



# Hydroseeding

Machines and additives

INFO



# What is hydroseeding?

The reliable greening of areas with difficult soil conditions, such as untreated soil embankments, poses a challenge for executing companies and consulting engineers alike.

Hydroseeding offers - using suitable materials and machinery - appropriate solutions for these challenges.

Hydroseeding is an efficient and reliable way to permanently green areas that are particularly large or hard to reach. Through the interaction of mulch and an adequate adhesive an immediate, but limited in its duration and strength, erosion control effect can be achieved.

Especially internationally hydroseeding has proven to be an equally economical as well as ecological technology, whereas in Germany it is used relatively rarely in suitable construction projects.

During hydroseeding a special machine, the so-called HydroSeeder®, is used to spray a mixture consisting of various components on the target areas.

The carrier medium is water which is enriched with mulching materials, soil additives, fertilizers, adhesives and seeds. This mixture protects the soil from erosion and drying out until the grass and plants have grown.

A central requirement for sustainable greening results is the adjustment of the mixture to the needs of the soil in the particular area.

# Fields of application

## FOR HYDROSEEDING

It is due to the variety of available additives that hydroseeding is going to be the first choice for many different building projects.

Hydroseeding can for example be used:

- for cost-efficient greening of large areas, for example highway projects, residential and industrial estates or airports.
- for erosion control on open or exposed hillsides, for example traffic route engineering, mining or landfill areas, new-shaped ski slopes or embankments in water engineering.
- for temporary dust protection on carbon or slag heaps in open brown coal mining. The materials are mixed locally and are then immediately distributed by a helicopter.
- for roof greening with sedum sprouts, grass and herbage cultures.

### MACHINES FOR RENT AND SALE

The machines which are used for hydroseeding are equipped with a tank with a capacity of 1.200 until over 13.500 litres and are powered by diesel engines. If desired, certain types are also available with gasoline engines.

The smallest machines, for example the FiNN HydroSeeder® T30, can be transported on a car trailer or a Pick-up, while the biggest models are permanently installed on their own vehicle.

The individual additives are mixed together with water to a coarse suspension by a hydraulically powered agitator. Finally an efficient centrifugal pump carries the mixture through a hose or a fettling gun with a nozzle and enables spraying widths up to 60 m. With special hose extensions it is even possible to reach areas in a distance of almost 200 m.

International Geotextile GmbH markets HydroSeeders® of the market leader FiNN. We help you to choose the right model for your purpose and can quickly supply rental models like the FiNN HydroSeeder® T30 Diesel.



### HYDROSEEDER IN ACTION

Scan this QR-Code to view our operation video.



# Machines

## HYDROSEEDER® FROM THE MARKET LEADER

FiNN Corporation from Fairfield (Ohio, USA) is known worldwide as pioneer in the technology of hydroseeding.

The machines, which were invented in 1957 and are continuously improved since then, are the ideal solution for cost-efficient greening of large areas and contribute to a significant increase of productivity.

FiNN HydroSeeders® have a hydraulically-driven agitator as well as a directly powered centrifugal pump which both contribute to work efficiency.



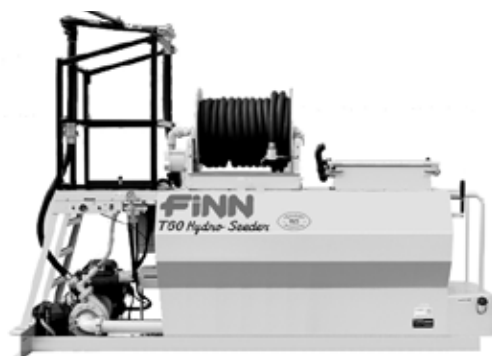
### FINN HYDROSEEDER® T30

Engine (petrol)	2-cylinders Kohler-Motor (14,2 kW / 19,3 PS) air cooling
Engine (diesel)	2-cylinders Kohler-Dieselmotor (14 kW / 19,1 PS) air cooling
Tank capacity	1.268 l liquid content 1.063 l completed mixture
Empty weight	671 kg
Working weight	2.068 kg



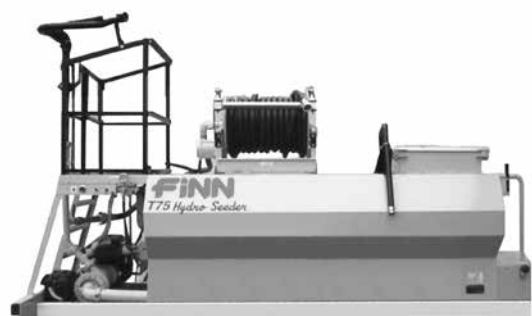
### FINN HYDROSEEDER® T60S

Engine (petrol)	2-cylinders Kohler-Motor (17,5 kW / 23,8 PS) air cooling
Tank capacity	2.270 l liquid content 1.890 l completed mixture
Empty weight	985 kg
Working weight	3.253 kg



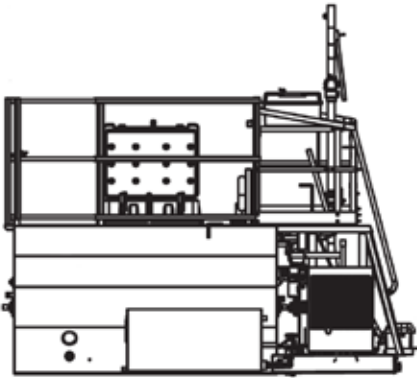
### FINN HYDROSEEDER® T75S

Engine (petrol)	2-cylinders Kohler-Motor (17,5 kW / 23,8 PS) air cooling
Tank capacity	3.100 l liquid content 2.650 l completed mixture
Empty weight	1.114 kg
Working weight	4.177 kg



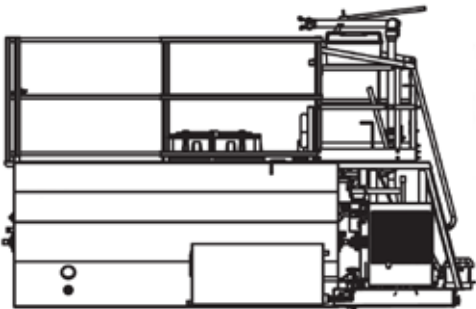
# Machines

## HYDROSEEDER® FROM THE MARKET LEADER



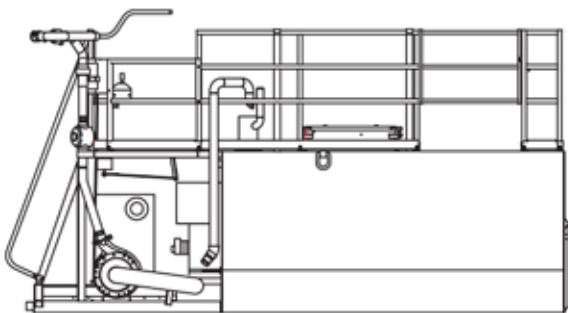
### FINN HYDROSEEDER® T90

Engine (diesel)	3-cylinders Yanmar-Motor (26,2 kW / 35,6 PS) water cooling
Tank capacity	3.558 l liquid content 3.028 l completed mixture
Empty weight	1.882 kg
Working weight	6.103 kg



### FINN HYDROSEEDER® T120S

Engine (diesel)	3-cylinders Yanmar-Motor (26,2 kW / 35,6 PS) water cooling
Tank capacity	4.468 l liquid content 3.785 l completed mixture
Empty weight	2.032 kg
Working weight	7.394 kg



### FINN HYDROSEEDER® T170S

Engine (diesel)	4-cylinders Cummins-Motor (48,5 kW / 65,9 PS) water cooling
Tank capacity	6.625 l liquid content 5.678 l completed mixture
Empty weight	3.071 kg
Working weight	11.022 kg



# Mulch additive

## WOOD FIBERS

Through the use of mulch additives, seeds and seedlings are protected from dehydration or frost and furthermore the germination of the seeds is promoted. This is very important if the seeding takes place in summer or late autumn.

Under the layer of mulch an optimal microclimate for the seedlings with ideal germination conditions can develop. Rain water does not hit the soil unbrakedly but is spaced out evenly.

The most common mulch additives are wood fibers and granulated cellulose, such as the **iGGvital HM** Hydromulch or the **iGGvital HS-G** coarse fiber cellulose.

### COMPOSITION **iGGvital HM** HYDROMULCH

	<b>iGGvital HM</b> (nature / green)
Wood species	pine
Fiber length	2 - 6 mm
Percentage of color	0 % / 1 %
Organic material	95 %
Inorganic material (ash)	5 %
Water absorption capacity	700 %
Special handling	heat treated to kill pathogenic germs and fungi
Packaging	20 kg/bag, 32 bags/pallet

**iGGvital HM** Hydromulch is a very user-friendly product that can easily be mixed with other aggregates for hydroseeding.

The high water storage capacity of the wood fibers helps to protect the soil from erosion and to provide sufficient water for the growth of the developing vegetation.

The green colored version facilitates an even and uniform application of the spray mass and provides a visually appealing sight after completing the work until the vegetation is established.

### USE **iGGvital HM** HYDROMULCH

slope inclination	Ø applied quantity*
< 1:2	180 g/m <sup>2</sup>
< 1:3	120 g/m <sup>2</sup>
< 1:4	60 g/m <sup>2</sup>



\* Average values, which must be adapted depending on the actual conditions of the location and other materials used.

# Mulch additive

## COARSE FIBER CELLULOSE (GRANULATED)



**iGGvital HS-G** is a granulated coarse fiber cellulose made out of renewable raw materials. The cellulose protects the soil surface from wind and water erosion until a stable vegetation has established itself.

It is ecological harmless, not bacteriostatic, as well as biodegradable and humus-forming.

After the application of the spray mass, **iGGvital HS-G** coarse fiber cellulose forms a three-dimensional fiber network which interfingers with the subsoil and this way contributes to the erosion control of the surface.

### COMPOSITION **iGGvital HS-G**

	<b>iGGvital HS-G</b>
Product	functional reinforce fiber from cellulose, pressed to soft pellets
Appearance	grey soft pellets
Fiber content	95 ± 3 %
Cellulose content	ca. 80 %
Fiber length	0 - 3 mm
Ash	ca. 15 %
pH-value	6,5 - 8,5
Humidity	< 7 %
Ø fiber diameter	ca. 45 µm
Water absorption capacity	450 %
Bulk weight	200 - 280 g/l
Packaging	10 kg/bag, 100 bags/pallet

**iGGvital HS-G** coarse fiber cellulose is used with **iGGvital SF** or **iGGvital SG** soil stabilizer to achieve optimal surface reinforcement as well as superior substrate adhesion.

### USE **iGGvital HS-G**

<b>slope inclination</b>	<b>Ø applied quantity*</b>
< 1:2	50 g/m <sup>2</sup>
< 1:3	40 g/m <sup>2</sup>
< 1:4	30 g/m <sup>2</sup>

\* Average values, which must be adapted depending on the actual conditions of the location and other materials used.



# Fertilizer (granulated)

## FOR IMPROVED ROOT GROWTH

Without a certain minimum concentration of macronutrients like nitrogen, phosphor, potassium and magnesium, a successful greening is impossible.

This means that the use of an appropriate fertilizer in the spray mass on nutrient-poor soils without sufficient humus content is necessary. A high-quality, preferably organic, fertilizer promotes not only plant health, but contributes to a quick growth of the roots and a long-term supply of important nutrients to the plants.

An organic slow-release fertilizer with soil improving effect is for example the **igGvital SC** soil conditioner. It is produced out of the fungus mycelium from the fungus *Penicillium chrysogenum*. The dried and granulated fungal biomass takes the function of a consistently available source of nutrients after application and remoistening.

Because of its biological components **igGvital SC** soil conditioner offers a balanced nutrient composition and is optimally adapted to microbial degradation processes.

### COMPOSITION **igGvital SC** SOIL CONDITIONER

N nitrogen organically bound	8 %
P <sub>2</sub> O <sub>5</sub> phosphorus	4 %
K <sub>2</sub> O potassium	2 %
Organic substance	85 %

The soil flora and fauna which was built by the use of **igGvital SC** soil conditioner helps to develop an active soil body. A biologically active soil offers ideal conditions for improved root growth.

### USE **igGvital SC** SOIL CONDITIONER

Fields of application	Applied quantity	Application
Raw soil greening	100 - 300 g/m <sup>2</sup>	year-round
Trees	350 - 400 g/m <sup>2</sup>	spring/autumn
Ornamental plants	50 - 100 g/m <sup>2</sup>	year-round
Sports fields	150 - 200 g/m <sup>2</sup>	spring/autumn
Lawns	100 - 150 g/m <sup>2</sup>	spring/autumn
Packaging	25 kg/bag, 975 kg/pallet	





# Liquid fertilizer

WITH SHORT- AND LONG-TERM EFFECT



**iGGvital LF** liquid fertilizer is an organic slow-release liquid fertilizer (specific density: 1,28 g/cm<sup>3</sup>). It consists of macromolecular sugar compounds with organically tied nitrogen and phosphate.

The liquid concentrated fertilizer is diluted in water and spooled in the soil for long-term fertilization and soil improvement. Because of its organic structure **iGGvital LF** liquid fertilizer will not be washed out.

## COMPOSITION **iGGvital LF** LIQUID FERTILIZER

N nitrogen organically bound	12,0 %
P <sub>2</sub> O <sub>5</sub> phosphorus	5,0 %
K <sub>2</sub> O potassium	6,0 %
pH-value	6,5 %

**iGGvital LF** liquid fertilizer forms sols and gels in connection with water. The gels in the soil, which are hard to move, contribute to the increased storage of water and nutrients. The gels function several years and this way ensure the long-term nature of the soil improvement measures.

The sole produced through the use of **iGGvital LF** liquid fertilizer is mobile in the ground and chemically active. Moreover, the smallest soil particles are netted to bigger aggregates. As a consequence the current ion concentration of the soil solution decreases because the ions partly attach to the negatively charged surfaces of the **iGGvital LF** liquid fertilizer molecules.

The reduced ionic activity and the low current ion concentration result in the decrease of the osmotic values of the soil.

Thereby the plant is able to absorb nutrient salts with a lower suction power. The plants need less energy for the water and nutrient absorption. Thus the growth conditions improve during the critical vegetation periods, particularly in dry seasons.

## APPLICATION **iGGvital LF** LIQUID FERTILIZER

Fields of application	Applied quantity	Application
Raw soil greening	50 - 150 g/m <sup>2</sup>	spring/autumn
Trees	100 - 5.000 g/tree	spring/autumn
Sports fields	50 - 100 g/m <sup>2</sup>	spring/autumn
Lawns	30 - 60 g/m <sup>2</sup>	spring/autumn
Packaging	30 kg/canister, 240 kg/barrel, 1.200 kg/tank	



# Adhesive

## MADE OF POLYACRYLAMIDES

Generally a hydroseeding measure should never be carried out without a special adhesive that has to be ecologically harmless and permeable to water. Otherwise there is the danger that mulch and seeds are removed by rain or wind, regardless of the slope inclination. Polymer-based soil stabilizers infiltrate up to 15 mm deep into the soil, whereby a firm connection with the soil surface is achieved.

**iGGvital SF** soil fix is a combination of soil reinforcement and stabilizer in one product. It is made of polyacrylamides (PAM) and is completely harmless for soil and water.

### APPLICATION **iGGvital SF** SOIL FIX (POWDER)

	<b>Applied quantity*</b>
Outside the vegetation period	1,0 - 2,0 g/m <sup>2</sup>
During the vegetation period	0,5 - 1,5 g/m <sup>2</sup>
Packaging	0,5 kg/bag, 1,0 kg/bag, 25 kg/bag



**iGGvital SF** soil fix is decomposed naturally by UV radiation and microorganisms living in the soil. In this process it decays into CO<sub>2</sub>, H<sub>2</sub>O and ammonium nitrate.

The nitrogen group of molecules is quickly absorbed by the microorganisms present in the soil. The carbon group composes 10 to 15 % per year depending on the UV radiation.

**iGGvital SF** soil fix can be used over the course of an entire year, except during heavy rainfall, when snow is on the ground or with frost in the soil.



\* Average values, which must be adapted depending on the actual conditions of the location and other materials used.

# Soil stabilizer

## BIODEGRADABLE



The use of **iGGvital SG** super glue is recommendable if slopes shall be protected from heavy rainfall or wind erosion in the time between seeding and the cultivation of a completed vegetation cover.

Another possibility is to firstly reinforce the slopes and then to conduct the greening at a later date. The fixation is frost-resistant and also works on acidic and alkaline soils.

### COMPOSITION **iGGvital SG** SUPER GLUE (LIQUID)

Polybutadiene (hydrocarbon molecules)	95 %
Additives	5 %

**iGGvital SG** super glue is emulsified in water and then spray-applied to the surface where it penetrates up to 20 mm deep, depending on the absorptive capacity of the soil substrate. There is a reaction with atmospheric oxygen and within a few hours a firm, water-insoluble network is formed.

As a result all wet particles such as sand grains, fertilizer, seeds and other materials become bound to the surface. The hardened **iGGvital SG** does not seal the surface of the soil, indeed the soil absorbency for rain is fully maintained by the net-like character of its hardened structure. Germination and plant growth remain unimpaired.

After the formation of the roots, **iGGvital SG** super glue is environmentally friendly degraded by atmospheric oxygen, thermal energy and the ultraviolet radiation of the sun into carbon dioxide and water.

**iGGvital SG** can be used over the course of an entire year, except during heavy rainfall, when snow is on the ground or with frost in the soil.

### APPLICATION **iGGvital SG** SUPER GLUE (LIQUID)

Soil structure	Applied quantity*
Smooth (z.B. loam, silt, clay)	15 - 30 g/m <sup>2</sup>
Rough (z.B. sand, gravel)	10 - 25 g/m <sup>2</sup>
Gross (z.B. gravel, weathered rock)	10 - 20 g/m <sup>2</sup>
Packaging	20 kg/canister, 900 kg/tank



\* Average values, which must be adapted depending on the actual conditions of the location and other materials used.

# Seed

## INDIVIDUAL FOR EVERY LOCATION

Usually in the selection of the seeds the so-called Regel-Saatgut-Mischungen (RSM) (standard seed mixtures) are considered. The mixing ratio of the several grasses is composed by the FLL e.V. (Forschungsgesellschaft Landschaftsentwicklung und Landschaftsbau) for specific locations and purposes according to the current state of research and development.

In line with the introduction of the regional-seed-concept the use of native wild plants becomes increasingly important. Wild plants make a very valuable contribution to long-term sustainable erosion control and at the same time show a good resistance towards temporary shortages of nutrients.

Because of their extended and highly branched roots, mixtures with a large numbers of species and a high amount of herbs are especially suitable for long-term erosion control. Another advantage is the comparatively high tolerance of the plants towards aridity.

But the genetically caused long dormancy of these plants means that it can take up to several weeks or months until the germination of the seed.

To establish a short-term erosion control as well, rapidly germinating mother crops (e.g. rye brome or annual ryegrass) are often added to the mixture as a component for a quick greening.



# Hydroseeding

## IN COMBINATION WITH GEOTEXTILES



### EROSION CONTROL BLANKETS UND TEXTILES

Frequently, the use of an erosion control textile or an erosion control blanket within a hydroseeding measure is beneficial. Especially if even the application of the actual seeding in a second, separate work process with an additional mulch layer does not offer an adequate erosion control until the vegetation is established.

The erosion control textiles consisting of organic materials, for example coir or jute fibers, or the erosion control blankets consisting of coir fibers or straw, are placed on the slope after the seeding and are fixed with appropriate wire bows or wooden fixing pins.

If geotextiles with relative large thread space (> 2 - 3 cm) are used, hydroseeding can also happen through the geotextile. If the distance between the nozzle of the hose and the slope to be greened is not too large, the hydroseeder produces enough pressure so that the spray mass is pressed through the geotextile.

The erosive effect of the rainwater is reduced by the coir and jute textile and at the same time the water absorption of the soil is supported. This does not only mean an immediate erosion control for the applied material, but also contributes to a good microclimate and thereby to a rapid germination of the seeds.

### LIFETIME\* OF SEVERAL GEOTEXTILES

Woven coir geotextile 400 g/m <sup>2</sup>	up to 36 months
Woven coir geotextile 700 g/m <sup>2</sup>	36 - 60 months
Woven coir geotextile 900 g/m <sup>2</sup>	over 60 months
Woven jute geotextile 500 g/m <sup>2</sup>	bis 12 months
Straw mat 350 g/m <sup>2</sup>	up to 12 months
Straw coir mat 350 g/m <sup>2</sup>	up to 24 months
Coir mat 350 g/m <sup>2</sup>	up to 36 months



\* The lifetime depends on local conditions, the soil, water, climate conditions and on the local risk of erosion.

# Applied quantities

## FOR HYDROSEEDING

### RECIPE: BASIS

This mixture is suitable for locations with a low danger of erosion and without special characteristics regarding the topography.

	Applied quantity
<b>iGGvital HS-G</b> cellulose	30 g/m <sup>2</sup>
<b>iGGvital SF</b> soil fix	0,5 g/m <sup>2</sup>
<b>iGGvital Seeds</b> RSM 7.1.1	20 g/m <sup>2</sup>

### RECIPE: MEDIUM

By integrating a quick greening component the recipe „Medium“ is the right choice for projects where a rapid greening success is desired.

The **iGGvital SC** soil conditioner provides for the short and long term optimal supply of the vegetation.

	Applied quantity
<b>iGGvital HS-G</b> cellulose	50 g/m <sup>2</sup>
<b>iGGvital SC</b> soil conditioner	100 g/m <sup>2</sup>
<b>iGGvital SF</b> soil fix	1 g/m <sup>2</sup>
<b>iGGvital Seeds</b> RSM 7.1.1	25 g/m <sup>2</sup>
<b>iGGvital quick greening component</b>	2 g/m <sup>2</sup>

### RECIPE: OPTIMUM

The **iGGvital HM** wood fiber mulch in our mixture „Optimum“ contributes to an optimal microclimate for the developing vegetation for example at steep slopes or during aridity.

	Applied quantity
<b>iGGvital HM</b> wood fiber mulch	150 g/m <sup>2</sup>
<b>iGGvital SC</b> soil conditioner	150 g/m <sup>2</sup>
<b>iGGvital LF</b> liquid fertilizer	50 g/m <sup>2</sup>
<b>iGGvital SF</b> soil fix	1,5 g/m <sup>2</sup>
<b>iGGvital Seeds</b> RSM 7.1.1	25 g/m <sup>2</sup>
<b>iGGvital quick greening component</b>	5 g/m <sup>2</sup>



# Applied quantities

## FOR HYDROSEEDING



### RECIPE: PREMIUM

For demanding projects, such as the greening of raw soil embankments, we recommend our recipe „Premium“. The used seeds are ideal for the reliable greening of slopes in road construction and land consolidation.

	<b>Applied quantity</b>
<b>iGGvital HM</b> wood fiber mulch	180 g/m <sup>2</sup>
<b>iGGvital SC</b> soil conditioner	300 g/m <sup>2</sup>
<b>iGGvital LF</b> liquid fertilizer	150 g/m <sup>2</sup>
<b>iGGvital SF</b> soil fix	2 g/m <sup>2</sup>
<b>iGGvital Seed</b> R&H slopes, roadside grass	5 g/m <sup>2</sup>
<b>iGGvital quick greening component</b>	5 g/m <sup>2</sup>

### RECIPE: DUST PROTECTION

The combination of **iGGvital HS-G** cellulose and the soil stabilizer **iGGvital SG** super glue is suitable for example to provide dust protection for the surrounding villages in exploited lignite landfills.

	<b>Applied quantity</b>
<b>iGGvital HS-G</b> cellulose	80 g/m <sup>2</sup>
<b>iGGvital SG</b> super glue	80 g/m <sup>2</sup>



# Reliable partner in ecologically sustainable concepts

Since the founding of the Internationale Geotextil GmbH (IGG) in 1997 by the Neisser and Roess families, we have grown from a commercial enterprise for coir and jute fabrics primarily active in Central Europe to the market leader in the area of natural fiber geotextiles. As a reliable partner in all matters of ecologically sustainable erosion control, we offer our international customers qualified advice and support in all project phases: from the initial concept, through detailed planning right up to realization.

We are not limited to the manufacturing of erosion control and green roof systems made of natural fibers, but we also take a leading role in research and development of new and sustainable system solutions for erosion control. Part of our comprehensive product portfolio are also various gabion systems for heavy duty walls and sound and privacy shielding, as well as an extensive selection

of wire netting, ropes, anchors and accessories for securing rock faces. For the professional greening of areas secured with geotextiles we offer FiNN HydroSeeder® (to buy or rent), as well as associated products, fertilizers and adhesives.

The high quality standards for our products can only be met by a most careful and sustainable selection of our raw materials. As a member of the Roess Nature Group we also profit from the expertise of our sister company, A.H. Meyer Maschinenfabrik GmbH. Since through permanent development of our innovative production machines we are able to constantly optimize the manufacturing processes and products.



**IN COOPERATION** with the market leader for HydroSeeder®, the FiNN Corporation, IGG offers optimized system solutions for projects in the field of hydroseeding.



**Internationale Geotextil GmbH**  
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