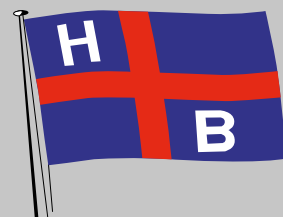
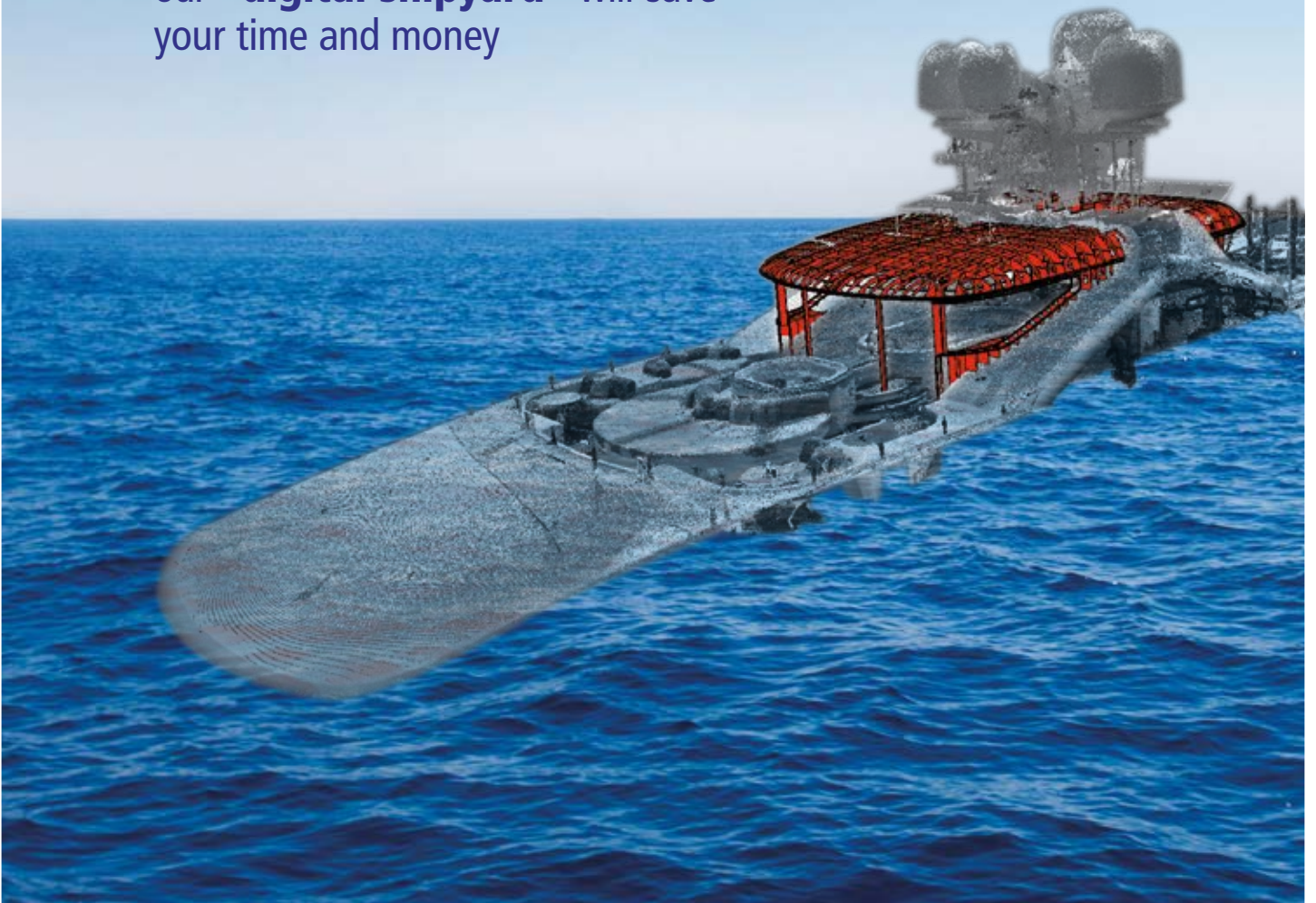


3D-SCAN APPLICATIONS

Find out how 3D-scanning can contribute to planned conversions, retro-fits, modifications, and how our **»digital shipyard«** will save your time and money



HB HUNTE ENGINEERING

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3D-SCANNING AT ITS FINEST

There can be several reasons why, and diverse fields where to apply 3D scan technology.

OUR 3D-SCANNER: THE »DIGITAL SHIPYARD«

Terrestrial-mobile 3D-scanning generates a point cloud containing millions of single coordinates. It captures system components, environments inside engine rooms and structures as far as your complete ship's hull, resulting in a 3D model environment, a virtual after-image of real steel – reversing the conventional process of engineering from virtuality to reality.

The obvious and distinct benefit is the – a few years ago unthinkable – possibility to virtually place components into an existing environment and verify the If and How beforehand – if your preferred ballast water

treatment system will fit and how (or if not, admittedly); and this at an accuracy of millimeters or less.

The new system: pipes, structures, components, sections can be vastly pre-fabricated; adjustments during installation onboard remain marginal. No more fiddling and fumbling with piecemeal piping bits to your restricted satisfaction in the end!

AS BUILT OFTEN NOT AS-BUILT

- Install a Ballast Water Treatment Plant?
- Increase your fuel capacities?
- Install an exhaust gas treatment system, a scrubber, an SCR?
- Refurbish corroded seawater pipes?
- Retrofit your vessel with a dual fuel system?

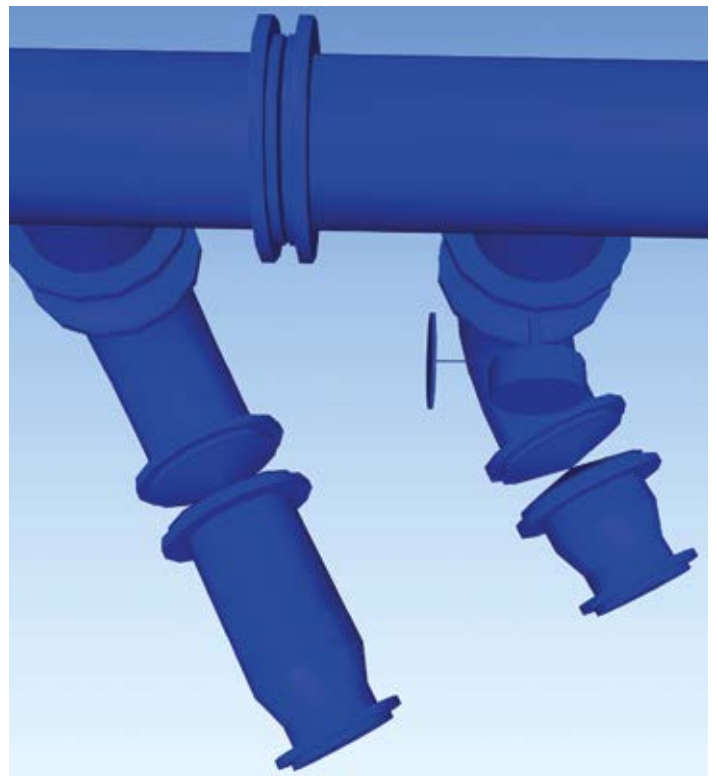
And you are only too aware that all you have at hand is a few shabby pdf drawings which even might not reflect the actual arrangement onboard?

The answer is: 3D-scanning!

Rubber-lined seawater cooling...

real...

...virtual.



FOUR STEPS OF 3D-SCANNING

1 PROJECT EVALUATION & FEASIBILITY STUDY

Project evaluation:

whatever your challenge – simple is best.

Any refit, repair, conversion begins with a »reverse engineering«– an abstract back from the touchable manifestation in steel to virtuality in software.

We will meet you eye to eye. We will listen to you with open ears and minds. We understand your task. We identify suitable measures to further evaluate it; we develop technically and commercially realistic answers.

Feasibility study:

onboard survey and 3D laser scan – do not disturb!

A 3D laser scan does not take longer than one port's call. Nor will our survey interfere with the ship's operation or schedule. The 3D image (point cloud) captured allows for maximum pre-fabrication, bypassing the frailties of manual measuring and minimizes expensive misfits and patchwork onboard.

2 CONCEPT DESIGN & DETAILED ENGINEERING

Concept design:

feasibility proven in virtuality.

Components and systems will be placed virtually within the point cloud environment showing clearly the Goes and No-Goes (where the latter, of course, for engineers do not exist!). A coloured report specifies and pictures the project's needs to a degree of detail allowing to assess a safe budget price.

Detail engineering:

as-built in advance – an advantage.

After a review together with you, the so established 3D model can be further elaborated into a detail engineering to an accuracy of about one millimeter and to the needs, location and capabilities of the envisaged realization company.

3 PURCHASE & PREFAB

Purchase:

additional costs – no, why?

With a vessel engaged in worldwide trade, choosing a shipyard to depend on is difficult.

With the feasibility road map acting as tender documentation, no shipyard can claim: not to have known...and even less so with detail engineering ready and complete with production drawings, material weights, components, pipes and instruments lists.

So, quotations become comparable; and if you still need assistance in your decision: let us know.

Prefab:

welcome parts ready.

Using the detail engineering data, piping, foundations, even complete bulkheads can be prefabricated, controlled and approved timely before dry-docking and notwithstanding the vessel's schedule. In the meantime you can assure yourself of the yard's workmanship and quality with the good feeling that the vessel's money-earning time is clipped only to the absolute minimum.

4 SUPERVISION & COMMISSIONING

Installation:

wherever, whenever, whatever – we will be at your site.

We do get in touch with the yard, we will – if not long done – adapt our engineering to their needs and facilities.

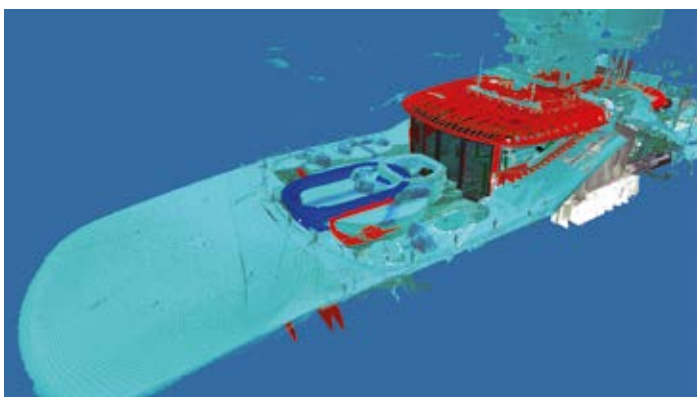
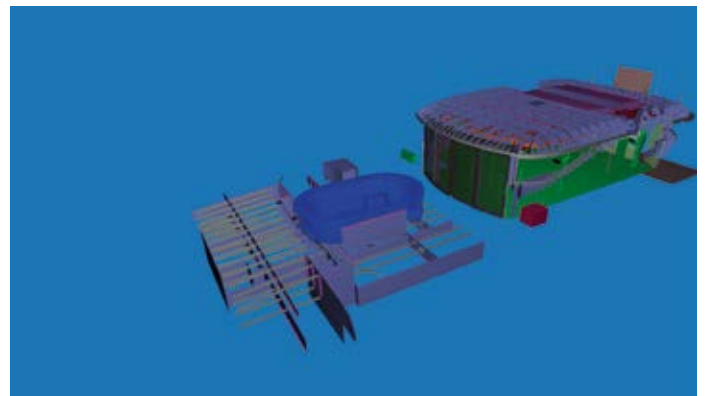
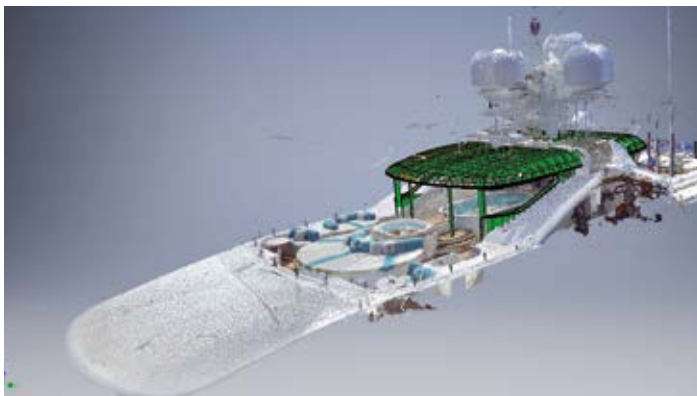
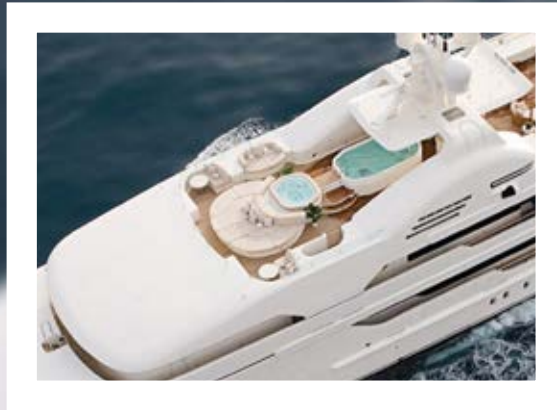
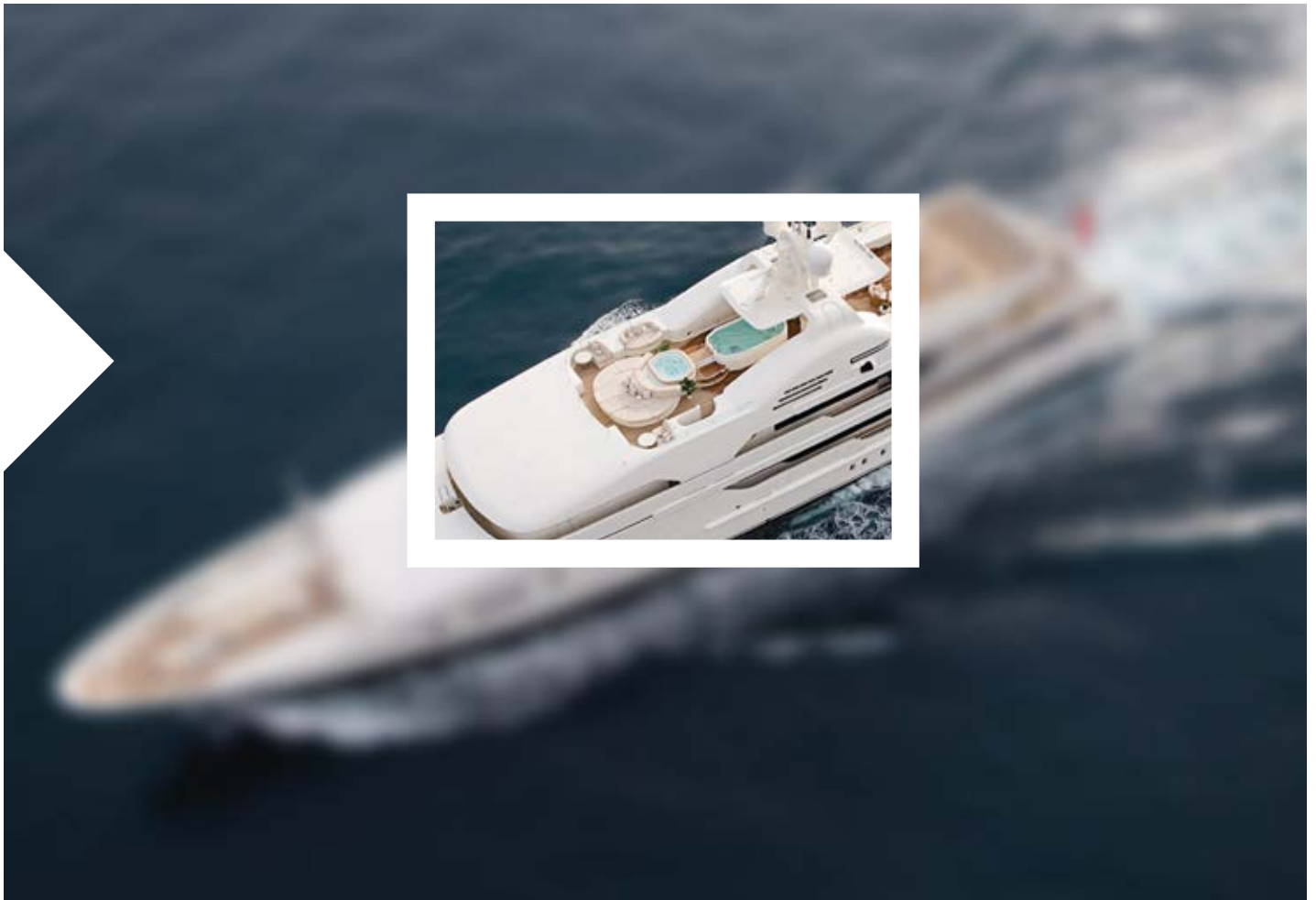
We can take over and take care if you have too many other issues on your agenda to attend works yourself. Our experienced supervisors report progress to you daily.

Commissioning:

the perfect finish – in time.

Not always and everywhere a matter of course: we will bring the project to its completion! And hand you over the keys.

EXTENDING COMFORT



Fitting a fully enclosed, pre-fabricated deck house structure and a new pool area on a megayacht's sun deck:

- The as-is condition captured by our 3D scanner; we implemented:
- structures, windows, automatic sliding doors, ceilings, light and sound system, ducts, piping for HVAC and water.

EXTENDING PREFABRICATION

A container ship's severely corroded cooling water system:

- Our 3D scanner created the point cloud data;
- A new rubber-lined piping system was re-engineered, pre-manufactured and installed – fitting without any adjustments on board.



A 10.000 TEU container ship's MGO tank extended into a void space:

- Our 3D scanner provided the engineering database;
- Wall and bottom structures engineered, prefabricated and installed forming a cofferdam (protection) against shell.
- The Chinese shipyard receiving a full set of workshop documentation with cutting parts;
- Job done in time and to the satisfaction of owner and yard.



HB HUNTE ENGINEERING

knows how a shipyard works

The Oldenburg-based Brand family has been involved in the ship-building industry for six generations since 1850. They founded the HB Hunte Engineering GmbH in the nineties turning it into one of the leading naval architecture and marine engineering companies in Germany.

They now offer marine designs from trifle to 3D-modelling of complete and complex ship structures, ship and machinery systems and gas plants including required and related calculations.

HB Hunte Engineering has extensive experience in newbuildings as well as conversions, refits and repairs.

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