Technology Offer

# Zero-discharge, ecologically friendly technology to recycle poultry waste with the help of flies' larvae.

## Summary

*A Russian company from Lipetsk region developed a technology for aviculture to recycle poultry waste that reduces utilisation and feed expenditures. The resulting product from flies larvae serves both as a feed additive and biomass, and as fertilizer. The authors look for partners to conclude services agreement or joint venture agreement.*

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|---|---|
| **Creation Date** | 03 October 2015 |
| **Last Update** | 08 October 2015 |
| **Expiration Date** | 07 October 2016 |
| **Reference** | TORU20151003002 |

## Details

### Description

Battery farms today do not have a technology to take advantage of poultry waste. This technology developed by the company from Russia helps to proceed to almost zero discharge system. The stages of the technology:
1. Determinate species of flies are bred in the insectariums. The larvae of flies are adapted to eat poultry waste (loss of birds, poultry excreta)
2. Flies are fed with sugar and special solutions to increase their amount.
3. As soon as larvae appeared, they are placed in special boxes with appropriate temperature and air humidity.
4. The larvae are fed with loss of birds and poultry excreta which are appropriately processed. The flies larvae are very voracious and grow up quickly. Per first 24 hours they increase in size more than 400 times.
5. On the third or fourth day the larvae are separated from the products of their vital functions and dry them up.
6. Dried larvae are high in protein (40-60%) and are nutritionally balanced and can be easily digested by birds. Moreover, they are high in chitin and melanin that strengthen birds' immunity.
7. The dried larvae are added to feed instead of fish flour and meat-and-bone meal tankage
8. The products of larvae's vital functions are stored and due to the high percentage of ammonia, the mass rot through and ecologically friendly fertilizer appears - zoogumus.
9. Zoogumus is balanced in mineral and organic matters and stimulates the growth of plants. It increases the plants' immunity and at the same time kills pest insects and causative agents of plants' diseases due to the natural insecticides and fungicides. The harvest increases by 50%, sugar content rises by 8-10%, vitamins - by 10-28%. The loss of harvest during winter storage decreases by 8-10%.

In perspective the technology can be applied to dairy production, cattle breeding and other types of agricultural farms.
The company offers to conclude:
1. services agreement and is ready to produce some equipment and provide a partner with necessary consultations;
2. joint venture agreement with the construction of diversified factory and receiving of technology patent being the expected result. The company has land ownership that can be used for the construction of plant with a capacity of about 10 tons per day. According to calculations a new factory will produce about 4 tons of zoogumus and 2,5 tons of biomass per day, the return on investment is 4-5 years.

**Advantages and Innovations**

1. The reduction of the expenditures on feed due to the replacement of fish flour and meat-and-bone meal tankage with larvae biomass produced at your farm.
2. The reduction in death rate among the poultry stock, the increase in weight by 80-150 gram per head.
3. The reduction in purchase of mineral fertilizer due to usage of more effective zoogumus, that increases the yield of crops by 50% min.
4. The technology reduces the load on environment.

**Stage of Development**

Prototype available for demonstration

**IPR Status**

Secret Know-how

**Profile Origin**

Regional R&D programme

## Keywords

**Technology**

| | |
|---|---|
| 10003001 | Biotreatment / Compost / Bioconversion |
| 10003004 | Recycling, Recovery |

**Market**

| | |
|---|---|
| 08004004 | Other pollution and recycling related |
| 09005 | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

**NACE**

| | |
|---|---|
| A.01.6.2 | Support activities for animal production |
| E.39 | Remediation activities and other waste management services |

## Dissemination

**Send to Sector Group**

Agrofood

## Client

**Type and Size of Organisation Behind the Profile**

Industry SME 11-49

**Year Established**

2014

**Turnover**

<1M

**Already Engaged in Trans-National Cooperation**

No.

**Languages Spoken**

English

**Client Country**

Russia

## Partner Sought

**Type and Role of Partner Sought**

Services agreement: 1.Type: small, medium or large company.
2. Field: poultry production.
3. Partner's role expected: introduction of waste recycling so as to reduce feed expenditures and to increase the birds' weight.
Joint venture agreement:
1. Type: manufacturing company or research institute that is able to invest in recycling waste factory’s construction.
2.Partner’s field of activity: waste recycling, green technologies, ecology.
3. The role of a partner: joint development of the project.

**Type and Size of Partner Sought**

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

**Type of Partnership Considered**

Services agreement
Joint venture agreement

Technology Offer

# A technology for removal of cyanobacteria from surface waters and for preventing the formation of cyanobacterial water blooms.

## Summary

*A technology for a selective removal of cyanobacteria (CBs) from surface waters was developed by a Czech university research centre. The method enables removal, prevention and reduction of mass expansion of Cyanobacteria water blooms in an environmentally friendly way. It has been successfully tested and is ready for use in any locality affected by cyanobacterial water blooms. Public or private partner for a commercial agreement with technical assistance or a licence agreement is sought.*

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|---|---|
| **Creation Date** | 07 October 2015 |
| **Last Update** | 13 October 2015 |
| **Expiration Date** | 12 October 2016 |
| **Reference** | TOCZ20151007001 |

## Details

### Description

A Czech university research centre offers treatment of all types of surface water such as water in holiday, water-station, technological and fish breeding reservoirs, in rivers, ponds, lakes, and other water systems is possible.

The preventive mode is based on an ability to remove bioavailable phosphorus.
• The destructive mode relates to the precipitation of iron-containing solids within the cell and the oxidative stress imposed by nZVI; this stems from the production of oxidizing radicals during the reaction of nZVI with water and from the active uptake of Fe(II) ions by cyanobacterial cells.
• Immobilization prevents the release of free microcystin into the water; it becomes sorbed on the large, positively charged surface of the nontoxic and environmentally benign ferric hydroxide produced by the oxidation of nZVI. In this context, it is also possible that nZVI might promote the partial decomposition of microcystin.
• The physical mode of action involves the formation of a compact waste product consisting of the destroyed cyanobacterial cells and highly aggregated ferric hydroxide. Because the product is highly flocculated and prone to particle agglomeration, the organic–inorganic aggregates formed by nZVI treatment do not present any hazard to the ecosystem; they are not nanoscale materials. These aggregates settle within a few hours, leading to the complete cleansing and decontamination of the water column.

Public bodies or private companies (landowners, developers, private commercial companies in industry) seeking a solution their caynobacteria water contamination problems or offering such services are sought. Cooperation should be based on a commercial agreement with technical assitance or a licence agreement.
In the case of a Licensing agreement, a license is expected to be acquired.
In the case of Commercial agreement with technical assistence, a technology is expected to be acquired, whereas the research centre will contribute to the application of the technology in the form of an expert assistance - that is analysis of samples, identification of suitable material and dosage, staff training on how to utilize the technology and so on.

**Advantages and Innovations**

The offered method is unique in terms of its mechanism and
selectivity of action, efficiency, large-scale applicability, environmental acceptability, financial cost, and technological sophistication.

This environmentally friendly technology is the first known method that allows a selective removal of cyanobacteria; zero-valent iron nanoparticles (nZVI), exploited in this technology, play four principal modes of action that are described in the description field.

**Stage of Development**

Field tested/evaluated

**IPR Status**

Patent(s) applied for but not yet granted

**Comment Regarding IPR status**

PCT application has been filed.

**Profile Origin**

National R&D programme

## Keywords

**Technology**

| | |
|---|---|
| 06004 | Micro- and Nanotechnology related to Biological sciences |
| 06006006 | Biological Nanomaterials |
| 10004002 | Municipal Water Treatment |
| 10004008 | Water Resources Management |
| 10004012 | Water in Buildings |

**Market**

| | |
|---|---|
| 04017 | Micro- and Nanotechnology related to Biological sciences |
| 08004003 | Water treatment equipment and waste disposal systems |
| 08004004 | Other pollution and recycling related |

**NACE**

| | |
|---|---|
| E.36.0.0 | Water collection, treatment and supply |
| E.37.0.0 | Sewerage |
| Q.86.1.0 | Hospital activities |

## Client

**Type and Size of Organisation Behind the Profile**

R&D Institution

**Year Established**

2010

**Turnover**

<1M

**Already Engaged in Trans-National Cooperation**

Yes

**Languages Spoken**

English
Czech

**Client Country**

Czech Republic

## Partner Sought

**Type and Role of Partner Sought**

Type of partner sought:
Companies and research organizations

Specific area of activity of the partner:
Public bodies or private companies (landowners, developers, private commercial companies in industry) seeking a solution their caynobacteria water-contamination problems.

Task to be performed by the partner sought:

In the case of a Licensing agreement:
Acquiring a licence

In the case of Commercial agreement with technical assistance:
Acquiring a technology offered, whereas the research centre will contribute to the application of the technology in the form of an expert assistance - that is analysis of samples, identification of suitable material and dosage, staff training on how to utilize the technology and so on.

**Type and Size of Partner Sought**

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

**Type of Partnership Considered**

License agreement
Commercial agreement with technical assistance