

# CPD Seminar Handout:

*Specifying hard metals: choosing the right product for the project*



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### Specifying hard metals: choosing the right product for the project


CPD handout: August 2017

This document contains the key resources from SIG Zinc & Copper's RIBA Certified CPD Seminar, Specifying hard metals: choosing the right product for the project, in an easy to use format.

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## Why specify hard metals?



### Why specify hard metals?

- Long life span due to natural patina formation
- Maintenance free
- Low weight ca. 7,2kg/m<sup>2</sup>
- 100% recyclable
- Zinc and copper are essential elements
- Zinc titanium production and use has a negligible impact on the environment
- Excellent BREEAM credentials
- Dramatic visual impact





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## Issues to be aware of



### Issues to be aware of

- High capital cost
- Compatibility issues
- Breather membranes specification
- Hard to retro fit penetrations
- Limited design standards





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## Hard metal confusion




### Hard metal confusion

- Specifiers confused by range of market offers
- Varying product quality
- Manufacturers offering differing details
- Confusion over best hard metal option and finish; zinc, copper or stainless steel
- Conflicting advice from manufacturers

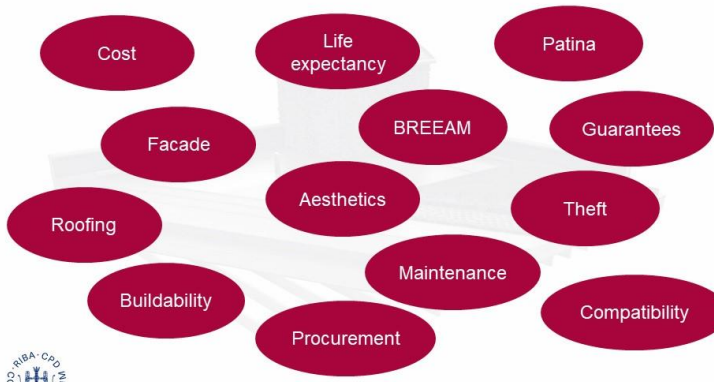





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### Establishing the client's brief





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### Establishing the client's brief

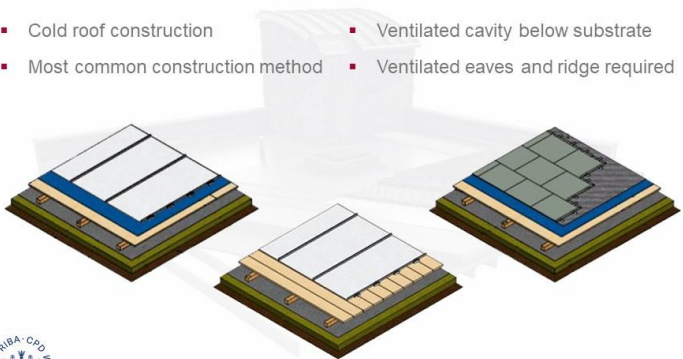
Before deciding on the best hard metal option, what does the client need this specific roof to do?

- Acquire BREEAM points (building)
- Be cost effective
- Deliver life expectancy
- Be compatible with other interfaces
- Be theft resistance

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## Roofing build-up – cold roof

- Cold roof construction
- Most common construction method
- Ventilated cavity below substrate
- Ventilated eaves and ridge required



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## Methods of construction

### Roofing build-up – cold roof

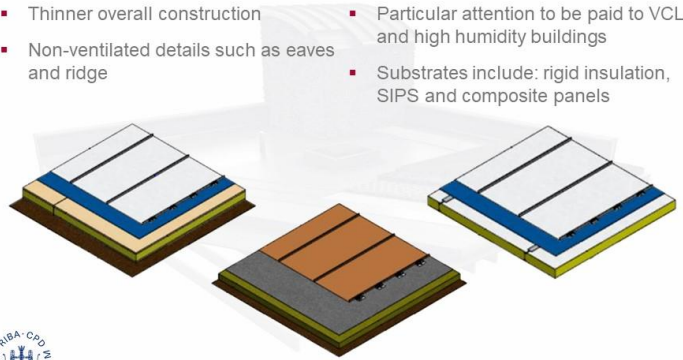
A cold roof is the most common construction method. There is a ventilated cavity below the substrate and the eaves and ridge must be ventilated.

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## Roofing build-up – warm roof

Warm roof construction

- Thinner overall construction
- Non-ventilated details such as eaves and ridge
- Particular attention to be paid to VCL and high humidity buildings
- Substrates include: rigid insulation, SIPS and composite panels



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### Roofing build-up – warm roof

A warm roof construction has no vented space within the roof build-up and the entire roof structure is below the insulation. It is thinner in construction but particular attention must be paid to the vapour control layer and in high humidity buildings.

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## Traditional façade methods



Angle standing seam

Flat lock system (shingles)

Panel system


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### Traditional façade methods

There are three main traditional façade methods: flat lock system (otherwise known as shingles), the panel system and angle standing seam.


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## Traditional façade methods




**Longitudinal Standing seam joint**

- Adaptation of the standing seam joint
- Finished with a 90° instead of 180°
- Joint is more stable resulting in a straighter seam
- Presents a stronger and more uniform joint width
- Metal is not stressed producing flatter trays



**Transversal joint**

- Flat lock joint that forms a small 5mm 'jump' in the face of the trays
- Not as noticeable as the standing seam
- Formed by making a 180° fold along each end of the trays



**Flat lock joint**

- Also known as the single lock cross welt
- Generates a jump between the faces of adjoining shingles
- Formed by bending a 180° fold along the perimeter of each shingle

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### Traditional façade joint methods

These renders show the different façade joint methods – longitudinal standing seam, transversal joint and the flat lock joint.

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## Flat lock system

- Also known as the shingle system
- Suitable for flat and curved façades
- Combination of delicate appearance, economy and ease of installation
- Durable, light-weight and low maintenance construction
- Shingles can be set in various orientations and in different geometric shapes
- Multiple design possibilities
- Usually built in vented façade construction
- Fixing is hidden and indirect
- Needs a continuous support behind
- Discrete flat lock joint

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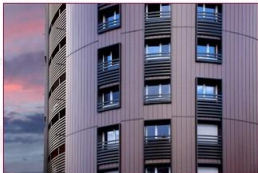

### Flat lock system

The flat lock system, otherwise known as shingles, is suitable for flat and curved façades. It offers multiple design possibilities because the shingles can be set in various orientations and in different geometric shapes. Flat lock shingles are not self-supporting and require a fully or almost fully supporting substrate against which they rest and to which their clips are fixed. The system uses the flat lock joint.

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## Panel system

- Especially suitable for flat or gently curved façades
- Commonly used to clad soffits
- Reasonable cost
- Easy installation
- Formal and ordered appearance
- Fixing is hidden and usually direct
- Longitudinal joint or transversal joint





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### Panel system

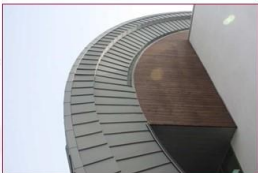

The panel system is a popular technique due to its reasonable cost, attractive appearance and ease of installation. It is especially suitable for flat or gently curved facades and it can be installed in a vertical or horizontal direction offering multiple design possibilities. It is commonly used to clad soffits and uses the longitudinal or transversal joint.






Angle standing seam

- Suitable for flat and curved façades
- Popular for façade cladding due to its attractive appearance, modest price and ease of installation
- Durable, light-weight and requires virtually no maintenance construction
- Installed in vertical or horizontal direction
- Multiple design possibilities
- Usually built in vented façade construction
- Fixing is hidden and indirect
- Needs a continuous support behind
- Longitudinal joint or transversal joint







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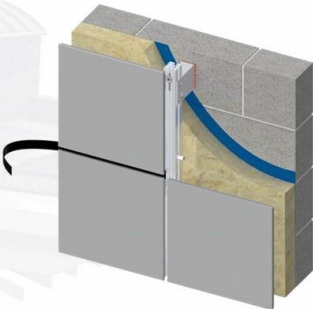
### Angle standing seam


The angle standing seam is suitable for flat and curved façades and is a popular choice due to its attractive appearance, it's easy to install and comes at a modest price. The panels are not self-supporting and the façade is normally built as a ventilated construction. It is durable, light-weight and requires virtually no maintenance and uses the longitudinal or transversal joint.



Engineered façades

- Metal honeycomb structurally bonded between two thin gauges of metal
- Lightweight composition reducing dead loads on building
- Honeycomb structures minimises the amount of material required
- Thin gauge materials reduces metal requirement and cost per m2
- Exceptional panel flatness
- Multi metal finishes
- High impact resistance






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### Engineered façades


The engineered façade system uses a metal honeycomb which is bonded between two thin gauges of metal. This creates a lightweight system which reduces the dead loads on building, the amount of material required and the cost. It offers an exceptional panel flatness which is available in a range of multi metal finishes. Due to its structure it offers a high impact resistance.



Engineered façade technology

- Large format panels
- Dimensionally variable panel thickness, width and length
- Flat, Curved, External & Internal Corner and Soffit Panels
- Individually demountable panels
- The system can be installed on to all wall constructions e.g. SFS, SIPs, Block, Brick
- System is fully adjustable on all axis
- Serviceability and Fatigue Assessment testing relating to a 50 year life cycle






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### Engineered façade technology

The engineered façade can be installed onto all wall constructions and are fully adjustable on all axis. It is ideal for flat, curved, external and internal corner and soffit panels which are individually demountable. The panels can be produced in variable thickness, width and length including large format panels. It has serviceability and fatigue assessment testing relating to a 50-year cycle.

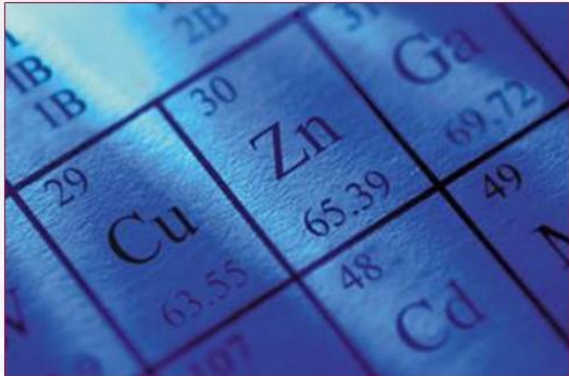
## Hard metal options


### Zinc




## What is zinc?

- Zinc is a metallic chemical element
- It has the symbol Zn and atomic number 30
- Zinc is 24th most abundant resource in the world's crust at 75ppm







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## Benefits of using zinc

- Long life span due to natural patina formation
- Maintenance free
- Low weight ca. 7,2 kg/m<sup>2</sup>
- 100% recyclable
- Zinc titanium production and use has a negligible impact on the environment
- Excellent BREEAM credentials
- Dramatic visual impact

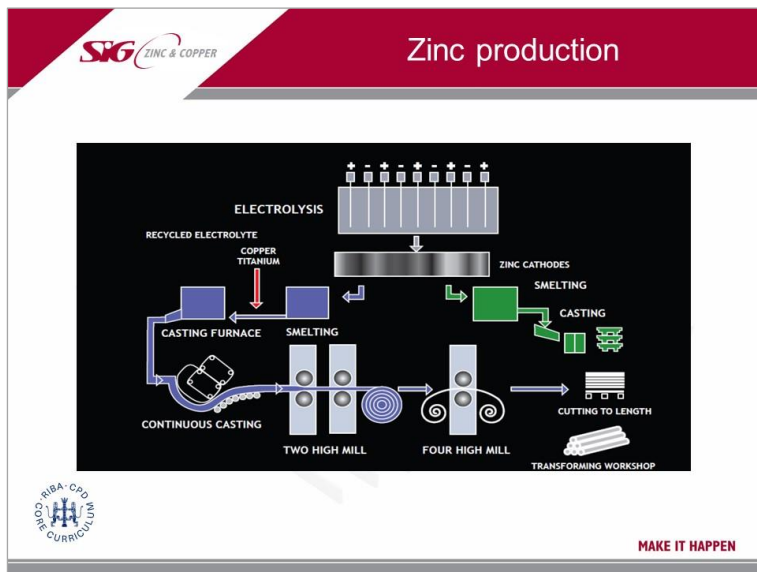




Amphibious House © Baca Architects  
© Tim Crocker

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### Zinc is produced in the following stages:

1. Zinc ore is roasted
2. The ore is then purified
3. And added to a solution
4. Electrolysis then occurs where an aluminium cathode is immersed in the water and a current is passed through the cathode, this causes the zinc to stick to the cathode
5. The zinc is then removed from the cathode
6. And smelted
7. The alloyed materials are then added
8. This alloyed material is then loaded into the furnace which produces a liquid mass
9. The liquid mass is then solidified which then goes through the milling process
10. And turned into coils and sheets

## Copper

## What is copper?

- Copper is a metallic chemical element
- It has the symbol Cu and atomic number 29
- Zinc is 25th most abundant resource in the world's crust at 50ppm

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## Benefits of using copper

- Superior durability
- Natural tint
- Subtle shades
- Easy to form and compatible with other materials
- Environmentally friendly
- Maintenance free
- Corrosion resistance
- High aesthetic appeal



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## stainless steel

## What is stainless steel?

- Stainless steel is an iron and carbon alloy.
- Stainless steel is a steel containing in its mass at least 10.5% chromium, other alloying elements and less than 1.2% carbon
- Corrosion resistant
- Naturally self-healing

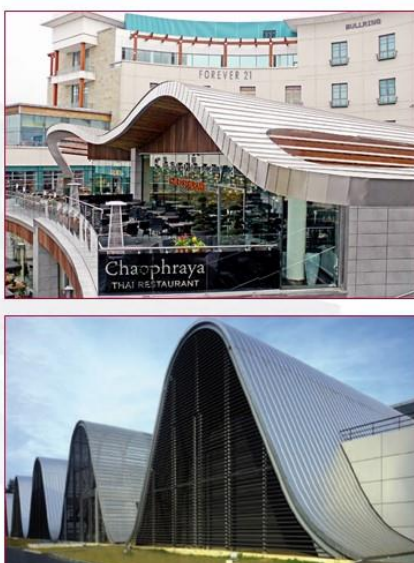



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## Benefits of using stainless steel

- Corrosion resistant
- Minimum maintenance
- Dramatic visual impact
- High strength resistance
- Solders easily
- In contact with elements such as water it does not release compounds which could modify composition.
- Stainless steel's longevity fulfils the requirements of sustainable constructions.
- Excellent cost versus quality price ratio





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### What to expect from suppliers

#### Technical support:

You should receive comprehensive technical support from a manufacturer or supplier.

Technical information should include bespoke details, NBS Specifications, 3D build-up and a UK warranty.

SIG Zinc & Copper now has several zinc products as BIM objects available in the NBS National BIM Library.

Suppliers can offer advice, not just on which products to use but more importantly when those products are not suitable and an alternative should be sought.

#### Warranties:

SIG Zinc & Copper also offer a full project proposal and guarantee which covers the materials, backed by SIG plc. Projects installed by a Design & Technology Accredited Contactor (DATAC) Zinc & Copper contractor are eligible for a 20 year warranty and we also offer the only UK issued Zinc warranty.

#### Accredited contractors:

All SIG Zinc & Copper roofing installations are undertaken by our networks of approved contractors who are members of the DATAC scheme. Without being a member, a roofing contractor cannot buy our materials. It's just one more way that we bring about quality control.

DATAC contractors have considerable experience and the majority are also members of the FTMRC.



### Cut the cost of metal roofing and cladding:



Metal roofing and cladding projects can be expensive. Hard metal sheeting is normally available in 100kg coils and costs thousands of pounds a tonne. If you are specifying for a project which only needs 110kg there could be significant waste.

As part of our UK hard metal fabrication service our new de-coiler machine will save costs by cutting hard metal to the exact length required for the job, and it's the only one in the UK. It can provide precise quantities for small or large projects in non standard sizes.

Now watch a 2 minute video on how you can cut the cost of metal roofing and cladding.

### Summary

- The issues you should be aware of when specifying hard metals and why there is potential confusion in the market.
- The different façade and joint methods available including engineered façades.
- Understanding the benefits of using hard metals in your project by offering low maintenance requirements, a high level of durability, excellent sustainability credentials and proven longevity.
- You will also understand that a manufacturer should offer a bespoke solution to meet your specific needs. The manufacturer should also ensure performance through effective detailing, compatibility of products and construction methods.

### About SIG

SIG Design & Technology is a part of SIG UK Exteriors, a leading division of SIG plc, a FTSE 250 listed company and the UK's market leading specialist supplier to professionals in the building and construction industry. It designs and supplies flat roofs, green roofs, and zinc, copper and stainless steel roofing and cladding.

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Good roofing design reduces risk and extends the lifespan of any roof. As an organisation embedded within the roofing construction sector, SIG Design & Technology offer a complete and impartial design and supply service, built around a selection of waterproofing options that are able to meet the specifier's definite requirements.

It has put together an 8-step guide to identify the challenges and ensure that a roof's design meets a building's requirements. Called #Perfect Roof, the eight steps follow the process from product selection and design expertise through to full guarantees and planned maintenance.

### About SIG plc

SIG plc is a FTSE 250 listed company and the UK's market leading specialist supplier to professionals in the building and construction industry. SIG focuses its activities into three business sectors: Insulation & Energy Managements, Interiors and Exteriors. Products are distributed through its national supply chain.

### SIG Zinc & Copper

Part of SIG plc, a FTSE 250 organisation that focuses on delivering market leading solutions to the construction industry. We strive to be at the forefront of designing, supplying and guaranteeing exclusive 21<sup>st</sup> Century roofing solutions.

Teaming up with market leading manufacturers including NedZink, elZinc, KME TECU, Uginox and Mazzonetto, as well as a national supply chain, enables us to offer a complete and impartial design and supply service for both new build and refurbishment projects.

### More information

Website: [www.sigzincandcopper.co.uk](http://www.sigzincandcopper.co.uk)

Technical blog: [www.singleply.co.uk/blog](http://www.singleply.co.uk/blog)

Technical product downloads: [www.sigzincandcopper.co.uk/downloads/](http://www.sigzincandcopper.co.uk/downloads/)



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