SINDIPEÇAS – Encontro da Industria de Autopeças
April 22, 2019

Volker Barth
Exec. VP
Europe and South America
Volker Barth Professional Experience

Education:
Dipl. Ing. Electrical Engineering and Controls

Professions:
GM Opel
• Experimental Engineer
• Manager Fuel Economy, Field Test and Car Evaluation
• Director Opel Liaison Japan
• Director Strategic Planning GM Europe
• Purchasing Executive GM Europe
Director Purchasing and Materials Management GM do Brasil
Exec. Director Purchasing Metallic GM Corporation
Exec. Director Purchasing Delphi
President Dephi South America
President Delphi EMEA
President Magna Intier Europa
CEO Russian Machine Systems
CEO DGH Group
Exec. VP OHorizons Global
Automotive Industry Challenges (general)

• Automotive Market globally stagnating
  • US Market stagnating on high level
  • China Growth Concerns
  • Europe Saturation and Eastern Europe political Concerns
  • Emerging Markets Scepticism
• Environmental Concerns and Global Warming
  • Stricter Emissions and Consumption Regulation / Diesel Uncertainties
  • Inner City Driving Restrictions for Diesel Cars
  • Push for pure Electric Vehicles
  • New Customer Focus
• Increasing Trade Barriers
  • US – China Trade Issues
  • Brexit
  • New NAFTA Negotiations
  • Mercosul Trade Negotiations
• New Technologies advancing
  • E-Cars and Plug-In / Full Hybrid
  • Autonomous Cars / Inter Car Communication / G5
  • Industry 4
Automotive Industry Challenges – Suppliers (general)

- Adaptation to the new Customer Requirements
  - Changing Technologies
    - Industry 4
    - Totally different Powertrains
      - Lesser Internal Combustion Engines
      - Smaller Transmissions with electric Cars
    - High Voltage inner Environment
  - New Electronics - Communication - Entertainment - Controls - Power Requirements
  - Frequent Technological Changes and Uncertainties
    - Battery - Fuel Cell - Hydrogen - Synthetic Fuel - LNG Alternatives
- Adaptation to a more volatile Market Environment and Competition
  - Changing End-Customer Preferences
    - Power - Environment - Status - OEM Image - Price driven Decisions
  - Alternative Transportation
  - OEM Strategic Actions
    - Strategic Partnerships or Competition
    - Technology
    - Globalisation
    - Price Pressure
- High Investment Requirement and Volume Uncertainties
Automotive Industry Challenges – Brazilian Suppliers (general)

Systemistas
• Rota 2030 – Technology Availability via Global Connections / International Ownership
  • Financial Feasibility to introduce new Technologies / Market Conditions
  • Tropicalization of international Technology
• International Strategic Relationships with OEM vs. Competitive Approach
• Market

Locally owned / Tier 2 Suppliers
• Access to Technology
  • Strategic Partnership with Systemista
  • Partnership with international Tier 2
• Economic Feasibility of Localization
• Development of required Competences
• Measures to meet competitive Requirements
• Feasibility of Investments
• Export Potential
• Availability of Incentives
• International Competition
Electric Car Challenges (general)

New Electric Car Platforms will require different and less Components
• Electric Motors have significantly less and very different Components
  • Motors and Transmissions are usually manufactured outside of the OEM Production Systems
  • Significant Reduction of Employment expected
  • Powertrain Component manufacturers have to expect lower business opportunities
  • Substitution of lost business with new Technology required
• Batteries for Electric Cars currently are only produced in China with new Developments expected in Japan, USA and Europe. The applied technology for Batteries however is changing rapidly to allow faster Charging and Range Extension, making Investment Decisions extremely difficult
• Required precious Metal is found in Regions with politically difficult conditions
  • Current Extraction Volumes are only a Fraction of future Requirements considering the ambitious Plans of OEMs and required Investments to increase Mineration are not in Place
  • Dependence on those Regions could represent future Supply and Price Challenges
• Distribution of Charging Stations, Charging Technology and Standards are still in Development
  • Sceptical Experts consider second Household Cars for short Distance Driving as the real Opportunity for Electric Cars, which also might resolve the current environmental Inner City Concerns.
    • Batteries could be smaller and cheaper, Charging less critical and on lower Amps
    • Could also allow to recharge the Battery at Home on regular electric Outlets
    • Studies in Germany show that the average Car is driven approximately 50km per Day
• Potentially the real Electrification will be with full Hybrids or Plug-in Hybrids mastering the City Drive electrically
• Hydrogen is strongly promoted for future Combustion, however works currently only on Fuel Cell Propulsion
  • Is currently considered as Replacement for Diesel Combustion in Trucks and Busses
• Above Concerns put current OEM Announcements on Electrification in Doubt (p.e. Toyota)
Considerations for Electric Cars

Heated Discussion in Europe about inner City NOx and Particle Pollution require OEM to demonstrate aggressive Plans for Electrification
• Several OEM have announced that by 2025 no further new Combustion Engine driven Cars will be introduced
  • Several Studies show that by 2025 approximately 25% of newly registered Cars will be full Electric
• Sceptics seem to prove that NOx and Particle Pollution is only by 20% coming from Car Exhaust
• Inner City allowed NOx Values are considered too stringent by Medical Doctors
  • Smokers take in significantly more NOx in Weeks than City Inhabitants in one Year
• OEMs are currently not entering into this heated Discussion as Image after Diesel Gate needs to be restored
  • However the VDA (Association of OEM and Suppliers in Germany) has now shily entered.
• The German Government has requested the EU Administration to re-check the NOx Inner City Limits

Confusion is High and Future uncertain
• How to develop future Plans is not only difficult for OEMs but even more for Powertrain related Suppliers?
• Can it be rational to believe in a totally electrified Car Future?
• How will the Industry stem the huge Investments?
  • Suppliers might not have Funds to adapt to a new Technology and Product Portfolio and also might face tough Price Pressures from OEM to finance their Investments
• How will we build the Infrastructure for Material Supply and Car Charging?
• How to overcome political and Trade related Risks?
• What will be the Influence of Artificial Intelligence and Self Driving Vehicles?
• How can Developing Country Industries participate or will we have separate Standards and Developments?
• How can future Synthetic Fuels and Brazilian Ethanol change this Electrification Picture?

Where is the Crystal Ball to provide an answer?
Thank you.
For your info and appreciation:
Attachment 1: OHG Profile
Attachment 2: OHorizons Foundation

Volker Barth
Exec. VP
Europe and South America
Appendix 1

OHorizons Global Profile
OHorizons Global (OHG) Value Differentiators

Key Points

- OHorizons Global is an international private investment, M&A, and management consulting company founded in January, 2007. We help acquire/divest large industrial assets partnering with leading multi-nationals and large Private Equity groups.
- OHG manages multi-national operations and a global technical network. We have partnered in some of the largest and most complex automotive transactions of the last decade.
- We have a global team of senior world-class operating executives with deep Automotive, Distribution, Industrials and Energy expertise, local knowledge and worldwide relationships.
- OHG advises global OEMs, Tier 1 suppliers, governments and international investors.
- Vision is to become the preferred choice for our partners to win and achieve superior returns through the evaluation, acquisition and divestiture of assets and leading technologies worldwide.
- OHG teams in Puerto Rico, China, Germany, Brazil, US, and Mexico have deep experience in:
  - M&A
  - Intellectual Property and Technology
  - US and Europe Distribution Networks
  - Operational Integration
  - Technology Integration

Representative Experience

- **Western**
  - **Bond Holder**
    - **Western Technologies Group**
      - OHorizons provided transaction diligence services in connection with a contemplated investment.
      - OHG acted as strategic, operational and financial advisor in connection with the transaction.
      - OHG advised on the company’s exit from bankruptcy.
      - OHG assisted in the determination of near and long-term operational efficiencies.

- **Delphi**
  - **Bond Holders**
    - OHorizons provided transaction diligence services in connection with a contemplated investment.
    - OHG acted as strategic, operational and financial advisor to the DIP lenders of Delphi in connection with the company’s exit from bankruptcy.
    - OHG acted on behalf of Delphi’s management and Board of Managers to assist in a comprehensive product portfolio assessment and the determination of near and long-term operational efficiencies.

Representative Partners

- **Apollo Global Management**
  - Asian Conglomerates
- **Bain Capital**
  - Private Equity
- **Barclays**
- **BorgWarner**
- **Continental**
- **CQV**
- **Carnegie Mellon University**
- **Carnegie Mellon University**
- **ERI**
- **Elliott Management**
  - Global
- **Faulkner**
- **General Motors**
- **Granite Real Estate**
- **Goldman Sachs**
- **Hitachi Metals, Ltd.**
  - Acquisition of Wasapoce
  - OHorizons provided transaction diligence services and financial advisory in connection with a contemplated investment.
- **Hitachi Metals**
- **Meggie**
- **Magna**
- **Monarch Alternative Capital**
- **Oak Hill Advisors**
- **Pioneer**
- **Silverpoint Capital**
- **SOLUS**
- **Suntrust Capital**
- **Trive Capital**
- **TRW**
- **Whirlpool**
Highly-Experienced Subject Matter Experts

- Functional teams used to conduct comprehensive assessments of corporations, their business lines and product groups
- Full complement of financial advisory tools and resources for transaction diligence, M&A and corporate finance activities
- Significant work with state, regional and local governments (e.g. transactions, site development, joint ventures)
- Ability to create go-to-market plans for new product introductions or to acquire customers within existing or new regions
- Focus on both the operational and financial impact of strategic sourcing strategies for raw materials, engineered components and vehicle assemblies
- Considerable experience actively managing facilities, product launches, strategic initiatives and global expansion activities

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<thead>
<tr>
<th>Strategy</th>
<th>Business Development</th>
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<tbody>
<tr>
<td>- Targeted acquisitions or divestitures</td>
<td>- Regional expansion</td>
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<tr>
<td>- Development of strategic plans</td>
<td>- Customer development</td>
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<tr>
<td>- Portfolio Assessment Tool®</td>
<td>- Product diversification</td>
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<tr>
<td>- Corporate and product positioning</td>
<td>- Technology deployment</td>
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<tr>
<td>- Regional growth initiatives</td>
<td>- M&amp;A opportunities</td>
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<tr>
<th>Procurement/ Supply-Chain</th>
<th>Manufacturing</th>
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<tr>
<td>- Raw material procurement</td>
<td>- Lean manufacturing</td>
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<td>- Logistics and distribution</td>
<td>- Footprint optimization</td>
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<tr>
<td>- Supply chain management</td>
<td>- Labor and workforce balance</td>
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<tr>
<td>- Outsourced direct and indirect buy</td>
<td>- Facility and product launch</td>
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<th>Finance</th>
<th>Engineering</th>
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<tr>
<td>- Business unit / product performance analysis</td>
<td>- Launch preparation and execution</td>
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<tr>
<td>- Cash generation and utilization</td>
<td>- Capabilities review</td>
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<tr>
<td>- M&amp;A and corporate finance</td>
<td>- Cost recovery strategy</td>
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<tr>
<td>- Systems and reporting review</td>
<td>- Technology gap assessment</td>
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### Technology and Process Expertise

<table>
<thead>
<tr>
<th>Vehicle Components and Systems</th>
<th>Manufacturing</th>
<th>Raw Materials</th>
<th>Distribution and Logistics</th>
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</thead>
</table>
| Hybrid, EV, Alternative Energy, Gas and Diesel | - Alloys and Composites  
- Injection Molding  
- Electronics  
- Forgings and Castings  
- Precision Machining  
- Modules  
- Stamping and Metal Forming | - Minor Metals and Rare Earths  
- Lithium Technologies  
- Traded and Industrial Metals  
- Technology Metals  
- Hedging and Sourcing Strategies | - Distribution  
- Logistics  
- Procurement  
- Supplier Quality and Development  
- Engineering and Launch |
| Electrical, Electronics and Controls | | | |
| ADAS and Connected Car | | | |
| Chassis and HVAC systems | | | |

- Integrating Technologies and Operations to Build Trusted Brands
- Intellectual Property acquisition and protection
- Deep relationships to approach high level key technical talent and team
- Broad experience in renewables and alternative energy
- Trusted relationships with decision makers in OEMs, Suppliers, Unions and Governments
- Deep knowledge to approach Automotive assets, New Energy technology, ADAS, Key components, existing Brands and Vehicle Platforms/Architectures, and EV companies
- Team successfully managed assets in North America, Europe, Asia and South America
- Experience in Joint Ventures, acquisitions and management
- Expertise in macro trends, technology evolution, demand drivers and market participants
OHorizons Global Service Network Map

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OHorizons Charitable Solutions
Global Intentions to End Global Hunger

Information to be found on www.ohorizons.org
Contact: laura@ohorizons.org
We Can End Global Hunger

The resources to make this happen already exist. And it starts with clean water.

This is what inspired our founder to launch the OHorizons Charitable Solutions (OCS).

OHorizons works to address difficult, global issues through innovative, low-tech solutions that are scalable, sustainable, and implemented at the local level. We provide local communities with tools, knowledge & education to solve their toughest problems so they can survive and thrive.

- **1 BILLION** people lack access to safe drinking water.
- **1.2 BILLION** people live off the grid without access to energy sources.
- **1 BILLION** people are unable to tap the agricultural potential that will move them out of persistent poverty.
- **5.6 BILLION** people around the world can't generate sustainable economic opportunities.
Tough Challenges Need Simple Solutions

To break the cycle of hunger, we need to address four key human needs we call the “Four Horizons of Life.”

- Access to clean drinking water
- Clean, renewable, affordable energy
- Improved agricultural practices
- Economic development opportunities

“Through the lens of the Four Horizons, we can attack hunger from a systems perspective, which leads to more sustainable and impactful solutions.”

Orlando Bustos, Founder & Chairman
Scalable Breakthroughs Require A New Way Of Thinking

Inspired by design thinking, which seeks to understand the user, challenge assumptions, and redefine problems, we developed our Low-Tech, High-Thinking™ philosophy which guides our approach to developing solutions:

- Low Cost
- Simple
- Locally-Sourced
- Flexible
- Open-Source
BioSand Filters (BSFs) produced using steel molds have been the global standard for making dirty water safe to drink since the 1990s.

The award-winning, patented Wood Mold™ came to life from a 8 ft by 4 ft sheet of plywood that’s easily sourced around the world. It makes it faster, less expensive, lighter, and easier to build BioSand Filters using local materials.

“Before we had the Wood Mold to build BioSand Filters, people used pond sand filters, but the quality of water was not good. And they were inconvenient. The BSF is reducing the hardness on a woman’s life and the burden they have had to provide clean water for their family. They are very user friendly.”

Mohon Kumar Mondal
Executive Director
LEDARS, Bangladesh
Low-Tech, High-Thinking™

WOOD MOLDS vs STEEL MOLDS

- **$50-80 for entire assembly**
- 65 lbs.
- 6-8 man hours
- No special training
- No specialized tools needed

- **$750 – 2000 for steel**
- 250 lbs.
- 16-24 man hours
- Some specialized training
- Requires skilled welder
OHorizons Foundation’s Bio Sand Filter

**How BSFs Clean Water**

- **Predation**: Micro-organisms in the biolayer eat other micro-organisms.
- **Trapping**: Micro-organisms get trapped in the sand.
- **Adsorption**: Micro-organisms get stuck to the sand grains.
- **Natural Death**: Micro-organisms die because they lack food or oxygen, or from old age.

Illustration courtesy of the Center for Affordable Water & Sanitation Technology.
A BioSand Filter allows anyone, anywhere to get clean drinking water right inside their home.

Clean water changes lives: improving health, unlocking the doors to education, providing employment opportunities, making a difference in the lives of children, women and families around the world.

By using our Wood Mold to create BioSand Filters, we can give clean water for life to anyone, anywhere for about $10 per person.

"With the Wood Mold BioSand Filter's introduction into homes, it made it a 1-to-1 opportunity for families to get their own clean water."

George Arango
Project Coordinator
Amua Africa Project
A Sustainable Approach

The Wood Mold BioSand Filter utilizes 100% locally available materials, operates with no electricity and is built following freely available instructions in numerous translations that requires little to no behavior change.

Unlike other clean water solutions that end up providing a centralized access point to clean water, a BioSand Filter enables families to have clean drinking water inside the safety of their own home.
We Can Change a Life for Just $10

Our partnership with a local NGO in Bangladesh has enabled the creation of the largest Wood Mold BSF Factory in the world. We have given tens of thousands of people clean water so far, and in the process spurred economic growth in an extremely remote area.
Expanding Around the World.

We’re engaged in Wood Mold projects with partner organizations in Bangladesh, Ecuador, Kenya, Senegal, Puerto Rico, and Mali.

After years of testing, validating and refining both our breakthrough solutions and our innovative processes, we are scaling our impact. We do this in two ways:

**COLLABORATIVE**
Selected partnerships with local organizations, leveraging OHF funding, training and technical support.

**OPEN SOURCE**
Filtration projects started by anyone using our open-source and freely available materials.

Future project sites.
OHorizons Charitable Solutions wants to support Brazil's potable water need.

- Initial contacts were made, however scalable change requires impact and action. But how?

- This could be how!
  - Involvement of OEM and Suppliers / Employees to support production of WoodMolds to create BioSand Filters
  - Direct involvement and / or financial support
  - Social market image
  - SINDIPEÇAS / ANFAVEA initiative
  - SAE / AEA initiative to involve university students in regions

Why not help when help is urgently required today and especially in the future?