IN-PIPE ROBOT

Pipelines inspection by self-designed robots

WWW.INPIPEROBOT.COM

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Problematics

Industrial and Main pipelines 200-750 mm dia.
- **Absence** of efficient inspection methods
- **Losses** of raw materials might exceed 30%
- **Emergencies** cost > $0.5 mln. per 1 km
- **Plant’s shutdown** caused by an emergency costs > $7 mln./day

Relevant spheres
- Energy
- Chemical
- Construction
- Oil and Gas
- Housing and Utilities
Solution

Robot for inspection of industrial and main pipelines with a complex configuration and with 200-750 mm inner diameters.

1. Maneuverable
2. Combined non-destructive testing
3. Autonomous
4. Modular
Technical Characteristics

**Functionality**
- Profilometry
- Onsurface defects detection
- Undersurface defects detection
- Leakages detection
- Pipeline map reconstruction
- Draw-rope service

<table>
<thead>
<tr>
<th></th>
<th>Velocity</th>
<th>up to 300 m/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameters</td>
<td></td>
<td>200-750 mm</td>
</tr>
</tbody>
</table>

**Maneuverability**
- T-branch
- Vertical section
- 90-deg. Branch
- Diameters changes

<table>
<thead>
<tr>
<th>Temperature range</th>
<th>0-80°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection length</td>
<td>&lt; 500 m</td>
</tr>
<tr>
<td>IP-protection</td>
<td>IP68</td>
</tr>
<tr>
<td>Power supply</td>
<td>Cable</td>
</tr>
</tbody>
</table>
Product and Clients

Business Model
B2B service company

Products
• Inspection service
• Predictive analysis
• Pipelines repairing work
• Pipelines cleaning

Client’s Portrait
• Revenue > $30 mln.
• Pipelines maintenance budget > $2 mln.
• The company needs maintenance service
  OR
  A contractor that provides maintenance to another company
Market Analysis

**Market type**  Emerging

**CAGR**  > 16.8%

**Forecast period**  from 2020 to 2026

**Target Markets**
- North America
- Europe
- Russia
- India

**Potential clients**  > 390

Estimated by experts and Zion Market Research by January 2020
## Technologies Analysis

<table>
<thead>
<tr>
<th></th>
<th>Hydraulic testing</th>
<th>Endoscopes</th>
<th>Equally spaced sensors</th>
<th>Operated robots</th>
<th>In-Pipe Robot solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Velocity</strong></td>
<td>High</td>
<td>&lt; 100 m/h</td>
<td>High</td>
<td>&lt; 180 m/h</td>
<td>&lt; 300 m/h</td>
</tr>
<tr>
<td><strong>Inspection length</strong></td>
<td>As necessary</td>
<td>&lt; 100 m</td>
<td>As necessary</td>
<td>&lt; 500 m</td>
<td>&lt; 500 m</td>
</tr>
<tr>
<td><strong>Defects</strong></td>
<td>Visible cracks</td>
<td>On the surface</td>
<td>Under the surface (accuracy &lt; 65%)</td>
<td>On the surface</td>
<td>• On the surface • Under the surface</td>
</tr>
<tr>
<td><strong>Maneuverability</strong></td>
<td>High</td>
<td>No</td>
<td>High</td>
<td>Limited</td>
<td>High</td>
</tr>
<tr>
<td><strong>Damages to an inspected pipeline</strong></td>
<td>Possible</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Low</td>
<td>Average</td>
<td>Average</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>
### Competitors Analysis

<table>
<thead>
<tr>
<th></th>
<th>DIAKONT</th>
<th>Eddyfi Technologies</th>
<th>In-Pipe Robot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diameters range</strong></td>
<td>200-400 mm</td>
<td>202-305 mm &amp; 457-914 mm</td>
<td>200-750 mm</td>
</tr>
<tr>
<td><strong>Velocity</strong></td>
<td>&lt; 85 m/h</td>
<td>&lt; 180 m/h</td>
<td>&lt; 300 m/h</td>
</tr>
<tr>
<td><strong>Defects</strong></td>
<td>• On the surface</td>
<td>• On the surface</td>
<td>• On the surface</td>
</tr>
<tr>
<td></td>
<td>• Under the surface</td>
<td></td>
<td>• Under the surface</td>
</tr>
<tr>
<td><strong>Maneuverability</strong></td>
<td>• L- branches</td>
<td>• L- branches</td>
<td>• T- branches</td>
</tr>
<tr>
<td></td>
<td>• Vertical sections</td>
<td>• Vertical sections</td>
<td>• L- branches</td>
</tr>
<tr>
<td></td>
<td>• Changes of diameters</td>
<td>• Changes of diameters</td>
<td>• Vertical sections</td>
</tr>
<tr>
<td><strong>Inspection length</strong></td>
<td>&lt; 400 m</td>
<td>&lt; 500 m</td>
<td>&lt; 500 m</td>
</tr>
</tbody>
</table>
Competitors Analysis

Key players on the world market

• Eddyfi Technologies, Canada
• GE Inspection Robotics, Switzerland
• Diakont, Russia
• ROSEN Group, Switzerland

Key players in the USA

• Honeybee Robotics
• Envirosight
• Quest Integrity
Created Values

- Up to 55% of savings on pipelines treatment
- Inspection time reduction up to 33%
- Complex shape pipelines inspection
- Predictive analysis of emergencies
- High accuracy of defects localization (error < 0.45 m)
Roadmap

2020 1 Round Seed

2021 2 Pilot Projects
Partnership with an integrator

2022 3 First-served commercial deals
Predictive analysis implementation

2023 4 Breakeven point
Point of return

2024 5 Round B
Scaling
Team

Vlad Zadorozhniy
Co-founder, CTO
- 4 local projects
- 2 international projects

Arthur Kolesnikov
Founder, CEO
- 6 local projects
- 2 international projects

Pavel Nikolayev
NDT-specialist
- 11-year CTO experience
- 11-year NDT-software development

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Who are We Searching for?

• **Investors** (round Seed / Seed+)

• **Clients** (let’s start with a **Pilot Project**!)

// Please contact us for more details