ARGE WG *Lead (Pb) Reduction*

Considerations for financing the two research projects:

Elimination of lead in keys

Reduction of lead content in lock cylinders and padlocks

Input for ARGE Members' Online Working Meeting on
28th February 2023

Hans Weissenböck on behalf of the ARGE Board

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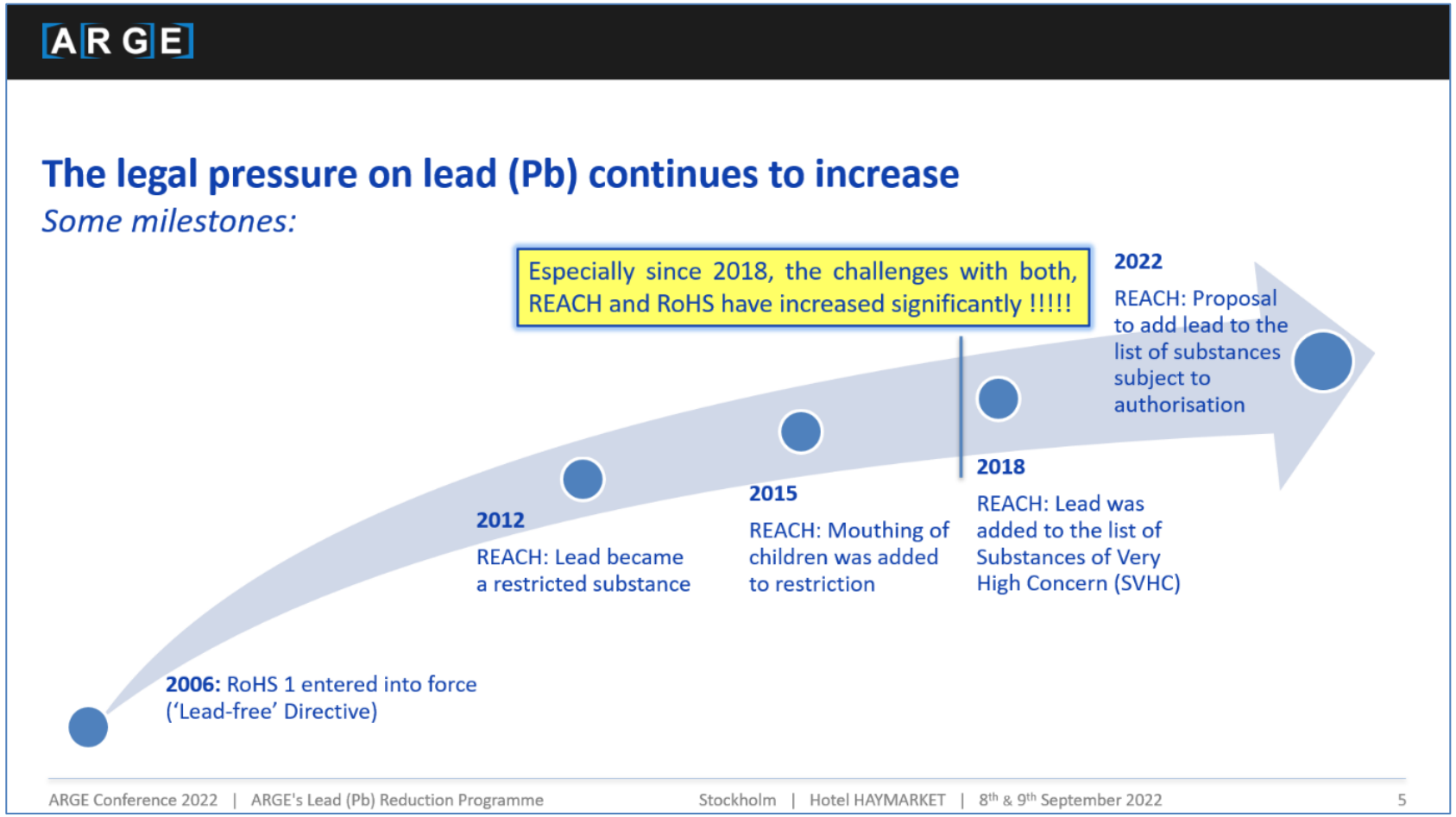
1. Legal background and industry's sustainability ambitions (1/2)

Slide shown at ARGE Conference 2022 in Stockholm:



1. Legal background and industry's sustainability ambitions (2/2)

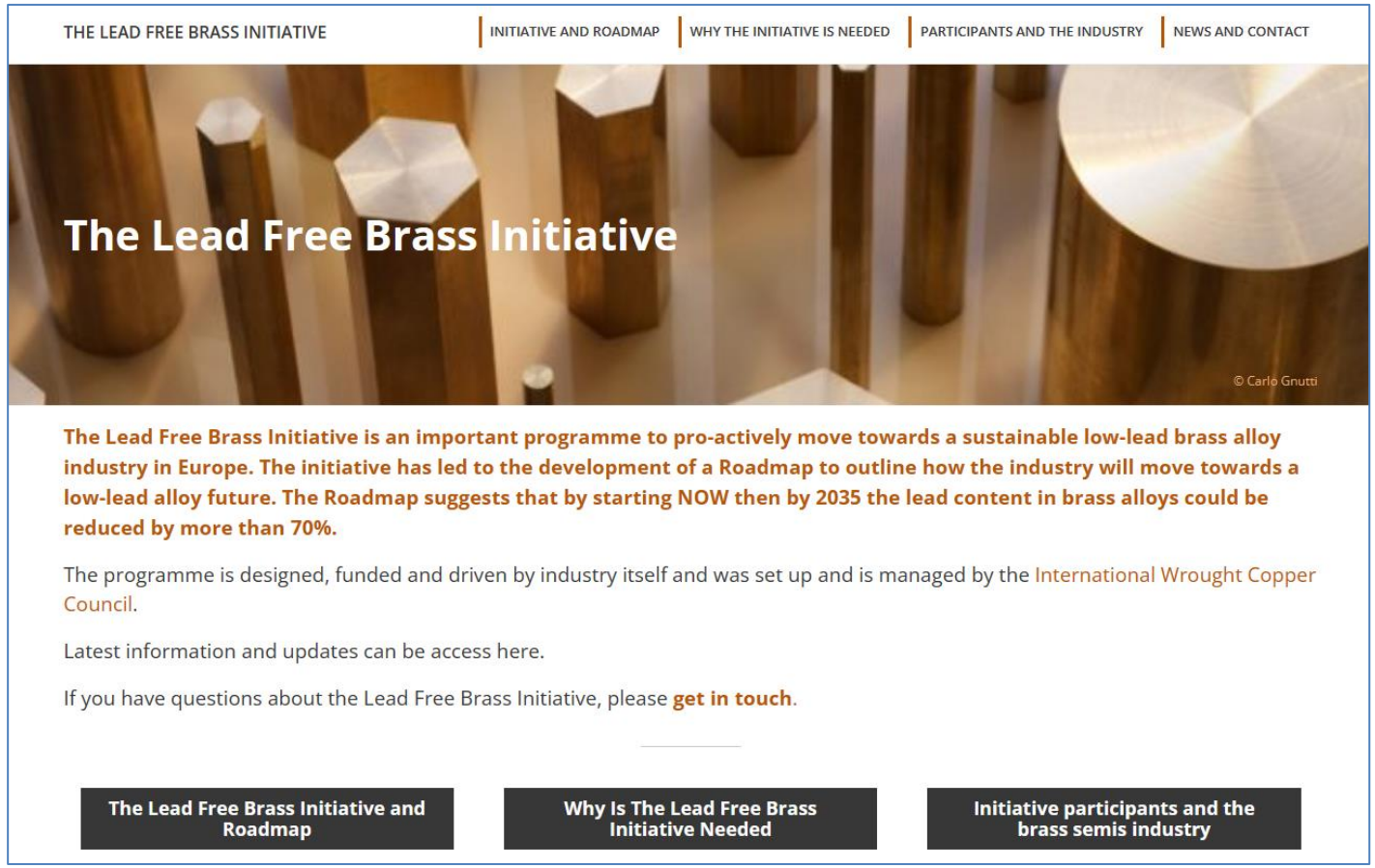
The Lead Free Brass Initiative:

www.leadfreebrass.org

The **Lead Free Brass Initiative** is an important **programme to pro-actively move towards a sustainable low-lead brass alloy industry** in Europe.

The roadmap suggests that by starting NOW (2022), **by 2035 the lead content in brass alloys could be reduced by more than 70%**.

The programme is **designed, funded and driven by industry itself** and was set up and is managed by the International Wrought Copper Council.



2. ARGE's proposed approach (1/3)

Rational:

- Since several years, **some of the manufacturers of keys and lock cylinders within ARGE have been carrying out research projects** with lead-free alloys on an individual bases.
- **These projects had to be realised with alloys which the suppliers of the coils** (for manufacturing keys) **and rods** (for manufacturing lock cylinders and padlocks) **had developed for other applications.** The suppliers of these semis did not develop alloys specifically for keys and lock cylinders.
- **None of these projects yielded a result which would have allowed them to change to such alloys in general!**
- **In particular, the challenge of broaching complex keyways in rotors of lock cylinders and padlocks made of lead-free or significantly lead-reduced brass has not yet been mastered!**

2. ARGE's proposed approach (2/3)

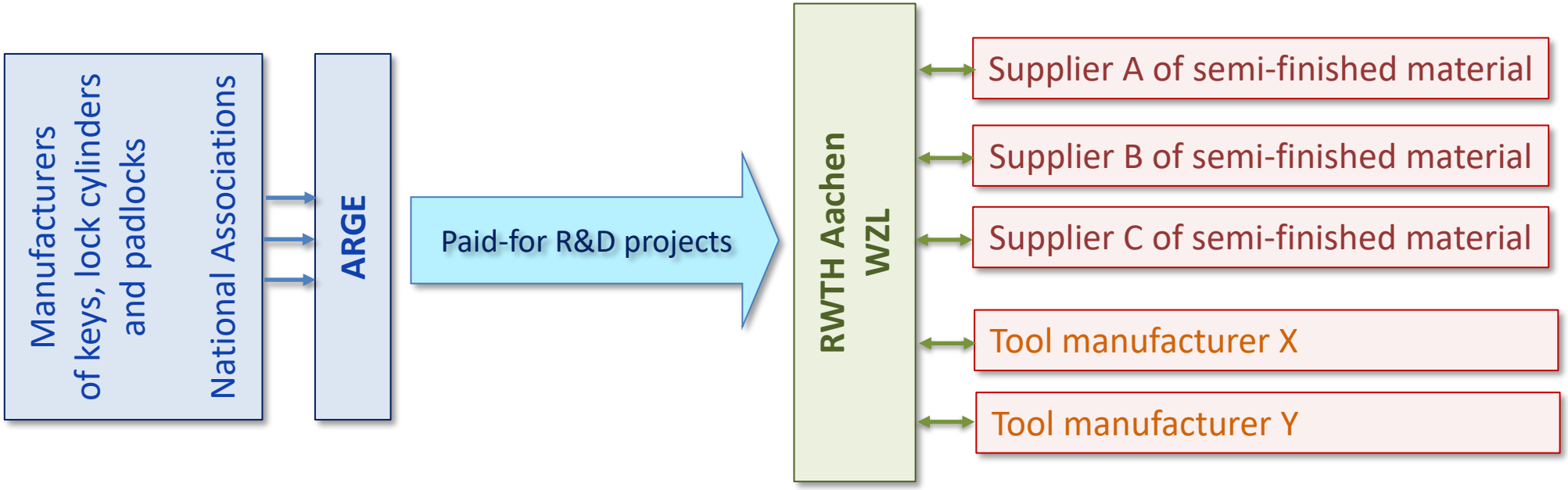
ARGE's proposed approach:

- **Get all stakeholders engaged and committed to contribute to the two research projects:**
  - The **most relevant manufacturers of the semis** have confirmed that they will work on alloys potentially serving the needs of the key and lock cylinder manufacturers.
  - Also **leading tool manufacturers** are on board.
  - Compared to the projects carried-out by individual companies, **the ARGE approach is a game-changer**.

Any outcome of the research projects will be of value as it enables our industry to document to European legislators our pro-active approach towards reducing or even eliminating lead in keys, lock cylinders and padlocks.

2. ARGE's proposed approach (3/3)

Structure of the projects as presented at ARGE Conference 2022 in Stockholm:



This structure reflects the legal advice ARGE has obtained, which aims at ensuring full compliance with antitrust law and avoiding anything that even gives the appearance of unlawful conduct.

3. The two research projects: (i) keys; (ii) lock cylinders and padlocks (1/3)

Keys:

- **In scope:**
  - **Brass keys** (uncoated and coated)
  - **Nickel silver keys**
  - Note in scope at present: Steel keys
- **Project objective**:
  - **Get a lead-free (< 0.1%) alloy developed** which is technically appropriate and financially feasible
  - **Minimum achievement is the reduction of the lead content:**
    - Brass keys: < 1.5% (presently from just below 1.5% up to 2.0% – 3.0%)
    - Nickel silver keys: < 1.0% (presently around 1.0%)

3. The two research projects: (i) keys; (ii) lock cylinders and padlocks (2/3)

Lock cylinders and padlocks :

- **In scope:**
  - **Brass lock cylinders** (uncoated and coated)
  - **Padlocks with brass rotor**
  - Note in scope at present: All other types of cylinders and padlocks
- **Project objective**:
  - **Get an alloy developed with significantly reduced lead content of < 1.5%** (presently up to 3.5%)
  - **Having a lead-free (< 0.1%) alloy developed** would be ideal but might be reaching too far at this point

3. The two research projects: (i) keys; (ii) lock cylinders and padlocks (3/3)

The selected research partner:

IKB Innovationsnetzwerk Kupferbearbeitung

Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University

841
Employees

- Manufacturing Technology
- Machine Tools
- Production Metrology and Quality Management
- Production Engineering

WZL | RWTH AACHEN UNIVERSITY

4. Companies engaged in the projects

- **13 companies/ groups committed**
- **All companies/ groups active in both projects**

Name of company/ group	Headquarter	Keys	Lock cylinders
Access 2	UK	X	X
ALLEGION/ CISA	IE/IT	X	X
Altuna Group	ES	X	X
ASSA ABLOY	SE	X	X
BKS	DE	X	X
CES	DE	X	X
DOM Security	FR	X	X
dormakaba	CH	X	X
EVVA	AT	X	X
ISEO	IT	X	X
THIRARD	FR	X	X
WILKA	DE	X	X
WINKHAUS	DE	X	X
13		**13**	**13**

Comments:

Company is stock-listed or part of a stock-listed group

5. Benefits for companies from participating in the projects

- **To be within the group of companies being the first ones gaining experience with lead-reduced and/or lead-free alloys used for manufacturing keys, lock cylinders and padlocks:**
  - During the research work the current findings will be made available to participating companies.
  - In addition to the research done at WZL, the participating companies will have to (i) get the keys, lock cylinders and padlocks made from lead-reduced or lead-free alloys tested according to the relevant EN standards (e.g. durability), and (ii) subsequently establish industrial manufacturing processes.
  - In case a manufacturer does not participate in this project, he will be able to develop the related know-how only when the new alloys will be freely available on the market.
- **It is envisaged to establish a "best-price clause" for participating manufacturers**:
  - This matter is still under clarification in respect of antitrust legislation and jurisdiction. It also needs to be agreed with the suppliers of semis.
- **Possibly, intellectual property (IP) rights might be obtained, for the benefit of participating companies**

6. Costs of the research projects (to be expensed in 2023, 2024, 2025)

- **WZL: € 305,000**
- **HW: € 32,000**
- **Tools: € 15,000**
- **Misc.: € 10,000**

Total € 362,000

All figures are without VAT.

The final WZL fees will depend on the project scope (decision on offered options to be made end-March 2023).

	EUR	Comments
Key project		
WZL's fee (optional broaching of tip of keys not included)	115.000	
Tools	5.000	more precise estimate will be available in February
Project management by Hans Weissenböck *)	12.000	30 working days à 400.- €
Miscellaneous	5.000	travel cost, buffer for unexpected expenses
Total	**137.000**	
Lock cylinder project		
WZL's fee (including option of testing 20 instead of 10 alloys)	190.000	
Tools	10.000	more precise estimate will be available in February
Project management by Hans Weissenböck *)	20.000	50 working days à 400.- €
Miscellaneous	5.000	travel cost, buffer for unexpected expenses
Total	**225.000**	
Grand Total of both projects	**362.000**	

*) The additional time needed to manage the two projects exceeds HW's contractually agreed working time for his work as Secretary General, which is 160 working days per year.

7. Schedule of payments to WZL (according to current cost expectation)

- **2023: € 45,000** (Q4: € 45,000)
- **2024: € 151,000** (Q1: € 106,000 | Q4: € 45,000)
- **2025: € 109,000** (Q1: € 45,000 | Q3: € 64,000)

Total € 305,000

All figures are without VAT.

8. Financing the projects | Principal options

Option 1: "EPD style" (all National Associations contribute in proportion to their annual membership fee)

Option 2: "Companies pay for their participation" (only participating companies contribute)

General consideration: ARGE will pass on all costs incurred.

Note: Receiving public funding (Germany and/or EU) has been investigated but seems unrealistic.

8. Financing the projects | Option 1: "EPD style"

- Under this option **ARGE will pass on all costs** incurred **to all National Associations**.
- **Opting out or just participating in the key project** would **not be possible** for National Associations.
- It will be at **the sole discretion of National Associations** whether **pass on their fees to companies**.
- **Lead (Pb) Reduction Project fees would approx. double the fees** payable to ARGE by National Associations over a period of 3 years. Presently, the total of membership fees and fees for the Standardisation Programme paid by National Associations to ARGE is approx. € 100,000.
- **Advantage:**
  - Proven concept
- **Disadvantages:**
  - Project becomes ~19% more expensive as VAT paid by ARGE would not be deductible
  - Most National Associations might need to pass on the cost to their members and will have to face the challenge of finding an appropriate allocation key

8. Financing the projects | Option 2: "Companies pay for participation" (1/2)

- Under this option **ARGE will pass on all costs** incurred **to the participating companies**.
- **ARGE will invoice participating companies directly, making VAT (in Germany: 19%) deductible for all entities involved. Any invoices from ARGE to companies outside of Germany will be issued without VAT (Reverse Charge System).**
- So far, **no participating company have expressed its opposition to paying** for the projects.
- **Advantage:**
  - VAT will be 'saved'
  - Simple concept
- **Disadvantages:**
  - An appropriate allocation key needs to be established
  - National Associations might feel bypassed

8. Financing the projects | Option 2: "Companies pay for participation" (2/2)

Stock-listed companies agreed to cover an over-proportional share of the total cost.

- **4 out of 13 companies are stock-listed (31%):**
  ALLEGION/CISA, ASSA ABLOY, DOM Security, dormakaba

- **Cost allocation if 4 stock-listed companies bear 50% of the total cost:**

Cost for each **stock-listed company**:	**€ 45,250** (to be expensed over 3 years)
Cost for each **non-stock-listed company**:	**€ 20,111** (to be expensed over 3 years)

9. Job to be done after the research projects

- **The research project encompasses only the development and machining of relevant alloys.**
- **What is not covered is the functionality of keys and cylinders made of new materials** (e.g. according to the requirements and test methods of EN 1303)**.**
- **'New' keys have to tested with 'old' cylinders, 'old' keys with 'new' cylinders, and 'new' keys with 'new' cylinders.**
- **Only after such tests, the usability of the 'new' alloys can be assessed.**
- Consequently, **the two research projects (keys and cylinders) should not be separated.**

10. Conclusions and decisions

- Xxx
- Xxx
- Xxx

Slide for depicting the outcome of the ARGE Members' Online Working Meeting on 28th February 2023