Corporate embeddedness in regional economies

Zámbó Dániel

Kecskemét | 2018.10.19
There is no Bosch car worldwide but there is no car without Bosch.”
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Employees

Overall

13,500 HC

+ 1,000 HC

13,600 HC
Electrical motors in passenger cars

High number of electrical motors in passenger cars, from small up to premium vehicle segment – no significant change for electric vehicles

Rotating Electrics – Europe average distribution of electrical motors per vehicle (standard equipment)

<table>
<thead>
<tr>
<th></th>
<th>Maximum</th>
<th>Average</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>115</td>
<td>53</td>
<td>10</td>
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</tbody>
</table>
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Electrical Drives | RBHM/OFE-C | 2018-10-19

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Production RBHM 23.400 m² excl. External Locations
S.E.G.A 28.700 m² excl. External Locations
McP 35.300 m² excl. External Locations

Robert Bosch
Power Tool (McP)

Starter e-Components
Generators Automotive (S.E.G.A)

Robert Bosch
Energy and Body Systems (RBHM)

Hall 1
Hall 2
Hall 3
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Milestones of embeddedness

Establishment
- Automotive Factory SOP
- Continuous capacity extensions, new products
- New Production hall

Investment

R&D, Education
- University of Miskolc Bosch Department
- R&D area
- R&D projects and Test center
- Dual Education
- International Kindergarten
- Workshop opening, Cluster membership

2003

2018
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Fundaments

- Company Training Center
- Future
- Thermal Systems Specific RDI Projects
- Running Projects
- FIEK Cooperative RDI Framework
- Pre-Projects
- Dual Education Higher
- International Kindergarten & School
- Dual Education Secondary

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**University Cooperations**

<table>
<thead>
<tr>
<th>Title:</th>
<th>E-mobility solutions from Miskolc</th>
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</thead>
<tbody>
<tr>
<td>Consortium:</td>
<td>Robert Bosch Energy and Body Systems Kft. (Coordinator)</td>
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<tr>
<td></td>
<td>University of Miskolc</td>
</tr>
<tr>
<td></td>
<td>Bay Zoltán Nonprofit Ltd. for Applied Research</td>
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<td>Project’s topic:</td>
<td>Smart solutions in thermal systems for e-mobility</td>
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<table>
<thead>
<tr>
<th>Title:</th>
<th>Establishment of an Advanced Materials and Intelligent Technologies FIEK at the University of Miskolc.</th>
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<tr>
<td>Consortium:</td>
<td>University of Miskolc (Coordinator)</td>
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<td></td>
<td>BorsodChem Zrt.</td>
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<tr>
<td></td>
<td>ÉMI Építésügyi Minőségellenőrző Innovációs Nonprofit Kft.</td>
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<tr>
<td></td>
<td>Starters E-Components Generators Automotive Hungary Kft.</td>
</tr>
</tbody>
</table>
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Vocational dual education

**Specialization of vocational dual education**

- **Production line setup**
  - 3 years

- **Mechatronics technician**
  - 2 years

- **Mechanics technician**
  - 2 years

- **Automatics technician**
  - 2 years

- **Evening mechatronics technician**
  - 2 years – for own employees

**Number of the trainees in the vocational dual education**

<table>
<thead>
<tr>
<th>Year</th>
<th>Trainees</th>
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<tbody>
<tr>
<td>2018</td>
<td>102</td>
</tr>
<tr>
<td>2017</td>
<td>96</td>
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<td>2013</td>
<td>46</td>
</tr>
<tr>
<td>2012</td>
<td>24</td>
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<tr>
<td>2011</td>
<td></td>
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<td>2010</td>
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</table>

Total Trainees: 174

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Dual education location

2000 m² training center

6 HC fulltime trainer

10 workshops
Practical activities

11 training coordinators

68 training officers
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New technical training needs in the Training Center

TGA

VOCATIONAL DUAL EDUCATION

Production line setup - 3 years

Mechatronics technician - 2 years

Mechanics technician - 2 years

Automatics technician - 2 years

Evening mechatronics technician
2 years – for own employees

TGA

NEW TRAINING DIRECTION FOR OWN EMPLOYEES

I4.0 basic Training

Electrical measurement

Mechanics measurement

Pneumatics

Sensor setting Training

Robotics

Axis setting

PLC

Bearing mounting

Machine element
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Creation of a Company Training Center - GINOP-6.1.8-17

Certified Training plan

GA with the Ministry

Company Training Center

59 Training program
286 Training occasion
2550 participants
Future

Focus areas for the future

i4.0

Training for Line leaders, shift leader, technicians
Basic part: Basics of digitalisation, informatics, automation. i4.0 function elements
Practice: with i4.0 demo machine
Department specific: systems. MES cooperation with TEF

Robotics

Competence Develop for the TGA trainers
Cooperation with UNI and TEF
KUKA robotics training for TGA trainers
Thank you for your attention