



## D6.2 – PROJECT GRAPHIC IDENTITY (LOGO), LEAFLET AND POSTER

### PROJECT INFORMATION

GRANT AGREEMENT NUMBER	686086
PROJECT FULL TITLE	Development of novel, high Performance hybrid TWV/GPF Automotive after treatment systems by raTlonAL design: substitution of PGMs and Rare earth materials
PROJECT ACRONYM	PARTIAL-PGMs
FUNDING SCHEME	RIA
START DATE OF THE PROJECT	01 Apr 2016
DURATION	42 months
CALL IDENTIFIER	H2020-NMP 23 – 2015
PROJECT WEBSITE	<a href="http://www.partial-pgms.eu">http://www.partial-pgms.eu</a>

### DELIVERABLE INFORMATION

DELIVERABLE N°	28 (Relative number D6.2)
DELIVERABLE TITLE	Project graphic identity (LOGO), leaflet and poster
WP NO.	6
WP LEADER	WG
CONTRIBUTING PARTNERS	DEMOKRITOS
NATURE	DEC: Websites, patents filing, press & media actions, videos, etc.
AUTHORS	Isella Vicini (WG), Massimo Rinaldi (WG), Silvia Zambelli (WG)
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REVIEWERS	/
CONTRACTUAL DEADLINE	M3
DELIVERY DATE TO EC	M3

### DISSEMINATION LEVEL

PU	Public	✓
PP	Restricted to other programme participants (incl. Commission Services)	
RE	Restricted to a group specified by the consortium (incl. Commission Services)	
CO	Confidential, only for the members of the consortium (incl. Commission Services)	



## DOCUMENT LOG

Version	Date	Author	Description of Change
1	20/06/2016	Massimo Rinaldi	First Release



## TABLE OF CONTENTS









1	PROJECT IDENTITY .....	4
1.1	Project graphic identity (LOGO).....	4
1.2	Project leaflet .....	7
1.3	Project poster .....	9

# 1 PROJECT IDENTITY

## 1.1 Project graphic identity (LOGO)

A project logo (Figure 1) was created before the Kick Off Meeting implementing and analyzing 13 different options linked by three conceptual factors: **Innovation**, **Automotive** and **Sustainability**.

Table 1 Graphical representation of different logos

Logo Number	Graphical representation of the logo
Logo 1	 <p>PARTIAL PGM</p>
Logo 2	 <p>PARTIAL PGM</p>
Logo 3	 <p>PARTIAL PGM</p>
Logo 4	 <p>PARTIAL PGM</p>
Logo 5	 <p>PARTIAL PGM</p>
Logo 6	 <p>PARTIAL PGM</p>
Logo 7	 <p>PARTIAL PGM</p>
Logo 8	 <p>PARTIAL PGM</p>

Logo Number	Graphical representation of the logo
Logo 9	
Logo 10	
Logo 11	
Logo 12	
Logo 13	



The logo number 3 was chosen by the Project Coordinator, the Dissemination Manager and the Project Scientific Coordinator and it was presented to and approved by the PARTIAL-PGMs partners as the official logo of the PARTIAL- PGMs Project at the kick-off meeting on 11th - 12th April 2016 Bologna – Italy.

The logo includes the name of the project (PARTIAL-PGMs), its main concept intends to clear and to capture the attention of the audience. The shape of the vehicle from which come green leaves reminds the main idea of the Project: PARTIAL-PGMs proposes an integrated approach for the coherent development of smart and innovative nanostructured automotive post-treatment systems by integrating TWCs on GPF, capable to meet future regulations, with reduced PGMs and REEs, leading to development of 2nd generation GPFs.

The automotive catalysts of the future will need to be more active, work at lower temperatures, respond rapidly to the change in operating mode of the vehicle, remove pollutants as soon as the engine is switched on and also address the PM emissions

The PARTIAL-PGMs logo will be used for any (internal or external) deliverable, report and dissemination tools.

Table 2 PARTIAL-PGMs official LOGO



## 1.2 Project leaflet

The main objective of the project leaflet is to provide our audiences with an attractive and written project overview and a summary of the main project objectives and characteristics. To assist the dissemination effort, the attractive and professionally made leaflet, prepared by WG, is published on the project website. The leaflet presents the goals of the project and the main (expected) findings. The text is designed taking into account not only experts, but also an interested non-specialist. It introduces the main idea, the approach and the goals of the PARTIAL-PGMs project. Furthermore, it includes the website address and provides basic information on PARTIAL-PGMs Consortium. All partners' logos are also displayed.

A second version of the leaflet will be implemented after month 18. This version will contain an updated content, with an overview of preliminary results, and a new layout for making it more attractive.

The leaflet can be circulated in printed form, e.g. it can be handed out at conferences or other events; on the other hand also an electronic version (e.g. PDF file) can be circulated. The leaflet can be also downloaded from the project website. Some leaflets may be translated into other languages than English by the Partners, based on a master template which will be provided to the partners. The content of the leaflets has to be clear and easily understandable by the target end users.

**Link for leaflet download:** <http://www.partial-pgms.eu/wp-content/uploads/2016/06/PARTIAL-BROCHURE-2016.pdf>

Table 3 PARTIAL-PGMs Leaflet page 1



The leaflet is divided into three vertical panels. The left panel, titled 'PROJECT DETAILS', lists project information: H2020-NMP-2014-2015, Call Identifier NMP 23 – 2015, Grant agreement no. 686086, Project acronym PARTIAL-PGMs, Duration of the project 42 months, Start date of the project 1<sup>st</sup> April 2016, and Contact Person Project Coordinator massimo.rinaldi@warratgroup.it. The middle panel, titled 'PARTNERS', displays logos for Warrant Group, Johnson Matthey, Université Lille1, Université de Picardie, Universiteit Antwerpen, TU/e, LiqTech, Lurederra, University of Delaware, and eAmbiente. Below the partners is 'MORE INFORMATION' with the website WWW.PARTIAL-PGMS.EU and social media icons for Facebook, Twitter, Google+, LinkedIn, and YouTube. The bottom of the middle panel features the Horizon 2020 logo and a funding statement. The right panel features the PARTIAL-PGMs logo, a stylized car graphic, and the text: 'DEVELOPMENT OF NOVEL, HIGH PERFORMANCE HYBRID TWC/GPF AUTOMOTIVE AFTER TREATMENT SYSTEMS BY RATIONAL DESIGN: SUBSTITUTION OF PGMs AND RARE EARTH MATERIALS'. Below this is 'RATIONAL DESIGN OF CATALYSTS with low critical raw materials content, for the development of novel automotive after treatment and the reduction of toxic and pollutant emissions from cars'. The panel ends with the Horizon 2020 logo.



Table 4 PARTIAL-PGMs Leaflet page 2

### INTRODUCTION

PARTIAL-PGMs proposes an integrated approach for the coherent development of smart and innovative nanostructured automotive post-treatment systems by integrating TWCs on GPF, capable to meet future regulations, with reduced PGMs and REEs, leading to development of 2<sup>nd</sup> generation GPFs.

### S&T TARGETS

- Development of efficient hybrid TWC/GPF capable to meet future EC legislation (EU VII)
- Reduction of PGMs at least 35%.
- Decrease of REEs at about 20%

The workplan of the project involves the following general objectives:

- Rational design of nanocatalysts by Multi-scale modelling
- Synthesis of innovative nanostructured catalysts with enhanced activity.
- Full scale design and preparation of novel hybrid TWC/GPF
- Advanced characterisation techniques- Performance evaluation
- Life cycle analysis, Recyclability and environmental /health assessment studies
- Dissemination and exploitation of the results

### MAIN IDEA

- Automotive catalysts were implemented in production in the US (1975)
- Japan and thereafter Europe (1986) adopted the use of automotive catalysts.
- The most common type of catalyst found on gasoline engines is the so called: Three-way catalyst (TWC) :
  - Carbon Monoxide (CO) → Carbon Dioxide (CO<sub>2</sub>)
  - Hydrocarbons (HC) → Water (H<sub>2</sub>O)
  - Oxides of Nitrogen (NOx) → Nitrogen (N<sub>2</sub>)
- Platinum group metals (PGMs) mainly Pt, Pd and Rh have been the key component in automotive emissions control catalysts
- The national and international regulatory bodies enforce over more stringent emission rules so that the field of automotive catalysis is always at the very edge of technology.
- Continuous research to improve the catalyst performance and function, but also to reduce the amount of PGMs used to the catalyst
- Driven by ever tightening regulations Gasoline particulate filters (GPFs) are being developed to enable compliance with future particulate number (PN) limits for passenger cars equipped with gasoline direct injection (GDI) engines.

### APPROACH

To date, three way catalytic converters (TWCs) have been established as the most effective engine exhaust after-treatment system. However, TWCs not only fail to address the issue of particulate matter (PM) emissions but are also the main industrial consumer of Critical Raw Materials (CRMs) mainly Platinum Group Metals (PGMs) and Rare Earth elements (REEs), with the automotive industry accounting for 65%-80% of total EU PGMs demand.

The enforcement of new limits on PM emissions (EURO 6c/7) will require higher TWC performance, hence leading to further increase the CRMs content in autocatalysts.

Addressing the necessity of CRMs reduction in catalysis, PARTIAL-PGMs proposes an integrated approach for the rational design of innovative nanostructured materials of low PGMs/REEs content for a hybrid TWC/Gasoline Particulate Filter (GPF) for after-treatment systems with continuous particulates combustion also focusing on identifying and fine-tuning the parameters involved in their preparation, characterization and performance evaluation under realistic conditions.

PARTIAL-PGMs approach is broad, covering multiscale modeling, synthesis and nanomaterials' characterization, performance evaluation under realistic conditions as well as recyclability, health impact analysis and LCA.

The rational synthesis of nanomaterials to be used in these hybrid systems will allow for a reduction of more than 35% in PGMs and 20% in REEs content, either by increasing performance or by their replacement with transition metals.

The compact nature of the new hybrid system not only will allow its accommodation in smaller cars but will also reduce cold start emissions and light-off times with performance aiming to anticipate both future emission control regulations and new advances in engines technology. Such R&D progress in autocatalysts is expected to pave the way to the widespread use of such low CRMs content materials in other catalytic applications.









### 1.3 Project poster

The main purpose of the poster is to catch the audience attention. The poster focuses on the visual aspects. The content of the poster is clear and easily understandable by the target end users.

With regard to the layout and design, the poster shows the PARTIAL-PGMs project's logo and the colours emphasizing the link to the project's graphic.

From the content point of view, the poster of the PARTIAL-PGMs project illustrates its objectives and include basic information on the project and on the Consortium, including all partners' logos. It is possible to download it from the PARTIAL-PGMs website.

The PARTIAL-PGMs poster will be published 3 times within the PARTIAL-PGMs project by WG:

- once at the initial phase (month 3), to convey the project approach and objectives;
- then at Month 18, to highlight project achievements in the first half of the project, and
- finally, at Month 36, to include industrial scale results and demo activities (the poster will be presented at the final PARTIAL-PGMs conference).

Posters may be translated into other languages than English by the partners located in the different member states and attending local or national events.

**Link for poster download:** <http://www.partial-pgms.eu/wp-content/uploads/2016/06/PARTIAL-POSTER-2016.pdf>

Table 5 PARTIAL-PGMs Poster

DEVELOPMENT OF NOVEL, HIGH PERFORMANCE HYBRID TWC/GPF AUTOMOTIVE AFTER TREATMENT SYSTEMS BY RATIONAL DESIGN: SUBSTITUTION OF PGMs AND RARE EARTH MATERIALS

## RATIONAL DESIGN OF CATALYSTS

with low critical raw materials content, for the development of novel automotive after treatment and the reduction of toxic and pollutant emissions from cars

BACKGROUND	MAIN IDEA
<ul style="list-style-type: none"> <li>• Automotive catalysts were implemented in production in the US (1975)</li> <li>• Japan and thereafter Europe (1986) adopted the use of automotive catalysts.</li> <li>• The most common type of catalyst found on gasoline engines is the so called: Three-way catalyst (TWC) :                             <div style="margin-left: 20px;"> <p><i>Carbon Monoxide (CO) → Carbon Dioxide (CO<sub>2</sub>)</i></p> <p><i>Hydrocarbons (HC) → Water (H<sub>2</sub>O)</i></p> <p><i>Oxides of Nitrogen (NO<sub>x</sub>) → Nitrogen (N<sub>2</sub>)</i></p> </div> </li> <li>• Platinum group metals (PGMs) mainly Pt, Pd and Rh have been the key component in automotive emissions control catalysts</li> <li>• The national and international regulatory bodies enforce over more stringent emission rules so that the field of automotive catalysis is always at the very edge of technology.</li> <li>• Continuous research to improve the catalyst performance and function, but also to reduce the amount of PGMs used to the catalyst</li> <li>• Driven by ever tightening regulations Gasoline particulate filters (GPFs) are being developed to enable compliance with future particulate number (PN) limits for passenger cars equipped with gasoline direct injection (GDI) engines.</li> </ul>	<p>PARTIAL-PGMs proposes an integrated approach for the coherent development of smart and innovative nanostructured automotive post-treatment systems by integrating TWCs on GPF, capable to meet future regulations, with reduced PGMs and REEs, leading to development of 2<sup>nd</sup> generation GPFs.</p> <p><b>S&amp;T TARGETS</b></p> <ul style="list-style-type: none"> <li>• Development of efficient hybrid TWC/GPF capable to meet future EC legislation (EU VII)</li> <li>• Reduction of PGMs at least 35%.</li> <li>• Decrease of REEs at about 20%</li> </ul> <p>The workplan of the project involves the following general objectives:</p> <ul style="list-style-type: none"> <li>• Rational design of nanocatalysts by Multi-scale modelling</li> <li>• Synthesis of innovative nanostructured catalysts with enhanced activity.</li> <li>• Full scale design and preparation of novel hybrid TWC/GPF</li> <li>• Advanced characterisation techniques- Performance evaluation</li> <li>• Life cycle analysis, Recyclability and environmental /health assessment studies</li> <li>• Dissemination and exploitation of the results</li> </ul>

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### PROJECT DETAILS

HORIZON 2020

**H2020-NMP-2014-2015**

Call Identifier  
NMP 23 – 2015

Grant agreement no.  
686086

Project acronym  
PARTIAL-PGMs

Duration of the project  
42 months

Start date of the project  
1<sup>st</sup> April 2016

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