About Us?

Everson Talgatti

CEO / President Director of MRG Solutions
President of Institute of Applied Technology and Qualification – ITAQ
President of Brazilian Association of Thermal Waste Treatment - ABTT

Lawyer Specialization in Tax Law – Experience in the area of project management.

Stephan Hardt

Commercial Director / New Business Development
International Relations of Institute of Applied Technology and Qualification – ITAQ

Engineering Management and Industrial Engineering with experience in international business in the Oil & Gas and Chemical Industry sector.
Event Index:

- MRG Solutions
- Legal Aspects
- MSW – “Municipal Solid Waste”
- Petcoke
- Mineral Coal
- E-Waste
- Best Practices for Doing Business in Brazil
- Paraná
- The First International Conference for Thermal Treatment of Solid Waste – in Brazil
“Simplifying processes, developing and implementing solutions.”
Who we are?

MRG Solutions is a Brazilian holding company that emerged from the necessity to respond to strategic demands from Brazil, among them the local industry, the oil and gas sector, the energy sector and the new policies for environmental management.

Our Structure:

- Headquarters Brazil – 26 Employees
- Production Facility, Brazil – 120 Employees
- Engineering, Brazil – 120 Employees
- Total Staff, Brazil – 234 Employees
- Total, Globally – 497 Employees
What do we do?

OIL AND GAS

INDUSTRIAL ENGINEERING

RENEWABLE ENERGY

PRODUCTION

PRODUCT ENGINEERING
Project Competences

2D Development

3D Development

Technical Norms Adequation

Industrial Design

Manufacturing and Process

FEA Analysis
Where we are?
Production Capacity

Processes

- Lase Cutting
- CNC Milling
- CNC Cutter
- Welding – TIG/MIG/MAG
- Hydraulic Stamping
- Painting: Powder & Top Coat
- Assemblies
- Machining Center 5 Axis
- CNC Lathe
Manufacturing Facility

Plant site:

São Jose dos Pinhais – Paraná, Brazil
75,000 m² Free Area
10,000 m² Built Area
Private Non-for-Profit Institute

"Being a reference for qualification and training, research, development and technological innovation for the main productive sectors of the national economy."

Areas of Expertise

- Agricultural;
- Automotive;
- Manufacturing;
- Oil & Gas;
- Sanitation;
- Environment;
- Renewable Energy;
- Prevention of Disasters;
- Urban Mobility.
Clients

- Nutrimental
- CNH
- AGCO
- Jumil
- COMAU
- Santal
- Mitsubishi
- JTEKT Corporation
- Molins Tobacco Machinery
- MAN
- Petrobras
- Volkswagen
- IVECO
- Hyundai
- DAFRA
- PSA Peugeot Citroën
- Perfecta Curitiba
Why Waste ?
Política Nacional de Resíduos Sólidos

"National Solid Waste Policy"
THE NATIONAL SOLID WASTE POLICY
The key Instruments are:

- Shared Responsibility between the General Public, Private and Public Sectors
- Reverse Logistics
- Environmental Monitoring and Supervision of Means of Disposal
- Selective Waste Collection
- Incentives for R&D on means of Waste Disposal
The key Directives:

- Environment Correct Final Disposal of Waste
- Dump and “Controled Landfill” Recovery Programs
- Elimination of “Controled Landfill” and Dumps
- Programs for Reduction on the Generations of MSW
- Reduction of the Amount of “dry waste” in the final Disposed Residues
- Reduction of the Amount of “wet waste” in the final Disposed Residues
What type of residues are affected by the PNRS?
Who does it Impacts?

URBAN SCAVENGERS

PUBLIC SECTOR

PRIVATE SECTOR

GENERAL PUBLIC
“In the context of shared responsibility for the lifecycle of products, it is up to the holder the public services urban cleaning (...) adopt procedures for reusing the recyclable and reusable solid waste (...), to establish a system of selective collection, (...) To provide adequate environmental waste disposal (...).” (Cap. III, Section II, art. 33)
More reverse logistics programs with the objective of returning the packages of electronics products to manufacturers for recycling.

“(…) the holder of public services for municipal cleaning and solid waste management will prioritize the organization and functioning of cooperatives or other forms of Association of collectors (…) formed by individuals from low-income families, as well as his hiring ”(Cap. III, art. 36, VI).
Organized into cooperatives, the collectors have valued formal work as agents in the management of municipal waste.

"(...) The holder of public urban sanitation and solid waste management will prioritize the organization and operation of cooperatives or other forms of association of collectors. (...) Formed by individuals of low-income people as well as their employment " (Chap. III, art. 36th, VI)
PNRS and GENERAL PUBLIC

They must do their part to ensure that the waste is no longer a problem, and induce new attitudes to improve life quality in large cities.

Whenever established the separate collection system for the municipal plan (...), consumers are obliged to (...) package properly and in a differentiated manner the waste (...) the municipal public power may establish economic incentives to consumers who participate in(...) “ (Cap. III, Section II, art. 35)
THE MARKET OF MUNICIPAL SOLID WASTE IN BRAZIL
BRAZIL
Um País de Proporções Continentais

General Data

- Territorial Extension: **8,514,876.599 Km²** - 5th largest in the world.
- Population: **202,289,850**
- GDP: **US$ 2.212 Trillion**
- Counties: **5,570**

- Sanitary Landfills: **2,226**
- Controlled Landfills: **1,775**
- Sanitary Landfills: **1,569**
US$ 12 BILLIONS
WERE INVESTED IN THE
URBAN CLEANING MARKET IN 2013

Responsible for the generation of 333,777 direct jobs

Public: US$ 3 Bi
Collect: US$ 4 Bi

Private: US$ 9 Bi
Others: US$ 8 Bi

Included: disposal, sweeping, weeding, cleaning and maintenance of green areas, cleaning streams, etc.

According to ABRELPE, 2014.
Generation of MSW in Brazil:

- 1.041 Kg/hab/day*

*PNRS Establishes a limit of 1.1 kg/hab/day

Projections based on IBGE and ABRELPE data, 2014.
Index of Generation and Collecting of MSW by Region

NORTH – 7.0%
15,169 t/day of MSW generated.
80% are actually collected.

MIDWEST – 8.2%
16,636 t/day of MSW generated.
93% are actually collected.

SOUTH – 10.9%
21,922 t/day of MSW generated.
94% are actually collected.

NORTHEAST – 22.1%
53,465 t/day of MSW generated.
78% are actually collected.

SOUTHEAST – 52.4%
102,088 t/day of MSW generated
97% are actually collected.

Nationally
Generated: 209,080 t/day
Collected: 189,219 t/day

Total of 90% of waste is collected

Based on ABRELPE data, 2014.
Generation of MSW in Brazil – By Region:

- **1.041 Kg/hab/day***

*PNRS Stablishes a limit of 1.1 kg/hab/day

Projections based on data from ABRELPE and IBGE, 2014.
Destination of MSW in Brazil:

- Sanitary Landfill: 58.30%
- Controlled Landfill: 24.30%
- Dumps: 17.40%
- Inappropriate: 41.70%

Based on ABRELPE data, 2014.
Brazil Waste Composition

- 10% Paper
- 02% Cardboard
- 02% Ferrous Metals
- 03% Glass
- 05% Rags
- 01% Leather
- 01% Rubber
- 52% Organic Material

- 08% Plastic Film
- 05% Hard Plastic
- 02% Non-Ferrous Metals
- 0.36% Wood
- 05% Other Materials

19.80% Recycled Waste
80.20% Processed Waste

“Within four months, Zero Garbage fined 23.8 thousands in Rio, yet only 3,700 have paid.”

23 – December - 2013
“Garbage on the streets of Rio gains international repercussions.”

07 – March - 2014
Brazil Waste to Energy
Available for Treatment

- Considering **the sum of both**, improperly destined waste and not collected waste.
- Of the total of MSW that can be used for power generation, only 80.2% will be used for processing, and approximately 19.2% is destined for recycling.

Projections made based on data from ABRELPE, 2014.
Brazil Waste to Energy
Projection Premisses

• Considering an average of moisture content in the MSW of approximately 50%.
• Considering that the waste needs to be dry and reach a maximum moisture content of 25% to be used for Gasification.

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>AMOUNT TON/HOUR</th>
<th>AMOUNT ENERGY (MW/HOUR)</th>
<th>AMOUNT TON / YEAR (Hour x Day)</th>
<th>AMOUNT (MW/YEAR)</th>
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<td>1,00</td>
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<td>1,00</td>
<td>8.760,00</td>
<td>8.760,00</td>
</tr>
</tbody>
</table>

Brazil Waste to Energy Potential – By Technology

- Considering an average of moisture content in the MSW of approximately 50%.

“In its debut auction source (MSW) sees the price and assurance of supply of inputs the biggest challenges to succeed in the contest.”

08 – August - 2014
MINERAL COAL MARKET
### Mineral Coal Worldwide

#### Largest Producers of Coal

| Position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Countries with the largest reserves of coal |

Data from CGEE – Centro de Gestão e Estudos Estratégicos, 2013, Base data from 2012.
Mineral Coal Production
in Brazil 2012 - 2014

Data from DNPM – National Department of Mineral Production, 2013.
Mineral Coal Resources

IN MILLIONS OF TONS

- **Known Reserves:**

  Computed by detailed geological studies, with a margin of error lower than 20%.

- **Inferred Resources:**

  Are exploitable resources, but currently still require further studies and investments to be explored.

Data from Geological Services of Brazil - CPRM, 2013.
Mineral Coal Resources by Region

According to the Society of Mineral Resources Research (CPRM, 2014 - Geological Service Brazil), Brazil has reserves of turf, lignite and hard coal. The coal of the hard coal type (high carbon content) totals 32 billion tons of reserves and is mainly in Rio Grande do Sul (89.25% of total), followed by Santa Catarina (10.41%).
Distribution of Revenue from Coal Production

DNPM data indicate that the ranking of marketed production of coal in the country, the State of Rio Grande do Sul remains the largest producer, with 63.6% of the total production, with Santa Catarina and Paraná with 35.1% with 1.3% respectively. However in terms of revenue, the distribution changes because Santa Catarina owns 61.9% of total sales, while Rio Grande do Sul has 31%, and the Paraná, 3.2%. The total amount of gross revenue in 2012 by coal was R$ 819.31 million, a decrease of 11.35% compared to 2010.

NATIONAL MARKET

Data from Geological Services of Brazil - CPRM, 2013.
Distributions of Imported Mineral Products

Because the properties of the coal extracted in Brazil do not meet the requirements of domestic steel and metallurgical industries, there is still a need to import large quantities of coal specifically for this purpose.

- **40,6%** Coal
- **34,0%** Potassium
- **13,2%** Copper
- **3,2%** Coal
- **1,5%** Zinc
- **2,4%** Phosphatic Rock
- **0,9%** Natural Stones
- **4,2%** Others

Data from DNPM – National Department of Mineral Production, 2013.
Brazilian Energetic Matrix

In Brazil, the ore represents, however, little more than 2.6% of the electrical energy matrix. In 2013, the year that the domestic demand for electrical energy reached 609.9 TWh - 570 TWh of domestic generation and 30.9 TWh imported - coal was responsible for the generation of 15.9 TWh, from the operation of power plants that are located in the southern region, near the mining areas. (Energy Research Company - EPE, 2014 / base year, 2013)

Data from ANEEL, 2014.
Energy Use in the Industry

Coal today accounts for 13\% of total energy consumed by the industry. (Energy Research Company - EPE, 2014 / base year, 2013)

Data from ANEEL, 2014.
PETCOKE MARKET IN BRAZIL
Petroleum Barrel Composition and Derivates

Based on Petrobras data, 2014.
National Production of Petroleum and Petcoke

In Brazil, Petrobras is responsible for 85.2% of all petcoke produced.
**Petcoke Use**

Petcoke application are made according to its characteristics.

- Steel industry (sintering, pelletizing, furnace, manufacturing metallurgical coke, PCI) Abrasives (silicon carbide)
- Pig Iron
- Alloys
- Coalmining
- Cement Companies
- Thermoelectrics
- Casting
- Calcination
- Drying Grain
- Gasification
- Chemical Industry

Based on Petrobras data, 2014.
National Production of Petroleum and Petcoke

GOALS - QUANTITY OF OIL INTENDED FOR THE PRODUCTION OF PETROLEUM COKE GREEN

Projections made based on Petrobras data, 2014.

2013 145,000 Barrels a Day
2020 315,000 Barrels a Day
E-Waste and the PNRS

According to the Law N 12.305 /2010 ( ART.33 ): the chains of products that must necessarily implement reverse logistics programs are:

a) Batteries
b) Fluorescent Lamps
c) Other Electronic Products
d) Tires
e) Pesticides
f) Lubricating oils and their packaging waste
Electronics Production in Brazil (2010)

Data from ABDI, 2014.
# Electronics Classification in Brazil

Data from ABDI, 2014.

## Green Line
- Desks;
- Notebooks;
- Printers;
- Cellphones.

- Less Durable (~2-5 years);
- Small devices (~0.09kg - 30kg);
- Wide variety of components;
- Composed mostly of metal and plastic.

## Brown Line
- CRT Television / Monitor;
- Plasma Television/LCD/ Monitor;
- DVD/VHS;
- Audio Devices.

- Average Durability (~5-13 years);
- Midsize Equipment (~1kg - 35kg);
- Composed mostly of plastic and glass.

## White Line
- Refrigerators;
- Freezers;
- Stoves;
- Air Conditioning.

- Long Durability (~10-15 years);
- Large Equipments (~30kg - 70kg);
- Lower diversity of components;
- Composed mostly of metals.

## Blue Line
- Mixers;
- Blenders;
- Irons;
- Drills.

- Long Durability (~10-12 years);
- Small Equipments (~0.5kg - 5kg);
- Composed mostly of plastic.
Projection of E-Waste Production (2014 – 2020)

Data from ABDI, 2014.
Projection of E-Waste Production by Region (2014 – 2020)

Data from ABDI, 2014.
Co-Responsabilidades – Stakeholders Map

Today’s Map
Recycling Centers in Brazil (94)

Legend:
Number Of Recyclers

- 1-5
- 6-10
- 11-15
- 16-20
- >20

Data from ABRELPE, 2014.
THE BEST PRACTICES FOR DOING BUSINESS IN BRAZIL
MRG Solutions Develop the Best Practices for Doing Business in Brazil

**Attend to the Minimum Regional Content:**

- Trained and qualified engineering projects of nationalization
- Import Coreparts and Production of Non-coreparts
- Qualified Suppliers
- Factory Unit for local production of Non-coreparts
- Model for Technology transfer

**Acquire Technology Transfer Contract:**

- Guarantee protection of intellectual property
- Qualified legal team
- Know-how for the development of international contracts, ensuring the security of intellectual property
Nationalize and Ensure Productive Capacity

- Company qualified and able to develop the entire process of nationalization and production, ensuring approval (approval in accordance with local regulations).

Capturing and Delivering Private and Public Resources for Municipalities

- Access to financial institutions: local and international, public and private.
  A) Know How to submit the project for approval, suitable to Brazilian standards
  B) Knowledge of the process
  C) Transfer of technology?
  D) Nationalization

Have Knowledge of Market

- Knowledge of the entire production chain of waste (Market Intelligence).
Be Approved in Sector Agreement

• Have Know How to prepare for submission the document for the announcement
• National company
• Comply with the requirements that meet PNRS 12,305 / 2010.

Ensure Access to Feedstock

• Local company approved the sectoral agreement
• Presence and knowledge of the market

Attend Governing Law / Government

• Be licensed and meet the requirements of federal, state and municipal legislation.
MRG Solutions Develop the Best Practices for Doing Business in Brazil

Reduce The High Cost for Implementing Technology in Brazil

- National company
- Domestic Production
- Model of Technology Transfer
- Integrated Network of Suppliers and approved with skilled workforce
- Company able to raise funds and access to government inventive
- Knowledge of the bureaucratic system
- Expertise with company standards, public and private procedures
PARANÁ
PARANÁ
A Strategic Point for Business

- 3rd Largest Industrial Polo in Brazil
- 5th Largest Economy in the Country
- 3rd Brazilian State in Terms of Competitiveness in Brazil

Fonte: Economist Intelligence Unit, Centro de Liderança Pública, 2013
PARANÁ
A Strategic Point for Business

General Data

• 5.4% Largest GDB in Brazil
• Average Annual Growth 2009-2012 = 4.9%
  • Above the National Average (3.7%)
    Latin America (4.5%)
    World (4.1%)

Fonte: IPARDES, FMI e IBGE. Elaborado por IPARDES, 2013.
General Data of The Industry

- Main Industrial Sector:
  - 2nd Largest Automotive polo of Brazil
  - Food and Beverage
  - Oil and Gas
  - Chemicals
  - Pulp and Paper

General Data Infrastructure

- 40 Airports – **2 Internationals**
- **2 Ports** – Paranaguá is the **LARGEST PORT** in the South of the country
- **13,750 Km** of Paved Roads
- **2,400 Km** of Railways
- **1 Waterway**

The Best Place in Brazil for doing Business

• Competitive Paraná:
  • With a modern, flexible and with a private sector partner of the Government fiscal policy, Paraná established itself as one of the best places to do business in the country.

• Lines of Action:
  • Modernization of fiscal policy - Expansion of foreign trade - Optimization of existing infrastructure - Qualification of manpower - Debureaucratization.

• The Results:
  • Every day, companies announce new investments that move all regions of Paraná. It is a cycle of industrialization in the state.

THE FIRST INTERNATIONAL CONGRESS OF THERMAL TREATMENT OF MUNICIPAL SOLID WASTE
Motivations

- Due to the need to discuss solid waste treatment themes and technologies for Thermal Treatment, through enriching lectures specialized in the areas of municipal solid waste, petroleum coke, coal, and electronic waste. This event seeks to update the fields of law, management, technological and institutional.

- This will be the first International Conference thematic panels that will promote discussions that will result in improvements of future courses aimed at constant improvement activities and new demands, which have been developed by national and international markets, will be presented.

- The Conference will feature national and international experts who will provide insights and practices on the topic presented.
Location

CITY:  Curitiba - PR
LOCAL:  Industry Federation

*Close to the airport, and the city center.
The Congress

- Total area – 3,750m²
The Structure
Option 1 - Auditorium Horácio Coimbra

- **4** Conference Rooms
- **250** Participants Each
- **15-20m²** Space to set up stands for technological representatives
Option 2 – Main Building

180 Participants Each

120-150 Participants Each

860 Participants Each

250 Participants Each
Objetives

• The event seeks to provide professionals in the oil & gas, mining, environmental agencies, solid waste management, organized society sector, the deeper understanding of the Law, Management, Planning and Technology, Political, Financing, and methods of solid waste in accordance with the need for policies and regulation.

Target Public

a) Public Sector (Secretaries
b) C-Level
c) University, institutes and R&D centers
d) Mayors
e) Ministers
f) Engineers
g) # of Participants: 1,500
Themes

1. Technologies
2. Energy Overview
3. Political Aspects
4. Business Aspects
5. Social Aspects
6. Project Financing

Revenue Sources

- Application Fees
- Sponsors and Governmental Support

Action Items

- Event Program, Keynote Speakers, Roundtables, Panels, and workshops.
- Budget
Proposed Agenda

June 3rd:

1. Ceremony, cocktail, and speech (Political, Executives and Entrepreneurs).

June 4th:

1. Keynote Morning: Political Challenges:
   Example: “How to do business with municipalities in Brazil”

2. Keynote Afternoon: Technical:
   Example: “Nationalization and Regional Content Requirements”

June 5th

1. Keynote Morning: Environmental
   Example: “Environmental Challenges in Brazil”

2. Keynote Afternoon: Financing
   Example: “How to finance projects in Brazil”
Sponsors/Partners:

- Ministers (Cities, Science and technology, and etc)
- Secretaries (Development, and etc)
- Private Companies (Petrobras, Petra, Coal Refinery, and etc)
- Environmental Agencies (ABRELP,
- Regulatory Agencies (ANP, ABES, & ETC)
- Banks: World Bank, BNDES, BID, and etc)
- Federal Industries
- World Wide related Councils
## Committee

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<th>Everson Talgatti</th>
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<td>Vice-President</td>
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<td>Members</td>
<td>Eliciani Santos</td>
<td>ITAQ / ABTT</td>
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<td>Steve Jenkins</td>
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<td>Cassio Tanigushi</td>
<td>Secretaria do Planejamento e Coordenação Geral</td>
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<td>Alan Darby</td>
<td>Gasification Technologies Council / Aerojet Rocktdyne</td>
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How to Participate?

THE FIRST INTERNATIONAL CONGRESS OF THERMAL TREATMENT OF MUNICIPAL SOLID WASTE

Offers several ways you can participate:

Being:
• Sponsor
• Exhibitor
• Speaker
• Guest
• Congressman
• Contributor
• Support

How:
• Request a proposal for the organization of participation
• Reserve your space as an exhibitor
• Subscribe to conference presentation
This panorama of waste in Brazil, based on secondary market research on already available or sent to MRG SOLUTIONS analysis of financial information and a range of interviews with industry experts. The MRG SOLUTIONS makes clear that not verified, independently, or provided any information at their disposal and therefore no warranty, express or implied, that these data are correct or complete. Market forecasts, financial information, analysis and conclusions contained herein are based on the type of information listed above and in the judgment of MRG SOLUTIONS. Therefore, should not be interpreted as definitive predictions or as assurances for future performance or results. Furthermore, the data and interpretations presented here does not constitute advice of any kind, are not intended to use for investment purposes, nor MRG SOLUTIONS nor any of its subsidiaries or their partners, directors, shareholders, employees or agents assume any burden or liability in connection with the use or reliability of any information or content included in this analysis. All rights of this document belong to MRG SOLUTIONS, and it may not be published, broadcast, distributed, copied, reproduced or republished in whole or in part without the explicit written permission of MRG SOLUTIONS.