APPROACH

ADVANCED PHOTONIC PROCESSES FOR NOVEL SOLAR ENERGY HARVESTING TECHNOLOGIES

OPPORTUNITIES AND RISKS OF COOPERATION BETWEEN UNIVERSITIES AND COMPANIES

MAREK SEDLÁČEK

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INTRODUCTION

Marek Sedláček

CO-FOUNDER

Academic sector:

1. Thomas Baťa University in Zlín (CZ)
2. Technische Univerzität in Wien (AU)
3. Technical University in Bratislava (SK)
4. Palacky University in Olomouc n.f. (CZ)

Private sector:

1. Hella Autotechnik Nova (CZ)
2. Hella KG & Hueck Co. (DE)
3. MONTIX (CZ); Berkhof Construction (CZ)
4. esgrovia. (CZ)

Science experience: PhD study; Post – PhD academic possition

Job experience: Project manager, Program manager, CEO, Board of directors, Founder

I. FORVIA HELLA in a glance

Founded in 1899
Lippstadt (Germany)

€ 8.1 billion sales
in fiscal year 2023 (adjusted)

3 Business Groups
Lighting, Electronics and Lifecycle Solutions

FORVIA
HELLA

~37,500 employees
as of: 31 December 2023

~10% R&D ratio
per year on average

~125 locations
in around 35 countries

Product lines:
- Headlamps
- Rear combination lamps
- Interior lighting
- Car body lighting

Product lines:
- Sensors and actuators
- Automated driving
- Lighting and body electronics
- Energy management

Product lines:
- Independent aftermarket
- Workshop solutions
- Special Original Equipment

I. FORVIA HELLA key figures

Key performance indicators at a glance

FORVIA HELLA at a glance

Selected key figures

in € million

	Fiscal year 2023 1 January to 31 December 2023	Calendar year 2022 1 January to 31 December 2022
Currency-adjusted sales	8,125	7,212
Reported sales	7,954	7,212
Operating income	486	295
Operating income margin	6.1%	4.1%
Net cash flow	205	219
Net cash flow in relation to sales	2.6%	3.0%
R&D expenses	878	758
R&D ratio	11.0%	10.5%
	31 December 2023	31 December 2022
Net financial debt / liquidity	-56	43
Equity ratio	41.0%	41.9%

Research & Development: located in DE and also in Mohelnice (CZ)

Development center in Mohelnice / Ostrava: the biggest R&D center in Europe

High potential for cooperation between the International company with Academic world

I. FORVIA HELLA fields for cooperation

Seating

- Seat structures
- Complete seats

Interiors

- Instrument Panels
- Door Panels
- Center Consoles
- Sustainable Materials

Clean Mobility

- Ultra low emissions solutions for passenger and light commercial vehicles
- Zero emission hydrogen solutions for mobility, energy storage and distribution

Electronics

- Sensors & Actuators
- Automated Driving
- Lighting/Body Electronics
- Energy Management
- Cockpit Electronics
- Cockpit Experiences

Lighting

- Headlamps
- Rear Lamps
- Interior Lighting
- Car Body Lighting

Lifecycle Solutions

- Independent Aftermarket*
- Workshop Solutions
- Special Original Equipment

Electrification & Energy Management

Safe & Automated Driving

Digital & Sustainable Cockpit Experiences

I. FORVIA HELLA NEW fields for cooperation

Environment

Social

Governance

Environment

Climate

2025: 100% CO_2 neutral production (Scope 1 & 2)

2030: -45% FORVIA **CO2 footprint** vs. **2019**

2045: NetZero company

Energy

2025: 100% renewable electricity supply

Transition to renewable heat

2025: -20% energy intensity **vs. 2019**

Waste

2025: -9% waste intensity in our operations vs. 2019

Water

2030: >7% water intensity reduction in our operations vs. 2023

Social

Health & Safety

2025: Accident Rate <2.2 Accidents per Mio. hours worked

*Accidents per Mio hours worked with time lost

Diversity & Inclusion

2025: 27% of females in managers & professionals

Learning Company

2030: 25 training hours per employee per year

Governance

Supply Chain

2025: 95% of purchase volume of key suppliers with sustainability assessment by EcoVadis

Business Ethics

2025: 100% of targeted employees trained on Code of Conduct

I. FORVIA HELLA (CZ) cooperation example

1. Research & Development programs

Project supported by the European Union funds and Czech Ministry of industry and trade:

„Relief of nano/micro structure for optical components v automotive industry“

Cooperation of:

FORVIA HELLA & IQS & Palacký University in Olomouc

Target:

the aplicatication of new structures on surface of components

Expected results:

no waste of light flow with better focusing and optimization of shapes

Involved:

researchers from Palacký University in Olomouc (app. 7 +)

company technicians and specialists from the optic and material departments (5)

engineers (3)

I. FORVIA HELLA (CZ) cooperation example

1. Research & Development programs

Opportunities

1. Complexed research topics
2. More subjects can be involved
3. Public private cooperation
4. Finance availability
5. International cooperation
6. Knowledge sharing
7. Research equipment available
8. Repeated cooperation
9. New experience on both sides

Risks

1. Available specialists
2. Willingness for cooperation
3. Slow reactions
4. Limited finance source (budgeted)
5. Limited initial experience
6. Practise and training needed
7. Distances between participants
8. „Lost brains“ on both sides
9. Time, time, time!

II. FORVIA HELLA (CZ) cooperation example

2. Study programs „tailor made“ for the company

Special University study program: Automotive lighting construction (VUT Brno)

- prepared by the University according companyś request
- consists of special focused subjects and knowledge

VUT	Lektor	Zástupce	Přednáška	Cvičení
Konstruování (2D/3D modelování, sestavy, optimalizace konstrukce z pohledu výroby a montážní linky, standardní díly, robustní design…)	Ivo Straka	Willi Glatter	**6**	**6**
Problematika plastů I. (technologie vstřikování, vstřikovací formy)	Štěpán Šanda	Petr Mlejnek	**4**	**4**
Problematika plastů II. (povrchové úpravy)	Jitka Brodinová	Petr Mlejnek	**3**	**3**
Problematika plastů III. (plasty)	Kristýna Berková*	Petr Mlejnek	**1**	**1**
Základy elektroniky pro světlomet a zadní skupinovou svítilnu (LED technologie, sběrnice, diagnostika…)	Marek Olivík	Milan Tannenberg	**0**	**2**
Základy optiky pro světlomet a zadní skupinovou svítilnu (legislativní požadavky, světelné zdroje, certifikace a homologace…)	Martin Kutáč	František Dostál	**0**	**2**
Simulace, způsobilost výrobku a testování (teplotní, pevnostní a toleranční analýzy, kinematika, optimalizace, 3D měření, plán pro ověření návrhu a zprávy z testování…)	Juraj Michálek	Petr Kuchynka	**4**	**4**
Nástroje včasného plánování kvality (nástroje kvality, FMEA, DVP&R, Benchmarking, Brainstorming a DMAIC)	Jaroslav Schwarz	Ondřej Klemš	**6**	**4**
Průmyslový design (ergonomie, stylistické návrhy, vizualizace…)	VUT	VUT	**4**	**2**

II. FORVIA HELLA (CZ) cooperation example

2. Study programs „tailor made“ for the company

Opportunities

1. New approach to study
2. Universities followed companies
3. Focused study programs
4. Available workforce on market
5. Easy to be employed
6. Employment during studies
7. Practise and theory in one class
8. Product and process knowledge

Risks

1. One side focus program
2. Companies need to push universities
3. Long approval process
4. Changing program content
5. General knowledge limited
6. For technical subjećts mostly
7. Confidence to future
8. Future status of some industries

II. MONTIX – SME company (production)

MONTIX a.s. : is a Czech plastic moulding company producing plastic parts and sub-groups of components especialy for automotive industry customers.

Founded: **2012**

Business group: **lighting**

R&D: **no**

Turnover: **350 mil CZK**

Employees: **200**

Location: **Mohelnice, CZ**

Main customers

Customerś projects

II. MONTIX – SME company (production)

1. Continual education courses

Education course for management

Cooperation:

MONTIX and Thomas Bata University in Zlín

Target:

Improve knowledge in Finance / Industrial engineering / Operation / Planning / HR / Logistics / etc.

Expected results:

Higher Knowledge score

Involved:

MONTIX employee (12)

Time period:

3 months

Lecturers:

Internal UTB + from companies in Zlín

Attendance:

Pesonal + online

Final examination:

Written test + Practical case study + Discussion

Certification:

Done by UTB

II. MONTIX – SME company (production)

1. Continual education courses

Opportunities

1. Study at the University
2. Not only study but also teamwork
3. Some topics from MBA study
4. Problem solving from work
5. Up to date knowledge
6. Theory and practice in one room
7. Networking
8. Potential for future self study

Risks

1. Personal availability
2. Everyday operational topics
3. Costs for small companies
4. Limited support from management
5. Work balance (time for studying)
6. Subject contents
7. Quality of courses
8. Old time information in some fields

II. MONTIX – SME company (production)

2. Workshops / conferences / theses

Workshops:

- especially for specific problem solving (technical)
- in the shopfloor
- during some technology transfer (relocation)
- new product development
- new process definition (e.g. CIM / planning / etc)

Conferences:

- speakers from practise
- networking for companies
- getting new commercial cases
- info about actual trends and future perspectives

Bachelor / Diploma / PhD thesis:

- Bachelor / Diploma / Disertation thesis
- at MONTIX history (2012) app. 12 theses
- various topics (from production to HR)
- supervisors also from MONTIX side
- most frequent -> strategic and operational management + industrial engineering

II. MONTIX – SME company (production)

2. Workshops / conferences / theses

Opportunities

1. New perspectives and ideas
2. New information
3. New talent definition
4. New imployees and colleagues
5. Future cooperation
6. Increase competitiveness
7. Long term partnerships (UNI + Co.)
8. Practise for students

Risks

1. Lost objectivity (research questions)
2. Academic independence in danger
3. Limited information availability
4. Limited „academic freedom“
5. Work balance (time for studying)
6. Copyright
7. Available people at companies
8. Time and priorities

III. BERKHOF – SME company (development)

BERKHOF : is a Czech family owned company, focused on Industry 4.0 technologies, design solution, machine learning, assebly workplaces, precision jigs, automation, collaborative workstations and camera systems.

Founded: **2014**

Business group: **machine development**

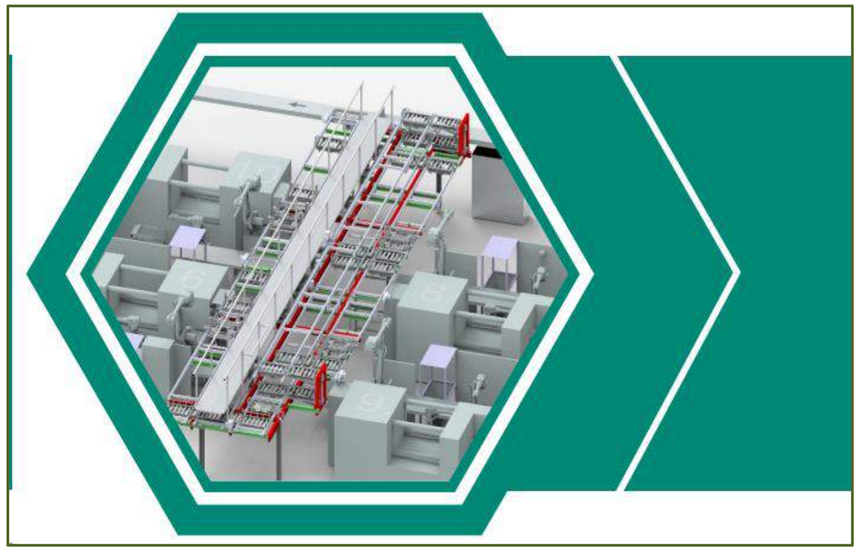
R&D: **YES**

Turnover: **32 mil CZK**

Employees: **15**

Location: **Zábřeh, CZ**

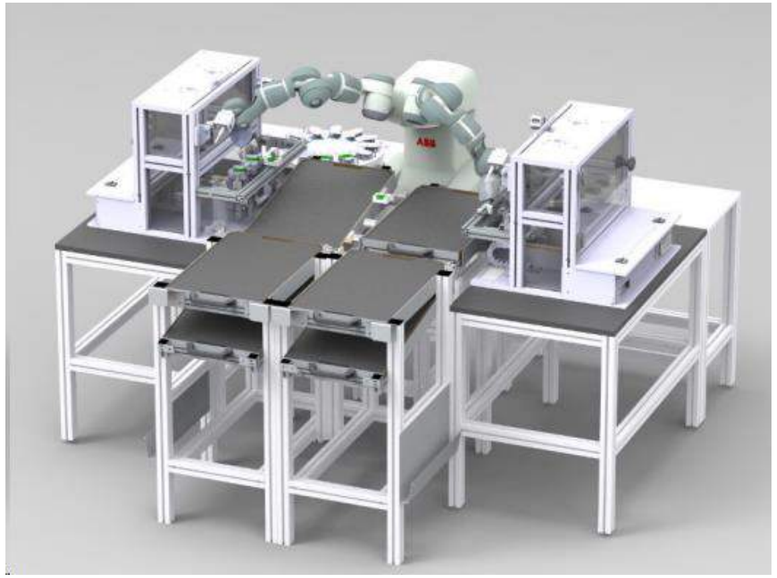
BERKHOF Construction



III. BERKHOF – SME company (development)

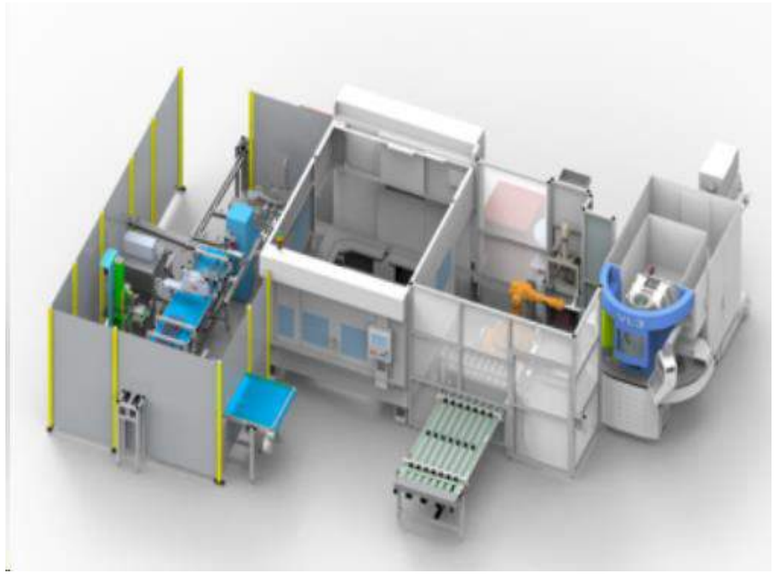
TOP BERKHOF 1.:

Application of collaborative robot YuMi ABB, which operates with two work stations - replacement of two persons (operators) in the production process.



TOP BERKHOF 2.:

Robotic system of milling machines --> whole automation from development to realization at the customer. Sending of automatic corrections from themeasurements position to the milling machines.

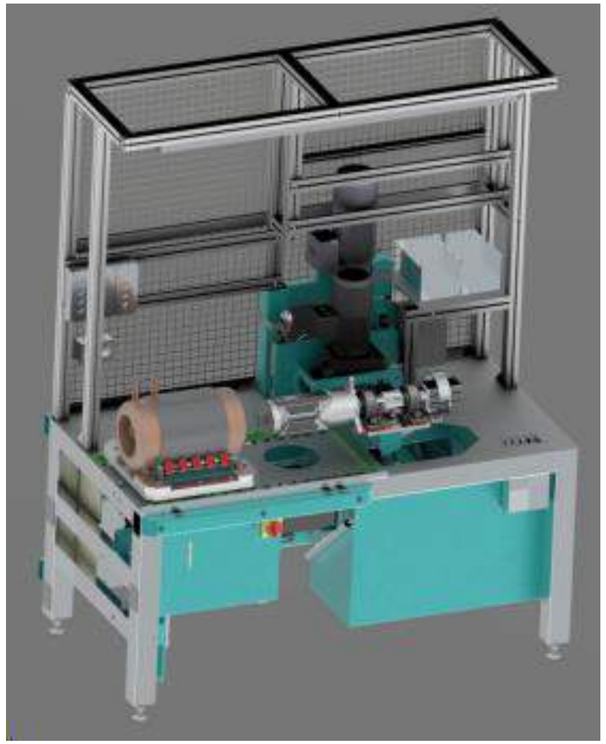


III. BERKHOF – SME company (development)

1. Software / hardware / testing / development

Cooperation with universities / development centers / secondary schools:

1. Traineeships in software solutions
2. Development collaboration
3. Testing
4. Prototyping
5. Special control application development
6. Common projects for a special purpose
7. Mentoring
8. Workshops for problem solving
9. Ergonomic working place definition



III. BERKHOF – SME company (development)

1. Software / hardware / testing / development

Opportunities

1. New technology sharing
2. Testing equipment available
3. Mechanical engineers on market (missing)
4. Cost saving due to development investment
5. New skills especially IT available
6. Material engineering (UTB in Zlín)

Risks

1. Project oriented organization (costs / time / quality)
2. Capacity at the universities and development centres
3. Location – distance (esp. Development centres)
4. Copyright and law limits
5. Development time period (shorten)
6. UNI flexibility

IV. esgrovia – start up company

esgrovia. is a company founded by Marek Sedláček and Jiří Staník in a cooperation with Thomas Bata University in Zlín and Technical university of Ostrava focused on ESG topics, CO2 footprint, Finance and Calculations, Energo savings and engineering, cooperated with the partners Helgi Library and Industria Group Co.

Founded: **2023**

Business group: **Financial – nonfinancial reporting, ESG, management.**

R&D: **YES**

Turnover: **15 mil CZK / 2024 planned**

Employees: **4 + 4**

Location: **Prague, Olomouc, CZ**

esgrovia.
Grow with Care.

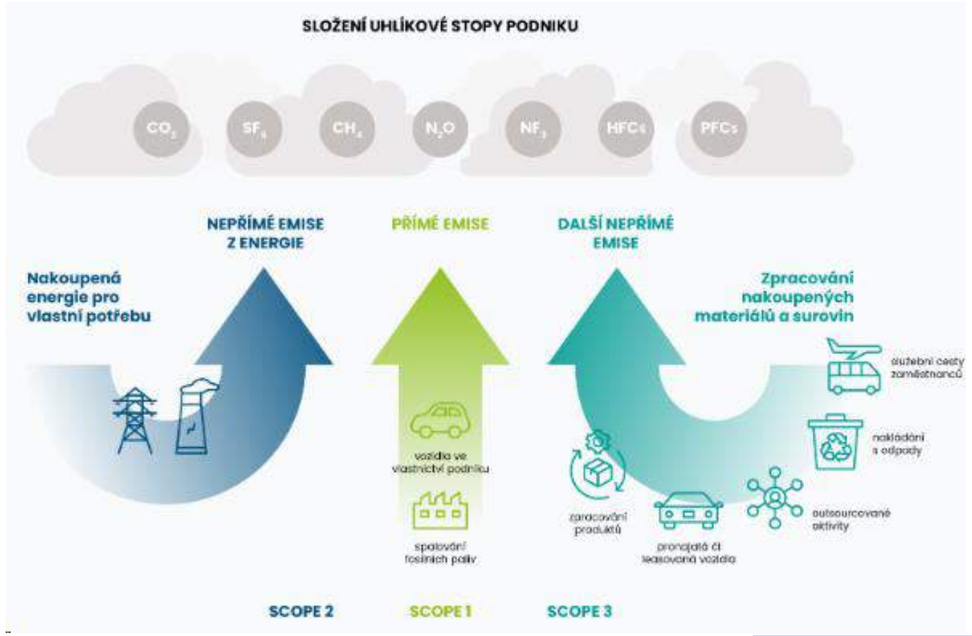
IV. esgrovia – start up company

1. Software development / knowledge sharing

Cooperation with Tomas Bata university in Zlín and Technical university of Ostrava:

1. Software solutions and calculations for CCF – Corporate Carbon Footprint
2. Automatic application definition and development acc GHG protocol
3. AI solutions for Sustainability reports and CO2 calculation
4. Knowledge sharing in ESG fields
5. Expertise of academic workers and scientists
6. Mentoring
7. Bachelor and Diploma theses

esgrovia.
Grow with Care.



Univerzita Tomáše Bati ve Zlíně
VŠB TECHNICKÁ UNIVERZITA OSTRAVA
HelgiLibrary
IndustriaGroup

IV. esgrovia – start up company

The esgrovia. team

Jiří Staník
CO-FOUNDER

Jiří má více než 25 let zkušeností s analýzou firem v regionu střední a východní Evropy. Zakladatel projektu Helgi Library.

Marek Sedláček
CO-FOUNDER

Marek působí celý svůj profesní život v průmyslových firmách různé velikosti zejména výrobně zaměřených. Je Baťovec.

Petr Braniš
CTO

Více než 20 let se pohybuje ve světě webových aplikací. V esgrovii má na starost automatizaci reportingu, vývoj klientské aplikace a webu.

Drahomíra Pavelková
ODBORNÁ KONZULTANTKA

Ekonomka a profesorka v oboru podnikové finance. Zabývá se měřením výkonnosti firem, klastry, LCA a LCC. Ředitelka Ústavu financí a účetnictví, UTB ve Zlíně.

Lucie Tomancová
ESG KONZULTANTKA

Od roku 2007 se zabývá problematikou manažerské etiky, společenskou odpovědností a ESG. Ve své práci propojuje teorii s praxí.

Eliška Kozubíková
ESG KONZULTANTKA

Udržitelný rozvoj a jeho aplikace do praktického života je Eliščino hlavní téma. Působí na Univerzitě Tomáše Bati ve Zlíně.

Jana Kodymová
ODBORNÝ GARANT

Expertka s 20letou praxí v oblasti ekologie a environmentálního managmentu. Působí na VŠB – TUO, jako externí lektor kurzů EMS a odborný konzultant pro LCA a stanovení uhlíkové stopy.

Jan Pohl
KONZULTANT

Student, který propojuje znalosti oboru marketingu z UTB ve Zlíně a sociologie z UP v Olomouci. Během pandemického lockdownu založil běžecký univerzitní spolek pro studenty UP.

Zde můžete být Vy!
Spojte se s námi ›

Univerzita Tomáše Bati ve Zlíně
VŠB TECHNICKÁ UNIVERZITA OSTRAVA
HelgiLibrary
IndustriaGroup

IV. esgrovia – start up company

1. Software development / knowledge sharing

Opportunities

1. High level of expertise
2. Up-to-date information
3. Special software and application
4. Fresh ideas
5. IT experts partialy available
6. Various experts (various fields)

Risks

1. Long organizational processes
2. Experts availability acc project timing
3. Neverending approval processes
4. Limited knowledge sharing
5. Nontransitive experience and skills
6. Patent and license limitations

V. Lovecká chata Horka nad Moravou

1. The best place in the world





LOVECKÁ CHATA

The best place for academic workers and scientists to get more energy for research, study and other scientific topics ☺

(3 kilometers for from Olomouc city)

KONTAKT

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V. Lovecká chata Horka nad Moravou

1. Training / Workshop / Outdoor / Teambuilding

Cooperation with universities / centers / schools:

1. Special trainings and educational activities
2. Workshops for various topics
3. Outdoor trainings
4. Teambuildings
5. Sport and social events

Lovecká chata Horka nad Moravou services:

- Pension / restaurant (15 rooms / 50 beds; Czech cuisine)
- Seminar rooms (1st < 70 people; 2nd < 130 people)
- Equestrian area (10 - 15 horses; covered area/hall)
- Outdoor activities (trainings in the wood)
- Sport activities (rafting, hiking, cycling)

V. Lovecká chata Horka nad Moravou

1. Training / Workshop / Outdoor / Teambuilding




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APPROACH

THANK YOU

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