Technology Offer

New way of production fibers as biomass carriers in waste water treatment plants

Summary

Czech university developed technology that allows processing of coated linear fiber assemblies, special and fragile materials with low bending rigidity. Longitudinal yarns system is minimally stressed during bonding by polymer melt. This allows to manufacture technical textiles with fragile materials (e.g. fibres: glass, basalt, optical) and materials used in water treatment plants. The university seeks partners for licensing the technology and subsequent manufacturing.

Expiration Date	24 January 2017
Reference	TOCZ20150624001
Profile link	

Details

Description

A Czech university has developed a technology for manufacturing planar textile fabric structures which are bonded by perpendicular laying of polymer melt.

Currently, planar textile materials, used for filtration, have dense, compact structure that limits a possibility of increase in number of nanolayers per measured unit so the filtration effect is limited.

Technological solution consists of two main parts: 1) The base frame constructions for fixing of the beam with parallelly wound yarns and the beam with produced fabric; 2) Movable head with a dispensing mechanism for forming precisely specified layer of polymer melt, which ensures optimal fixation of the longitudinal yarns system.

Fabric produced by proposed technology has a characteristic structure. It is composed of longitudinal parallel yarns (the warp), which are fixed by the transverse layer of polymer melt. Polymer melt creates the connecting system, which ensures consistency and fabric shape.

The innovation is the way of fabric production, longitudinal yarns system is minimally stressed during bonding by polymer melt and fabric production from the point of view of bending and tensile stress. The technology allows processing of coated linear fiber assemblies, special and fragile materials with low bending rigidity.

Nanofiber fluidized biomass carrier for biological wastewater treatment plant (WWTP), the carrier with nanofiber surface covering, which has a large surface area.

Application
The products prepared by specific technology have a wide range of application in the area of technical textiles containing fragile materials (e.g. glass fibers, basalt fibers, optical fibers,

classical fiber materials coated by special additives).

Nanofiber fluidized biomass carrier for biological wastewater treatment plant, specific fabrics intended for distribution of operating fluids, construction composite materials with textile reinforcements used in construction, billboards and other advertizing panels, etc.

Partnership agreement relating to the production and further development of the technology device and its distribution.
Licensing of technology for manufacturing of planar textile fabric structures bonded by perpendicular laying of polymer melt.
Contract research focused to optimization of technology with respect to contract partner demands, including the preparation of acquisition samples, realization of verification and professional consultation.

The technology can be used for production of other kind and interesting products. Based on pilot technology testing, it is possible to process various fibers. These are: linear formations with nano-coating (or any other defined coating) monofilament hollow fibers, optical fibers and brittle fibers (glass, basalt, carbon). In terms of applied polymer perpendicular bonding the areal textile, it is possible to use two types of adhesives based on polyurethane or polyolefins

The university seeks partners for licensing the technology and subsequent manufacturing.

Advantages and Innovations

The main advantages of using the nanofiber technology (as substrate for bacterial population) lies in easier and faster (compared to commercial carriers) regeneration on WWTP (biological wastewater treatment plant).
Nanofibers have a positive effect on the physiological properties of the biofilm, which is subsequently reflected in efficient degradation and increased resistance of microorganisms to significant oscillations in the water quality (compared to commercial carriers).
The result of nanofiber biomass carrier application is more effective decrease of total organic pollution load in the effluent of WWTP and thus reduces anthropogenic impacts on the environment.
The cost of typical commercial carries did not differ significantly with the cost of new product.
The ratio cost/ performance is much higher in case of new product.

Stage of Development

Prototype available for demonstration

IPR Status

Patent(s) applied for but not yet granted

Keywords

Technology

02007009	Materials Handling Technology (solids, fluids, gases)
02007018	Advanced Textile Materials
02007024	Nanomaterials
10004001	Industrial Water Treatment
10004003	Wastewater Recycling

Market

08001004	Fibre-reinforced (plastic) composites
08001008	Membranes and membrane-based products

NACE

E.37.0.0	Sewerage
E.38.2.1	Treatment and disposal of non-hazardous waste

Open for EOI : Yes

Dissemination

Send to Sector Group

Environment

Client

Type and Size of Organisation Behind the Profile

University

Year Established

1953

Turnover

1 - 10M

Already Engaged in Trans-National Cooperation

No.

Client Country

Czech Republic

Partner Sought

Type and Role of Partner Sought

The university seeks partners for licensing the technology and subsequent manufacturing.

Type and Size of Partner Sought

SME 11-50,R&D Institution,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

License agreement

Reducing environmental risks of solid waste

Summary

A Hungarian SME has developed a new procedure for the moderation of the environmental pollution produced by municipal solid waste landfills. The aim was to reduce the environmental risks posed by municipal solid waste refuse dumps. The solution can be interesting for regional waste dumpsites or the waste management of regional governments. The company is looking for industrial partners interested in commercial agreement supported by technical consultancy or licence agreement.

Expiration Date 06 May 2017
Reference TOHU20150205001
Profile link

Details

Description

The Hungarian SME is offering a technology to reduce environmental risks of solid waste that is based on the partial treatment of municipal solid waste landfills which is independent of the amount of waste mass.
The partial treatment can be described as an organic municipal waste aerobic stabilisation and composting by use microbial inocula for optimal mineralisation without application of inorganic or hazardous additives. The stabilised municipal organic waste layer is functioned as a buffering layer for the reduction of environmental risks. The whole composting process is not longer than 70-90 days.
The technology is based on the aerobic stabilisation of mixed municipal solid waste which consist kitchen waste, green waste and inert waste in smaller amount. The controlled aerobic waste stabilisation occurs in an open windrow or an encapsulated system by utilising fresh or older municipal solid waste in 5-9 weeks which minimises the environmental risk.
The stabilised municipal organic waste is placed on the untreated waste surface as a soil covering with high buffer capacity. The treated stabilised organic municipal and untreated layers are changed continuously in form of 0,20-0,60 m deep layer.
As a result of the 2-year full-scale experiments 30-60 % volume loss was measured by use inoculation. The volume loss depended on the physical-chemical and biological characteristic of the untreated organic waste.
With the offered technology the environmental pollution of municipal solid waste landfills and dumps decreases.
Current and Potential Domain of Application: The offered technology can be used by regional waste dumpsites or the waste management of regional governments.
The company seeks for industrial partners interested in licence or commercial agreement supported by technical consultancy.

Advantages and Innovations

Innovative considerations:
• Decreasing environmental pollution of municipal solid waste landfills and dumps.
• The stabilized compost layers with high adsorption capacity contribute to the immobilisation of

organic and inorganic micro-pollutants.
• Acceleration of mineralization by use of microbial inocula that are GMO(genetically modified organism) free.
• Decreasing GHG (greenhouse gases), harmful gases and odor emission.
• Increasing capacity of municipal waste landfills.
• Increasing capacity in amount of 30-55 v/v % (volume-volume percentage)
• The technology is flexible which does not depend on the total waste mass.
• The compost layers which are produced during the stabilisation of organic municipal waste can immobilise the organic and inorganic pollutants in landfills
• The number of pathogenic organisms decreases due to the partial treatment.

Stage of Development

Already on the market

IPR Status

Secret Know-how

Keywords

Technology

10003001	Biotreatment / Compost / Bioconversion
10003006	Waste disinfection / detoxification

Market

08004003	Water treatment equipment and waste disposal systems

NACE

E.38.2.1	Treatment and disposal of non-hazardous waste
E.39.0.0	Remediation activities and other waste management services

Open for EOI : Yes

Dissemination

Send to Sector Group

Environment

Client

Type and Size of Organisation Behind the Profile

Industry SME <= 10

Year Established

0

Client Country

Hungary

Partner Sought

Type and Role of Partner Sought

- Type of partner sought: Industrial partner, regional governments.

- Specific area of activity of the partner: Maintenance of regional waste dumpsites or waste management.

- Task to be performed by the partner sought: Integrate the technology into its processes with technical assistance and know-how transfer from the Hungarian company.

Type of Partnership Considered

License agreement
Commercial agreement with technical assistance