

# A WORLD IN COPPER WITH TOFT

Reference and Staffing List



# Reference List Toft Kobber – Jun 21, 2023

## Included with staffing and employee CVs

Applies to executed copper works or copper related works



### Reference list for key employee Claus Michaelsen (chairman at Toft Kobber).

Long-time employee at companies such as Kobberfirmaet Lauritz Hannibal. Been with Toft Kobber since 2012. Claus Michaelsen has worked on approximately 30,000 m2 of roofs, particularly copper roofs, and towers, throughout his career.

### Of special relevance to Nordre Kapel before Toft Kobber, the following personal references of Claus Michaelsen can be mentioned:

Christiansborgs Ridebane - Copper roof. Palads Hotel København - The entire tower in copper and the dome at the top. Carlsberg – Elefant Tower - The entire tower and especially the very challenging details. Christiansborg - The tower - The entire tower.

### Skilled workers at Toft Kobber with over 5 years of tenure in the company:

Ole Thorn -	Employed since 1998 - Been away periodically.
Henrik Anderson -	Employed since 2011 - Been away periodically.
Claus Michaelsen -	Employed since 2011.
Dan Vagner Pedersen -	Employed since 2011.
Bernt Otto Larsen -	Employed since 2010.
Jan Høst -	Employed since 1992 - Been away periodically.
Camilla Jonsen -	Employed since 2018 - Apprentice and skilled worker.

### The above-mentioned skilled workers have been a constant team on all references.

Claus Sommer -	Employed since early 2020 - Led the team at Christiansborg roof and tower.
Steen Jørgensen -	Employed since early 2020 - Foreman at Christiansborg roof and tower.

Adult apprentices: Kenneth and Carsten.

### A small collage of our early works before the year 2000 that we have also executed.



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From 1986 to 2008, various roof replacements were carried out, including copper, zinc, slate, and aluminum roofs. During the period from 1997 to 2003, an average of 35 sheet metal workers were employed per year.

2008: Amalienborg Palace	Nicolas-Henri Jardins Palæ at C7 - Repairs to copper roof.
2008: Fredensborg Palace	Partial replacement/repair of copper roof.
2008: Slotsgården Hørsholm	Replacement of copper roof and dormers.
2008: Frederiksberg Alle 11	Replacement of copper roof.
2008: Hjalmar Brantings Plads	Copper tower and gutters, etc.
2009: Fredensborg Palace	Partial replacement/repair of copper roof.
2009: Gentofte Town Hall	Partial replacement/repair of copper roof.
2009: Regensen Collegium	Replacement of roof, including the "morgenstjerne."
2009: Nytorv 5	Replacement of copper roof.
2009: Haraldsborg Islands Brygge	Copper tower.
2010: Amalienborg Palace, C7	Partial replacement/repair of eaves, etc.
2010: Fredensborg Palace	Various copper maintenance works.
2010: Royal Library Holms Building	Replacement of copper dormers.
2010: Mændenes Hjem	Construction of a covered entrance (sponsorship).
2010: Private Residence in Allerød	New 250 m2 copper roof.
2011: Fredensborg Palace	Partial replacement/repair of copper roof.
2011: Greve Town Hall	Copper on entrances to the town hall.
2011: Royal Library Holms Building	Replacement of dormers.
2011: Marienlyst Castle	New copper roof on the entire building.
2011: Metropol – Strøget	Copper on the dome.
2011: Øregård Gymnasium	Copper on the building.
2012: Marselisborg Palace	Repair of copper spire with associated replacement.
2012: Olai Church in Helsingør	Repair of weather vane and leaky copper tower, including repairs.
2012: Vor Frelser's Church	Replacement of copper roof, dormers, and eaves.
2012: Le Somelier bar, CHP Airport	Airside ornament and bar.
2013: Dragsholm Castle	Interior and various repairs of copper in the castle.
2013: Fredensborg Palace	Partial replacement/repair of copper roof.
2013: Knippelsbro	Disassembly and reinstall. of copper cladding on the bridge house.
2013: St. Peter's Church	Various downspouts and inspection of copper roof/tower.
2014: Admiral Hotel	Repair of copper gutters and copper roof.
2014: Christiansborg Palace	Copper work in connection with a restaurant in the tower.
2014: Holmen's Church	New copper cladding for a new building.
2014: Mads Øvlisen's Residence	New copper ornaments for skylights on the terrace.
2014: Rosenborg Castle	Copper roof repairs for leaks.
2015: Admiral Hotel	Repair of gutters and copper roof.
2015: Radiohuset	Repairs and replacement of copper roofs, etc.
2015: St. Katharina's Church	St. Heddinge - New copper roof for the church.



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2015: Frederiksberg Have	Various repairs on buildings and the tea house, etc.
2016: Arne Jacobsen's own house	Repairs of various copper flashings and solutions.
2016: F.L. Schmidt Porter Residence	Repair of copper roof and water collection box, middle of building.
2016: Hotel Nyhavn 71	New copper roof. All work is done by hand by Arpe and Keldsholm.
2016: V2C - Valby	New copper table.
2017: DK Institute in Rome	Brass lectern.
2017: Carlsberg City	The Hanging Gardens - Copper cladding.
2017: Vimmelskaftet 23-24	Copper mansard roof + zinc and slate roofs.
2017: Klostermark Church	Repair of copper roof for the Ringsted parish.
2017: Rosenborg Castle	Inspection of copper roof by the National Museum of Denmark.
2017: Frederiksborg Castle	Inspection of major repair work on roofs by the National Museum
2017 Carlsberg Byen - Carlsberg Hotel	Copper canopy and copper entrance field.
2018-2019 Radiohuset Concert Hall Roof	Replacement of double-curved copper roof (1,500 m2) for PFA Ejendomme.
2019 Lindevej 13	Copper roof on conservatory with double-curved folded roof.
2019-2020 Frederiksberg Town Hall Tower	Replacement of all copper on the tower in a main contract.
2020 Cigaren - Kofoeds Skole	Copper covering resembling a Havana cigar and zinc disc.
2020 Mie Olufvej	Replacement of round copper window.
2020-2021 Grundvigskirken, Copenhagen	Replacement of leaking copper roof and tank.
2020-2021 Nordre Chapel, Copenhagen	New copper tower.
2021 Rosbækvej, Copenhagen Ø	New dormer windows and roof terrace on a private residence.
2021 University of Copenhagen	New copper roof on the gate building.
2021 Frederiksberg Alle 32	Replacement of copper on towers. 2021- Frederiksberggade 2 - Construction of a tower and new copper roof.
2022 Eremitage Hunting Lodge	Replacement of the curved part of the copper roof.
2021-2023 Frederiksborg Castle	Copper roofs and decorations on the dungeon tower.
2022-2023 Lyngby Town Hall	Replacement of the entire copper roof.
2022-2023 Frederiksberggade 1	Replacement of copper roofs, ridge lanterns, and dormer windows.
2022- Børsen (The Stock Exchange)	Replacement of copper roof, dormer windows, and front spires.
2023- Grundvigskirken	Replacement of copper font.



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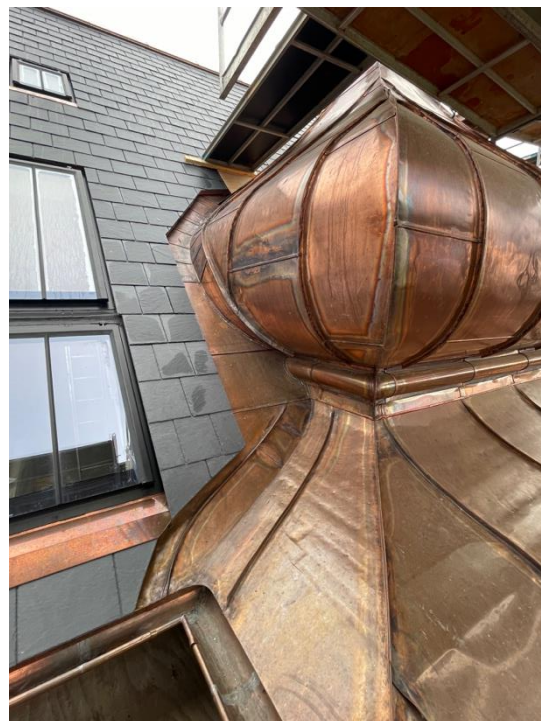


**Frederiksberg Allé 32**

*Executed by: Claus S., Claus M., Dan, Steen, Bernt and Jan*

Here is one of our recent cases, completed in 2021. In the reference list, which covers the past 14 years, all works have been carried out by employees who are still employed at Toft Kobber.

In this case, copper was replaced on copper towers, flashings, gutters, and downspouts





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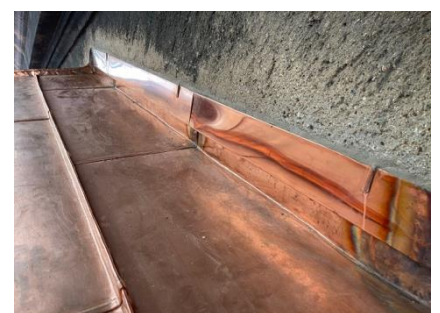
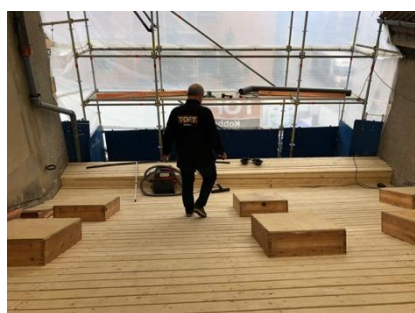


**Copenhagen University**

*Executed by: Ole and Henrik*

The Port Building above the University of Copenhagen in Fiolstræde, Copenhagen K.  
The building's existing copper roof and substrate were due for replacement.

All existing copper and underlayment were dismantled, and the reconstruction could commence. New skylights were also produced, this time in copper but with the same dimensions as the existing ones.





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Rosbækvej, Kbh. Ø

*Executed by: Steen, Claus S, Jan and Bernt*

Completed dormers and replacement of copper gutters on a villa in Copenhagen Ø. This task required technical solutions and skilled craftsmanship to ensure its durability for up to 100 years. The customer desired quality, and when we presented our proposed design, they promptly agreed.

The copper was replaced on the dormers, and a new copper dormer with double doors was installed, along with copper gutters and downspouts throughout the entire villa.

The large dormer features a harlequin pattern. Through the double doors, there is access to a terrace with a hardwood floor (outside our scope of work).

Our recommendation was to install copper underneath the wooden floor, creating an inclined trough that directs water into the gutter—a costly solution but a watertight one





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### Nordre Kapel - Tower

*Executed by: Ole, Henrik, Jan and Bernt*

In a case like this, we were eager to remove the copper to assess the condition of the wood underneath. Not surprisingly, the wood was in poor condition - we were surprised by the extent of the damage. There were pigeons, mites, flies, and many other things hidden inside the tower.

The carpentry company, Børge Nielsen, was assigned to the task. A significant portion of the supporting elements and cladding of the spire, cornice, and base had to be replaced.

**Finished work and new copper tower**



**Existing tower**



*When we opened the existing tower, we discovered that there had been a lightning strike at the top of the tower.*

*The fire must have suffocated itself as there was no air supply from the copper/underlayment, which was located right at the top..*

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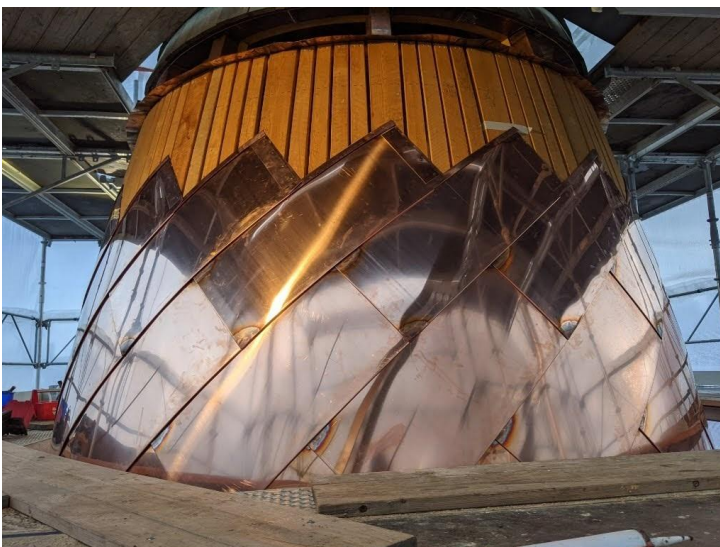
### Kofoeds Skole - Cigaren

*Executed by: Steen, Claus og Dan*

A fantastic collaboration with the artists Randi and Katrine and Kofoeds Skole in Amager.

Praised with 6 stars by Berlingske and Ugeavisen.

The cigar was developed to make the copper closely resemble a rolled cigar, within the agreed-upon budget. It was a very exciting and successful collaboration, but also a challenge for our copper roofers





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**Mie Olufvej, new window**

*Executed by Ole*

An old and leaky metal window was replaced with a copper window.

The existing window was leaking and worn out in both the frame and the glass.

We shaped and produced a copper window in our workshop that could fit into the wall opening, allowing the client to keep rain and moisture out and once again have a clear view through the glass.





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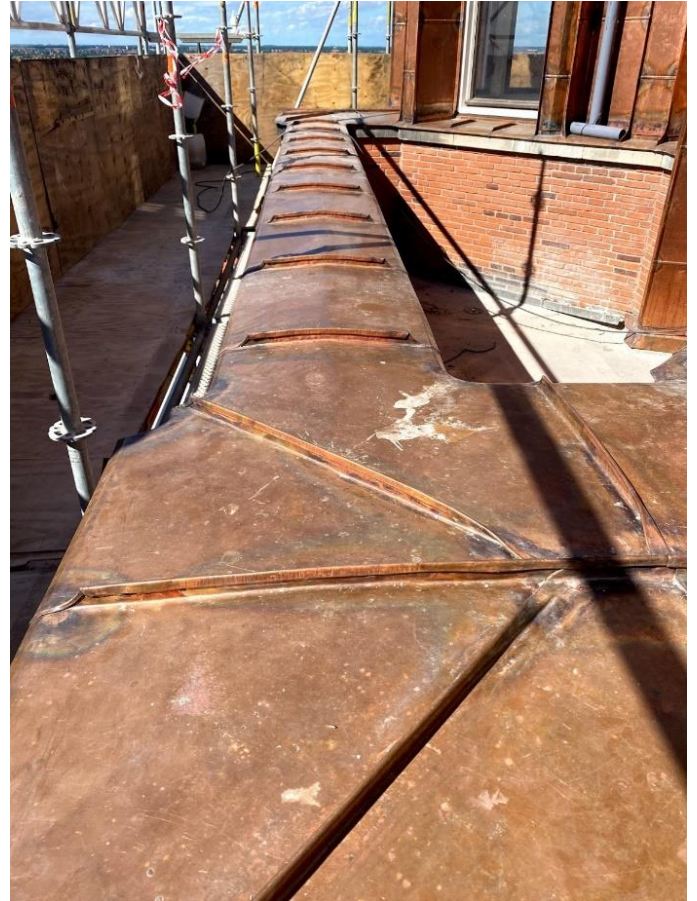
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Frederiksberg Town Hall Tower

*Executed by all*





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*On the existing roofing between the lookout and the bell tower, there is a four-part roofing. Please note that the joints appear uneven in their alignment.*



In our solution, we chose to achieve a homogeneous expression, as originally intended by the architect according to the existing drawings. Joints and details are executed according to the architect's specifications. In the new copper roofing, the uniformity of the seams and folded edges contributes to its stress-free installation, among other benefits.



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*Before*



*After*

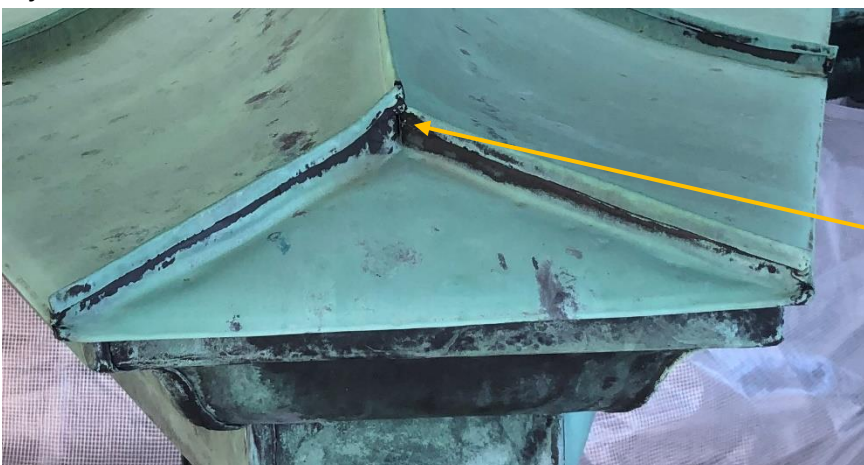


*The seams on the new copper are oriented in such a way that the transverse seams are not stressed by a high seam, allowing water to flow naturally without obstacles.*

*Note the uniformity of the seams in the new work compared to the old work.*

*This was a very poor solution. The top part here has been leaking for many years.*

*Before*



Here, you can see how it was previously done, with the right seam significantly lower than the ridge seam and extending to the left.

The difference in height is evident.

It is important to us that traditional and centuries-old methods are employed, as they have proven to be effective over four centuries.



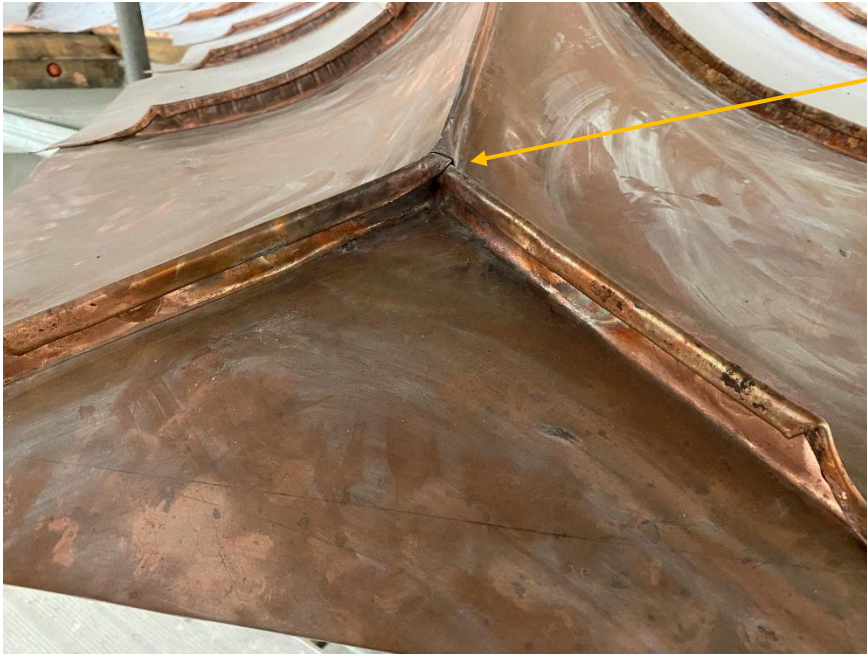
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*After*



Here, you can see how we work with the seams in the transitions. We always aim for all the seams to be of equal height and for the joint method to be continuous and tight.

### **CV for the following employees:**

Claus Michaelsen - Working foreman/site manager. Responsible for all copper works during their employment.

Ole Thorn - Responsible for all significant copper works during their employment.

Henrik Anderson - Responsible for all significant copper works during their employment.

Bernt Otto Larsen - Involved in larger copper works and/or sheet metal tasks.

Jan Høst - Involved in larger copper works and/or sheet metal tasks.

Dan Vagner Pedersen - Involved in larger copper works and/or sheet metal tasks.

Claus Sommer & Steen Jørgensen - Copper roofers.

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### The Copper book

When a copper roofer has the opportunity to analyze the old methods used on a given roof, it provides a unique insight into what works and what doesn't in the long run.

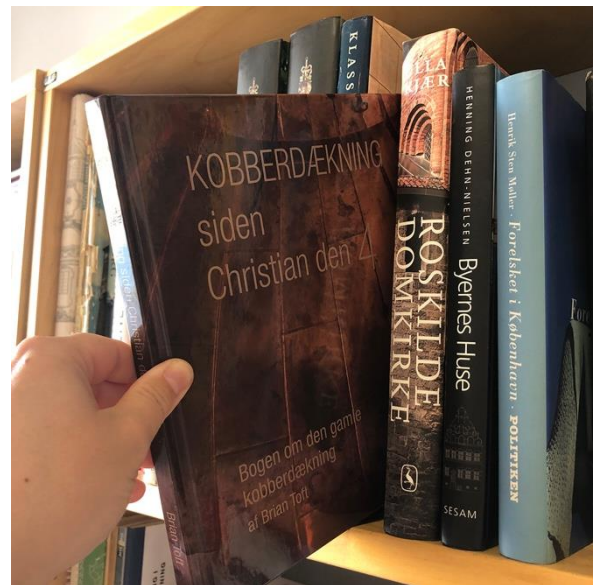
That was the entire idea behind my book on copper since the time of Christian IV.

The book includes, among other things, the skills and competencies that a copper roofer must possess in order to carry out their work to last for 100 years.

The book also contains tables, for example, for riveting gutters.

Furthermore, the book describes what architects and advisors should consider and include in copper work for new constructions and renovations.

Last but not least, the book provides insight into two copper projects: St. Katharina Church in Store Heddinge and Marienlyst Castle.



The book can be purchased on our website. Link:

<https://toftkobber.dk/boeger/>

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Lindevej 9, Frederiksberg

*Executed by: Ole and Henrik*

This project for Frederiksberg Municipality had to be carried out with gentle hands. They desired craftsmanship of the highest quality across all trades. For our part, it involved the installation of "rounded" gutters, sills, and internal condensation gutters in zinc. The task presented its challenges in terms of complexity, as the orangery was not perfectly aligned. However, we managed to make it appear seamless and straight.



### Some details about the work

The condensation gutter was a refreshing task as it had been a while since we had worked on something rounded in zinc.

The curvature at the top was far from straight; it wasn't even centered. This posed several challenges during the installation process.





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#### Radiohusets koncertsal

*Executed by: Claus, Dan, Ole, Henrik, Bernt and Jan.*

*The copper roof of the Radiohuset Concert Hall on Rosenørns Allé, Frederiksberg, is worth noting for its homogeneous appearance and precise placement of ventilation caps*



*The double-curved roof is considered the most challenging roof to fold and execute correctly, especially in achieving straight and uniform folds. When joining the long sheets together, experienced craftsmen must intentionally fold them slightly askew to ensure they align properly. There is only room for <2 mm deviation over a span of 22 m, which is half the length of the arch in the concert hall's roof.*



*Notice the homogeneous appearance of the folds and vents. It is one of the most challenging roofs to execute, ensuring that the final result is perfectly straight with uniform folds.*

**Udført af: Ole og Henrik.**



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### Metropol dome, Cph

*This is the Metropol dome on Strøget at Frederiksberggade 16. The challenge here is to achieve a completely stress-free copper surface with uniform folds that faithfully follow the dome's double curvature.*

*It's worth noting the flawless appearance of the copper work, which is also executed on a double-curved surface.*



*It may be difficult to see the extent of the dents on the old dome, but the curve leading up to the top was remarkably dented.*

*It required meticulous planning by Ole and Henrik.*

*When craftsmanship unfolds with limited space.*





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*The trained eye can also see that the folds unfortunately aren't as they should be. Additionally, the decision was made to install a blind fold along the curve facing the dome, which turned out to be not properly sealed.*

*We lifted the roof up along the curve and fastened the remaining part of the curve simultaneously. This way, we avoided laying down the folds, which would further weaken the structure.*



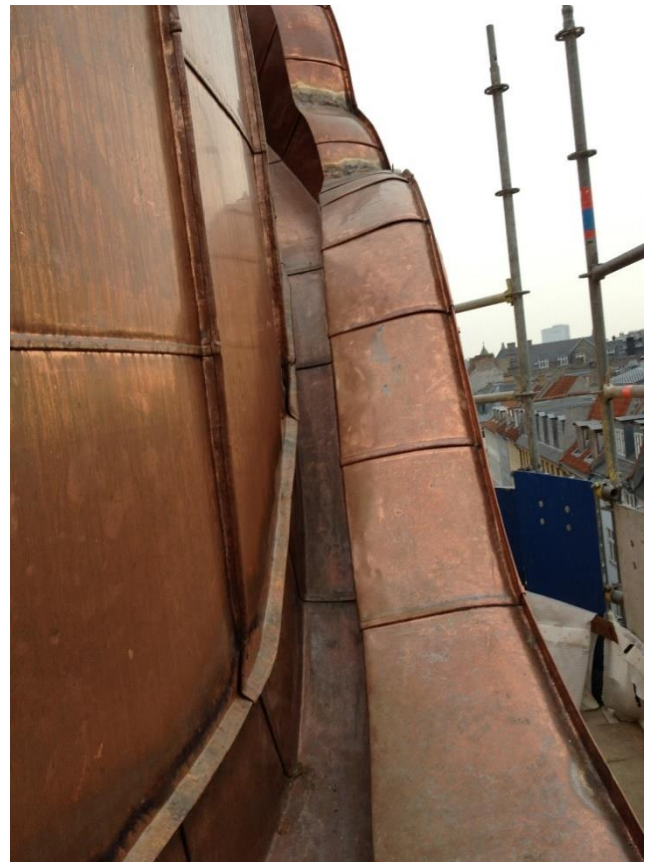
*As seen in the lower arch covering, we managed to execute it without any dents, and it is worth noting that it is a double-curved surface—curving inward in relation to the outward vertical arch.*



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The craftsmanship couldn't be executed in copper, either due to cost or skill limitations. We made the skirting trough in 1-meter sections, which were rounded on three sides. They were not easy to make and had to be free of dents.

The bulging is due to stress from the installation process - it has always caused dents.

Notice how the old copper folds here, the seams are also not uniformly executed, and they appeared very uneven.



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Finished copper work before railing installation.



*Here, the dome is seen under strong sunlight. It is at this point that any potential errors become apparent. As can be seen, the expansion in the panels is completely homogeneous, meaning that the copper on the dome is laid without any stress*



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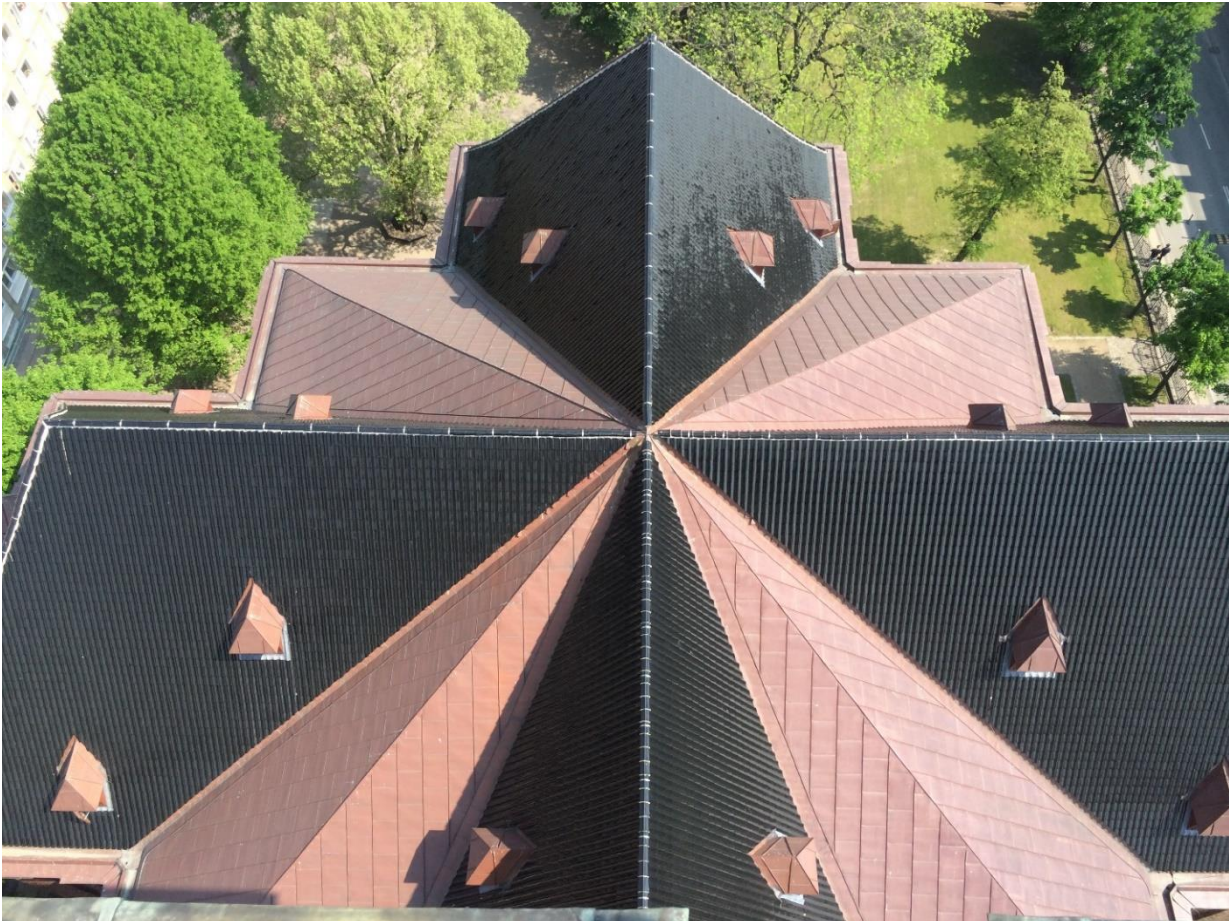
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Our Savior's Church, CPH.

*Executed by: All*

Our Savior's Church in Copenhagen - Christianshavn. Replacement of copper roof and gutters..



*View of the roof from above. Here, the symmetry can be seen in both roofing materials.*





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*It was primarily Henrik Anderson and Claus Michaelsen who carried out the installation of the foot gutters, while the rest of the team worked on the zwikler (copper roof).*

*The small pieces of copper in the scupper gutter are called sacrificial copper. They are installed here because over time, clay particles from the roof tiles will drip down into the scupper gutter, causing corrosion on the copper. It will be easier to replace these copper parts in a few years than to replace the entire scupper gutter.*

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Here are the new dormers in copper. The transition from the scupper gutter to the lead was done in copper, which was a challenging detail. Notice how straight the seams are.

It is evident that the high seams must not meet at the same point on both sides of the standing seam. Pay attention to how uniform they are.



A total of 16 tons of soft 0.75mm copper was used for the roofing, dormers, and foot gutters of Vor Frelser Kirke.



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### Marselisborg Castle

*Executed by : Henrik and Claus M*



*Marselisborg Castle - the scupper gutter on the left tower was replaced. It was Claus Michaelsen and Henrik Anderson who carried out this little gem.*



*Here you can see the construction of the scupper gutter and the downspout.*



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Holmens Kirke

*Executed by: Ole, Henrik and Brian*

*Bygningen "Ny Skriftestol" udført i kobber.*



*On top of the building, two round skylights were installed, and four skylights were embedded in the terrace floor.*





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#### Sankt Katharina Church

*Executed by: All*

The octagonal and beautiful Sankt Katharina Church in Store Heddinge was in need of replacing its copper roof, underlay, and downspouts. This is what the old copper roof looked like when we arrived. It lacked any form of ventilation, and the roof had detached from the wooden substrate. We were faced with a significant task ahead of us.





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*At Toft Kobber, we take pride in performing the craftsmanship ourselves. This means that we manufacture our own hinge pins and gutter brackets.*

*The angle brackets are cast in bronze, and the well collars are handcrafted.*

*Since the quality of the commonly available Hannibal nails or Løgum nails did not meet our product requirements, we have had our own nails manufactured.*



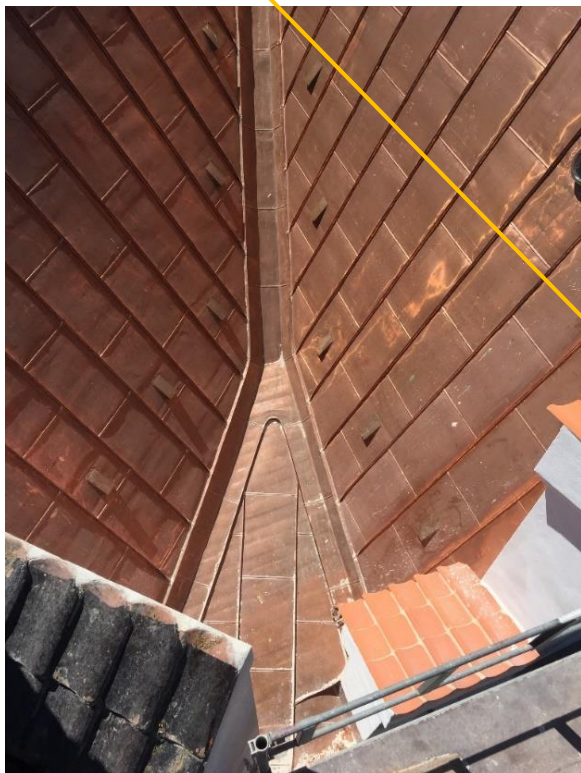
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*The bottom troughs had some unfortunate solutions that resulted in significant water damage underneath the copper.*



*This required a rethinking of how to construct the troughs. The architect and the church council were highly satisfied with the outcome.*

*It was also a challenging task due to the height and steepness of the roofs, making it difficult to access with a regular gutter.*





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The task was successfully completed, and everyone was pleased with the result.



*The work was carried out by Brian Toft for St. Katharina's Church. There was plenty to assemble – the picture here represents approximately half of the total downpipe and various components such as bayonet bends, elbow bends, well collars, etc*



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**Haraldsborg**

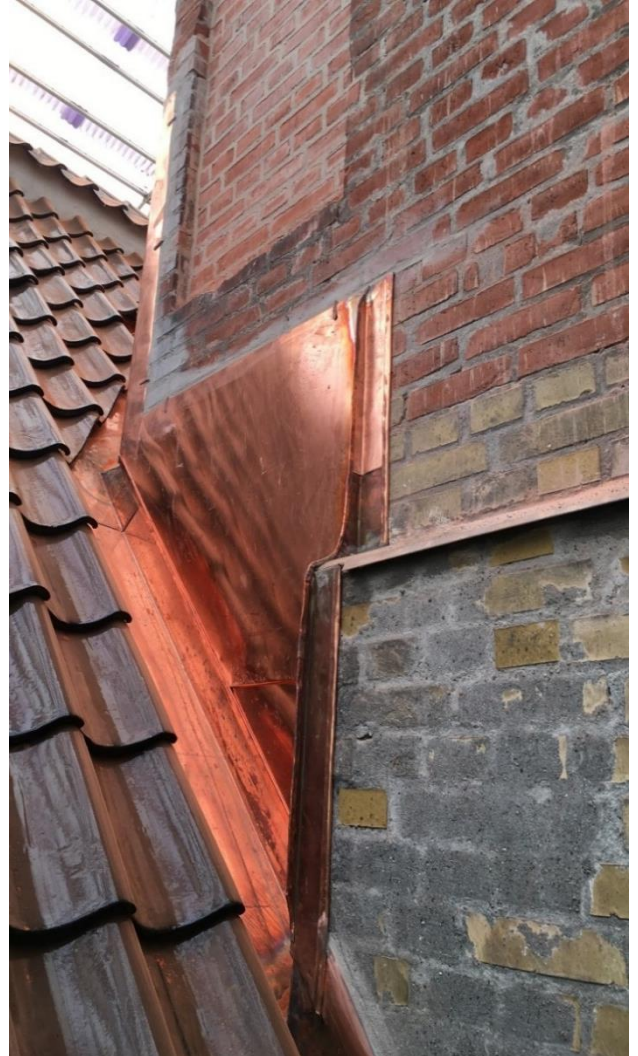
*Executed by: Ole and Brian*

*At the corner of Njalsgade on Islands Brygge, we have renovated this tower. One of the details you can observe is the absence of dents and how the seams are perfectly aligned, without any variations.*



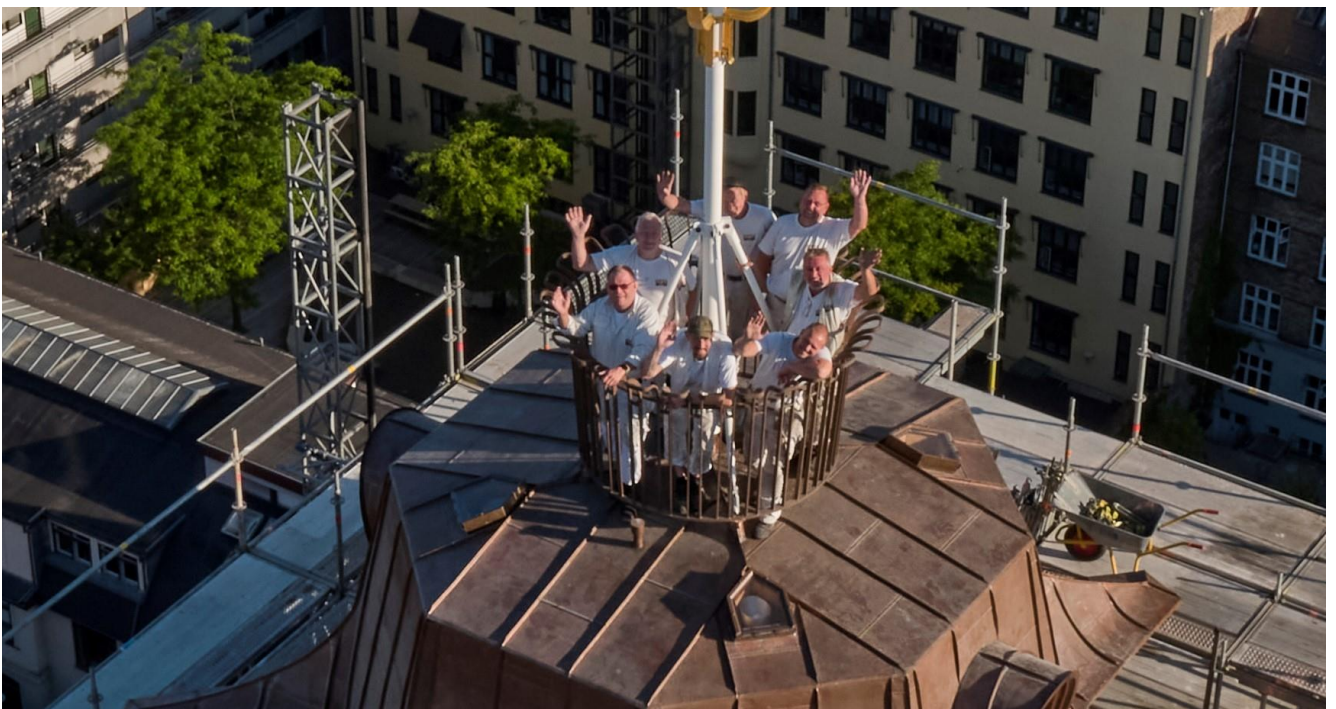


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Henrik Anderson – Vor Frelser Kirke

Ole Thorn executed this little gem at Nyhavn 71





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Everything we do at Toft Kobber, we do it properly with respect for the building we work on, and we bring years of knowledge to every copper craftsmanship that is meant to last for 100 years.

Best regards Brian Toft

A handwritten signature in blue ink, appearing to read "Brian Toft", on a light purple background.

Owner and founder of Toft Kobber since October 1, 1986

Cvr. Nr. 34109125

