



Building Kits in Steel and Aluminium



CENTRAALSTAAL INTERNATIONAL

a **CG** company



Introduction

Centraalstaal International has manufactured building kits in steel and aluminium for shipbuilders and other industries since 1972. Based at our production facilities in The Netherlands, Germany and India, enthusiastic teams serve more than 150 clients around the world. These projects include container vessels, general cargo vessels, offshore supply vessels, tankers, fishing boats, tugs, mega yachts and navy vessels.

Complete dedication to projects and a solution-driven philosophy have played a key role in the success story of Centraalstaal International:

- World leader in 3D forming of all types of metal plates and profiles
- Partner to more than 150 shipyards
- Annual output in excess of 80,000 tons of steel and aluminium
- Supplying building kits for more than 50 projects a year
- State-of-the-art machinery
- Logical numbering of more than 750,000 parts a year
- High quality in conformity with ISO9001:2000 and the Centraalstaal Standard

The overall result for the shipyards is on time delivery of the best possible building kit... And a perfect fit!

Building Kits

Each building kit of Centraalstaal International consists of all cut and formed plates, frames and profiles needed for the construction of a vessel.

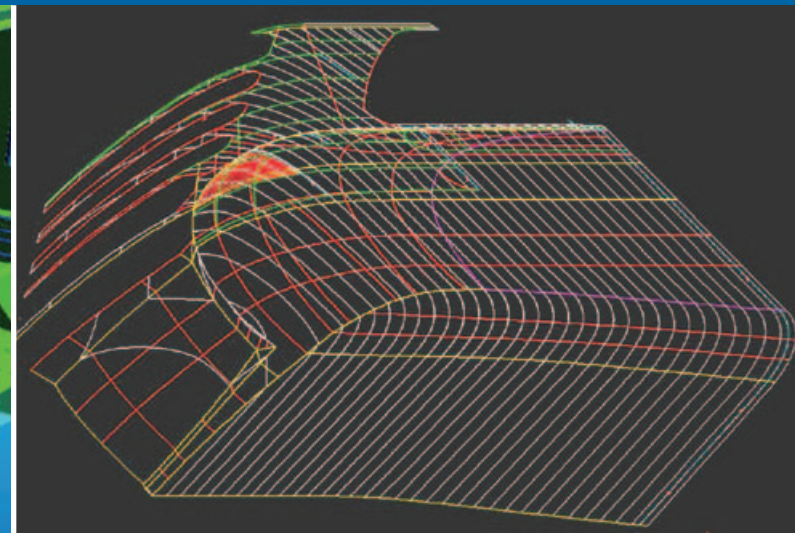
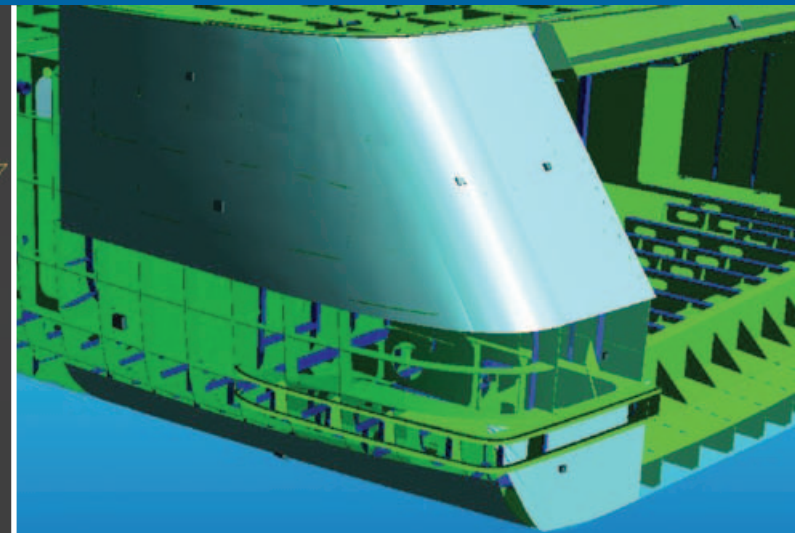
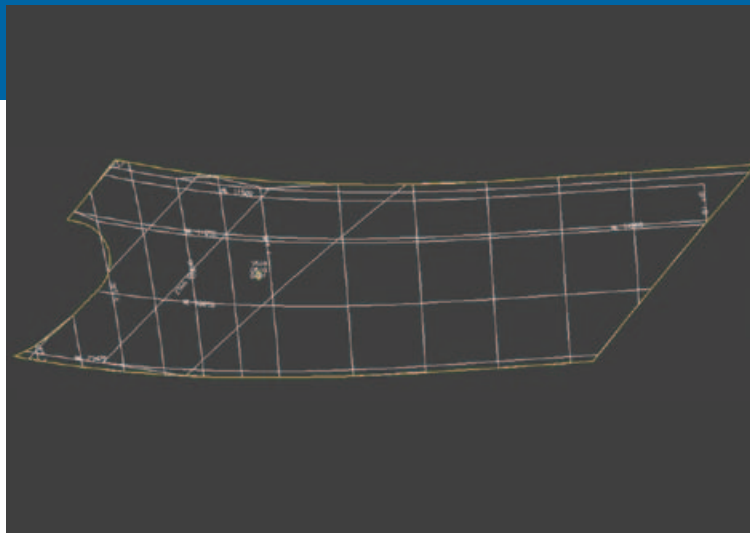
There are six important steps during the production of the building kits:

- Shell Plate Development
- Plate and profile marking
- Cutting
- Forming
- Assembly Instructions
- Logistical delivery

On the following pages, each step will be explained and the specific advantages for a shipyard of each particular step will be shown.

Table of Contents

Shell Plate Development	6
The Marking Process	8
The Cutting Process	10
The Forming Process	12
Assembly Instructions	14
Logistics	16
References Shipbuilding	18
References Yachts	20
References Other Projects	22



The Centraalstaal method

Our fairing and shell specialists model the ship's shape, superstructure or any other shaped object in detail in order to deliver the most accurate information for the optimal production of complex formed plates.

Shell plates are calculated with our in-house developed NUPAS-CADMATIC shell plate software. Double curved plates are calculated in a flat pattern including elongation due to the double curvature. Shell plates are developed without extra length (green), including edge preparation data, (construction) marking lines and elongation information for cold forming.



Advantages at the yard

- Left:** Shell plates without extra length (green) can be welded immediately without having to cut off excess length from the plates.
- Middle:** Plates and profiles are beveled at the correct angle, which eliminates the need for welding preparation at the shipyard.
- Right:** Where shell plates come together, profiles have special 'welding slots' in order to reserve space for a continuous weld.

The Cutting Process

The Centraalstaal method

Centraalstaal uses high definition plasma cutting techniques for steel and aluminium. Because of the close cooperation with shipyards and other clients, we are able to adapt the used cutting software to all our production equipment. All parts will be automatically nested for a more efficient use of material.



Advantages at the yard

- Left:** Welding slots are automatically cut into the profiles in order to make space for continuous welds.
- Middle:** Piping and cable penetrations are pre-cut into the plates.
- Right:** 'Egg-box constructions' with pre-cut spaces in the plates and profiles for easy mounting save time during the assembly process.



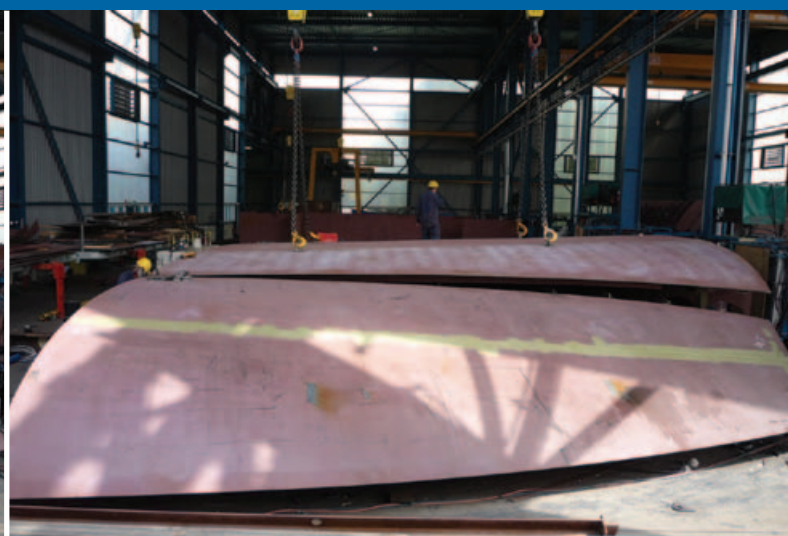
The Forming Process



The Centraalstaal method

All steel and aluminium plate and profile parts are cold formed to prevent material distortion. Complex 3D shapes can be combined in a single plate (up to 16 m x 3,5 m). Profiles are pressed into the correct shape by using a CNC profile bending machine.

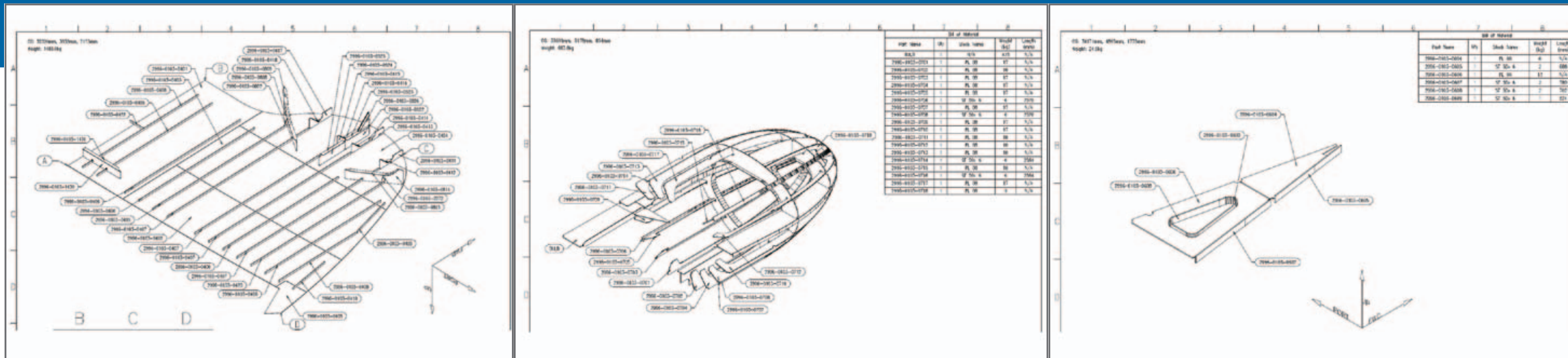
Combining the experience and expertise of our specialised operators with continuous quality control, this process yields shell plates and profiles that fit like a glove.



Advantages at the yard

Pictures from left to right:

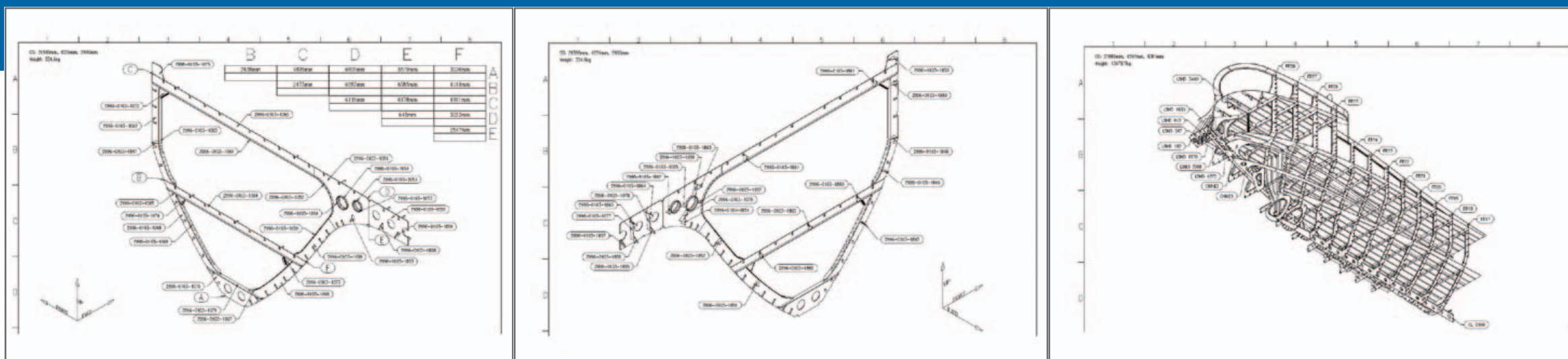
Perfectly formed plates, without extra length, fit exactly on the inner structure. After placing the plate in position the welding process can start immediately, without the need for extra preparations.



The Centraalstaal method

Assembly instructions are sent to the yard together with the building kit. These instructions include:

- Part number / unique identification
- Processing steps to be followed
- Logistical order
- 3D view assembly drawings as building manual



Advantages at the yard

The assembly instructions help the shipyard to fully use all the advantages of the Centraalstaal building kit. The detailed drawings serve as a guide through every step of the assembly process.

Working with a Centraalstaal building kit in combination with the assembly instructions can help shipyards save up to 25% in assembly hours.



The Centraalstaal method

A customized delivery schedule is generated for each project, taking client-specific construction methods, yard facilities and block assembly programmes into account. Applicable component numbering systems and the requested type of marking lines are developed in cooperation with the client.

Transport to customers around the world can be arranged on stackable flatracks, containers or by vessel.



Advantages at the yard

The processed plates and profiles are delivered in predetermined batches. The delivery schedule takes the logistical needs of the receiving shipyard into consideration, minimizing the need for sorting upon arrival.

References Shipbuilding



Left: Sunborn Hotelship under construction in Malaysia at Boustead Naval Shipyard.

Middle: Fishing vessels under construction in Morocco at CNAF.

Right: Multi Purpose Vessel under construction in Poland at Shipkits.



Left: Construction Support Vessel constructed at Metalships & Docks, Spain

Middle: Meko 100 constructed at Boustead Naval Shipyard, Malaysia.

Right: General Cargo Vessel constructed at Royal Niestern Sander, Holland.

References Yachts



Left: Lady Lara, Benetti Yachts, Italy

Middle: Nazenin V, RMK Yachts, Turkey

Right: ICON, Icon Yachts, Holland



Left: Ilona, Amels, Holland

Middle: Al Mirqab, Peters Schiffbau, Germany

Right: Luna, Lloydwerft / Stahlbau Nord Shipyards, Germany

References Other Projects



Barges and pontoons

Centraalstaal has delivered building kits for barges and pontoons to shipyards around the world. Because of the time reduction when working with building kits, shipyards can build barges and pontoons at a high level of efficiency and cost effectiveness.



Repair Projects

For large repair or refit projects Centraalstaal can produce a building kit for a fore-, aft- or midship section, in order to speed up the repair process. On the pictures on the left the complete renewal of the foreship of the Ariake Reefer can be seen.



CENTRAALSTAAL INTERNATIONAL

P.O. Box 204
9700 AE Groningen
Osloweg 110
9723 BX Groningen
The Netherlands

T: +31 (0)50 575 39 00
F: +31 (0)50 575 39 01

E: sales@centraalstaal-international.com
W: www.centraalstaal-international.com

