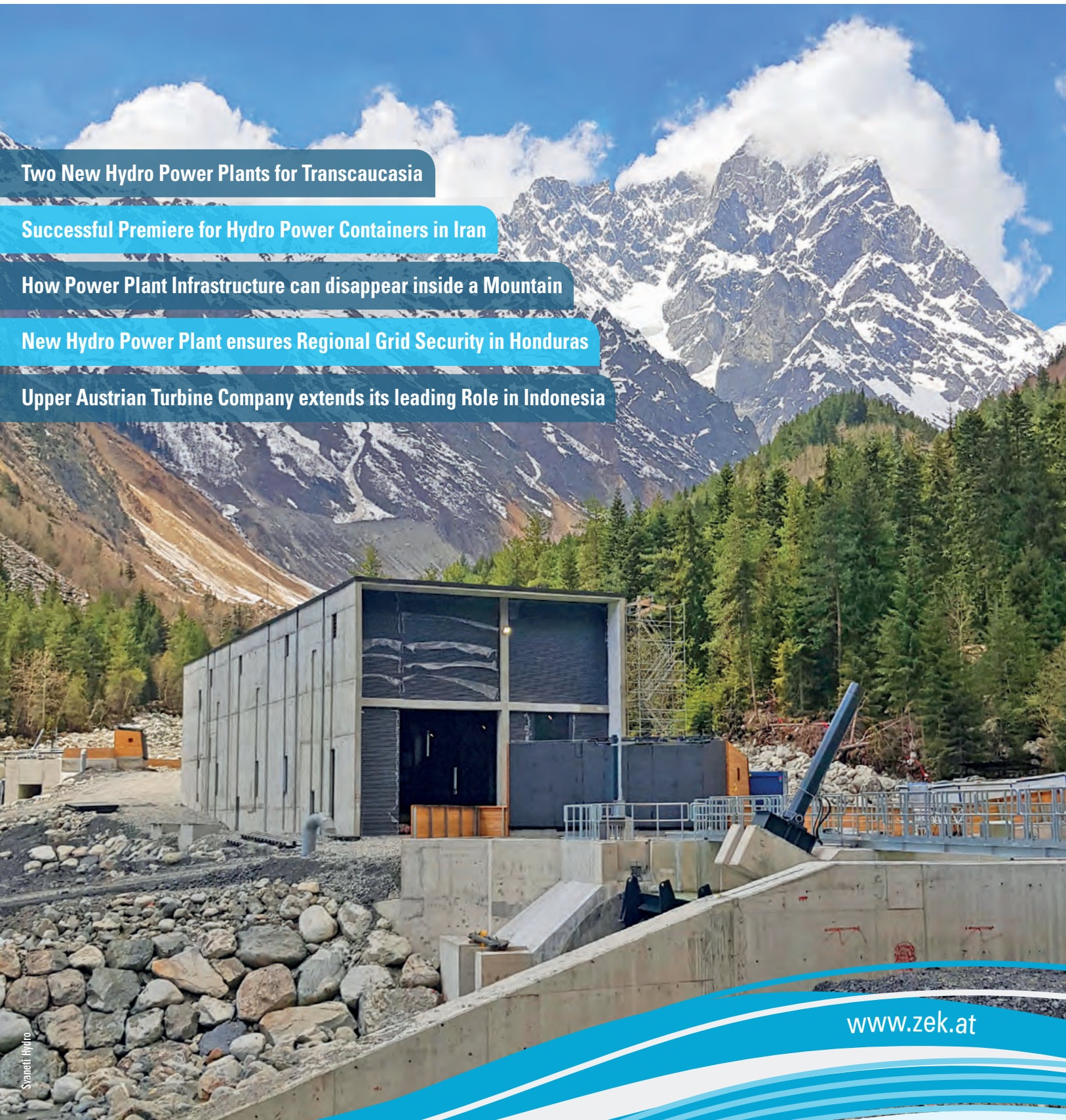
Two New Hydro Power Plants for Transcaucasia

Successful Premiere for Hydro Power Containers in Iran

How Power Plant Infrastructure can disappear inside a Mountain

New Hydro Power Plant ensures Regional Grid Security in Honduras

Upper Austrian Turbine Company extends its leading Role in Indonesia



In the last two decades, Coanda systems have also become established on the water catchments in the Alpine region. Models such as the Grizzly from Wild Metal are among the best-established and most successful.



FOR HYDRO POWER PLANT OPERATORS THE GRIZZLY COMES FROM SOUTH TYROL

Whereas the technology of the Coanda rake has long been established in hydropower in the USA, but also in Canada and New Zealand, its benefits have only been appreciated in our part of the world in the last ten to 15 years. The Coanda rake has now established itself as an economically and ecologically sensible option for water catchments on mountain streams which are full of debris. This can also be attributed not least to the small number of manufacturers that today provide Coanda systems in the Alpine region. The company Wild Metal from Ratschings, South Tyrol plays a particularly special role here. Hardly any other supplier has installed more Coanda rakes in recent years, and in South Tyrol it is the undisputed market leader with the Grizzly Power model. And the largest Coanda rake in Europe to date was also manufactured by Wild Metal – it is installed at the St. Leonhard power plant in Austria's Pitz Valley with a width of 25 metres.

The majority of Coanda rakes were installed in recent years in South Tyrol, in Western Austria and in Switzerland. With the Coanda rake, the wall adhesion effect, known as the Coanda effect, is utilised when the works water flows evenly over a rounded weir body and in the process is deflected by the fine rake bars. In combination with what is known as the shearing effect of the profile bars, the water flows into the intake. At the same time, the Coanda rake prevents the penetration of sediments and small aquatic creatures into the works water system. A modern and efficient Coanda system, such as the Grizzly Power from Wild Metal, therefore combines its repellent function with ecological water conservation. In addition,

the Coanda rake is regarded as a largely self-cleaning system because all floating debris and foliage that comes to rest on top of it is carried along by the excess water. The Grizzly Coanda rake from the company Wild Metal is a patented system which is individually adjusted to suit the particular requirements and both hydrological and topographical conditions. There are currently roughly 350 Coanda systems of the Grizzly Power type in use in the Alpine region but also beyond. The feedback from operators has all been very positive.

GRIZZLY INCREASES ECONOMIC EFFICIENCY

The small gap width of the Coanda rakes limits the level of sand contamination to a mi-

nimum. This means that there is no need for any separation systems such as a trash rack cleaner and sand traps, if they are required at all, are much smaller than is the case with conventional intakes with a Tyrolean weir. This increases the economic efficiency because this advantage is reflected directly in lower construction costs.

The Grizzly Power rake, which was developed and prepared for the market by the company Wild Metal, fundamentally consists of a robust, hot-dip galvanized steel grid and an underlying fine screen. The form of the upper protection bars is adjusted to the natural water flow. The construction method and the spaces between the bars are finally adjusted to the conditions on site.



graphics: Wild Metal

Wild Metal essentially offers three basic types of its Grizzly Power: the Protec (left), designed for mountain streams which carry a large amount of debris with an efficient protective screen; the Optimus (middle), which is integrated into existing water catchments – such as a side extraction – and therefore does not require a coarse screen upstream, and the Titan (right), which was developed for fishing waters with large amounts of leaves. The Grizzly is generally noted for its good absorption capacity and high degree of separation.



Fanes SHPP - South Tyrol (It)



Shypot SHPP - (UKR)

photo credits: Wild Metal

A TRIO FOR ALL REQUIREMENTS

As the requirements during operation and the conditions at the location of a water intake can often vary significantly, in the last few years the engineers from Wild Metal have developed three basic types of Grizzly Coanda rakes which can be adapted using a modular concept to suit all size requirements. The trio,

consisting of the Grizzly Power Protec, the Grizzly Power Titan and the Grizzly Power Optimus, covers the majority of the basic requirements in the Alpine region. For example, the Grizzly Power Protec was developed for mountain streams that carry a large amount of debris. Its flow-optimised extruded profile rods, which generally have a

gap of from 30 mm to 50 mm, keep the debris away from the fine screen and thus protect it from any damage. In addition, they direct the water from the acceleration plate to the fine screen. Wedging of rocks and wood debris is largely prevented by the special arrangement of the rake rods. Depending on the gap width, fish and smaller aquatic crea-



Kienzer SHPP - (AT)



Val Strem SHPP - Sedrun (CH)

photo credits: Wild Metal

20 modules of the Grizzly Optimus lined up in series produces Europe's biggest Coanda rake with a width of 25 m: at the St. Leonhard power plant in the Pitz Valley. (AT) The absorption capacity totals 4,000 l/s.



photo credits: Wild Metal

Steineraa PP - Schwyz (CH): The absorption capacity of the Grizzly at Steineraa PP is 1,250 l/s. Thanks to the efficient Coanda system, the people responsible for the project were able to save on the construction of a sand trap.



photo credits: AF-Iteco

tures between 0.2 mm and 2 mm in size can easily get through the fine screen and are carried along by the current of the running water. The same also applies to foliage, twigs, moss and similar debris. Only particles that are smaller than 0.2 mm to 2 mm (depending on the gap width) can get into the works water. This means that the level of maintenance work on the systems is minimised.

GRIZZLY TITAN AND GRIZZLY OPTIMUS

The Grizzly Titan is deployed primarily in fishing waters with large amounts of leaves - and on bodies of water where there is hardly any debris congestion in the catchment area. The best example of this is the outflow from a lake. Robust rounded steel ribs, which are fitted 19 cm apart, protect the fine screen from tree trunks, branches and rootstocks. In high water, the driftwood slips easily over the Grizzly Power Titan.

The Grizzly Power ensemble range is completed with the Grizzly Optimus. This is an

efficient Coanda screen without any protective rake above it. The tried-and-tested Optimus is therefore obviously deployed wherever the fine screen is already protected by a coarse screen for the water catchment. This does primarily apply to water catchments with side extraction or alternatively following a Tiroler Wehr. But moreover it is also used at sites where the water is relatively calm like at water treatment plants and fish farms. Basically the experts of Wild Metal take the decision on which type is brought to bear for every project specifically.

Depending on the type, Wild Metal today offers gap widths of from 0.3 – 2.0 mm, with the sizes 0.6 and 1.0 mm being the most popular choice. The customer can now choose between different rod profile sizes. In addition, as well as a stronger profile wire, the South Tyrolean company now also offers an even harder-wearing material for the fine screen. The new material increases the useful life of the screens significantly.

BIGGEST COANDA RAKE IN EUROPE

Wild Metal has caused a real stir in the hydropower industry with its innovative Grizzly Power. What is less surprising is that the hydraulic steel construction specialist from Ratschings in South Tyrol has also implemented Europe's biggest Coanda system to date – in St. Leonhard in Tyrol's Pitz Valley. In this case, 20 modules arranged in series for a Grizzly Optimus were used to allow the full extraction water quantity of 4,000 l/s to be handled. A very small gap width of 0.4 mm was very deliberately chosen in order to keep the highly abrasive glacier-polished rocks in the Pitz Valley away from the machines.

During regular operation, the Grizzly Power models guarantee effective filtering of solid materials even under the toughest conditions, such as a hard winter frost. The Grizzly's claws are currently among the most effective that Europe's Coanda market has to offer.



Wild Metal GmbH

- Hydraulic steel constructions
- Patented Coanda-system GRIZZLY
- Trash rack cleaner
- Gate
- Security valve
- Water intake rake
- Complete water intake systems made of steel

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