Newsletter on PIAS and LOCOPIAS functionality extensions

As released between January 2023 and July 2024

Introduction

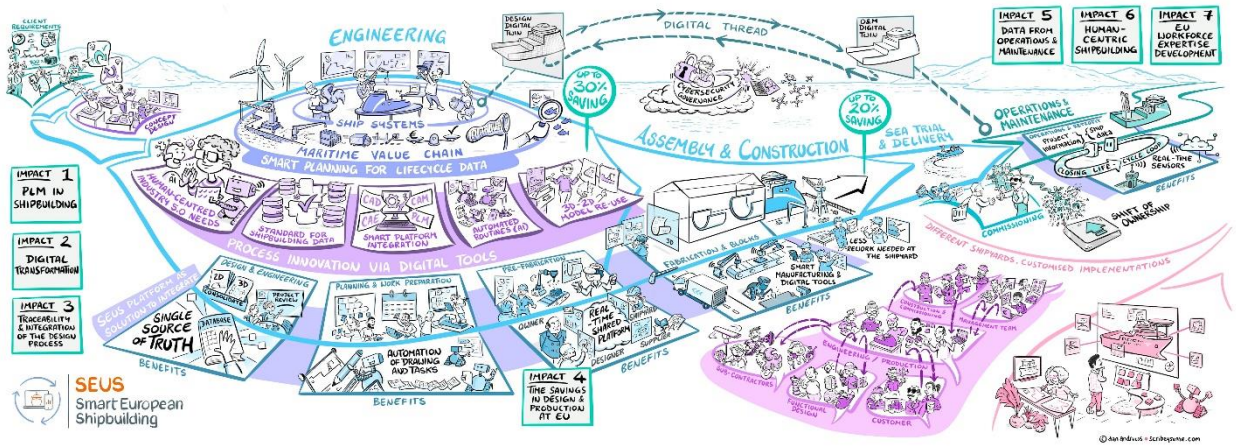
This newsletter summarizes some major enhancements of (LOCO)PIAS since the previous overview from December 2022. Individual release notes are also published on the website and in LinkedIn group SARC BV around the moment of release, however, an additional comprehensive collection from time to time is considered to be appropriate for archiving purposes.

SEUS

In 2022, the Horizon EU-project called SEUS started with partners such as CADMATIC, Ulstein and Gondan. The 2023 report is available online. Of course, we would like to share the latest, the next few points will be the subprojects SARC will be working on in the coming period:

- Data exchange of the bulkheads, decks and pipe systems between PIAS and CADMATIC.
- Hull forms derived file formats (i.e. IGES, DXF) continuously updated with hull shape changes.
- Support by a Product Lifecycle Management System (i.e. Contact software).
- Redesign and integrate the present Resistance and Propellor modules augmented with wind (assisted) propulsors.
- Extend the current Constraint Management function in Layout.
- Link to and from external spreadsheet cells.
- Extend the set of training documents and videos.

The rich picture below shows nicely the coverage of the SEUS project. This gives an overview of all tasks (and challenges) for this project. It is expected that we will be able to share the first results in 2025-2026.



Joint Maritime Digital Platform

Through the (Dutch) Maritime Master Plan, the maritime sector is getting a significant boost to towards sustainability. Essential for success in this is a commitment to innovation. Knowledge about and experience with new propulsion technologies, such as methanol, hydrogen and LNG with carbon capture, must be developed. The ambitious plan relies on a digital platform for cooperation and data sharing, the Joint Maritime Digital Platform (JMDP). Together with some other SME companies, we are ready to make this a success.

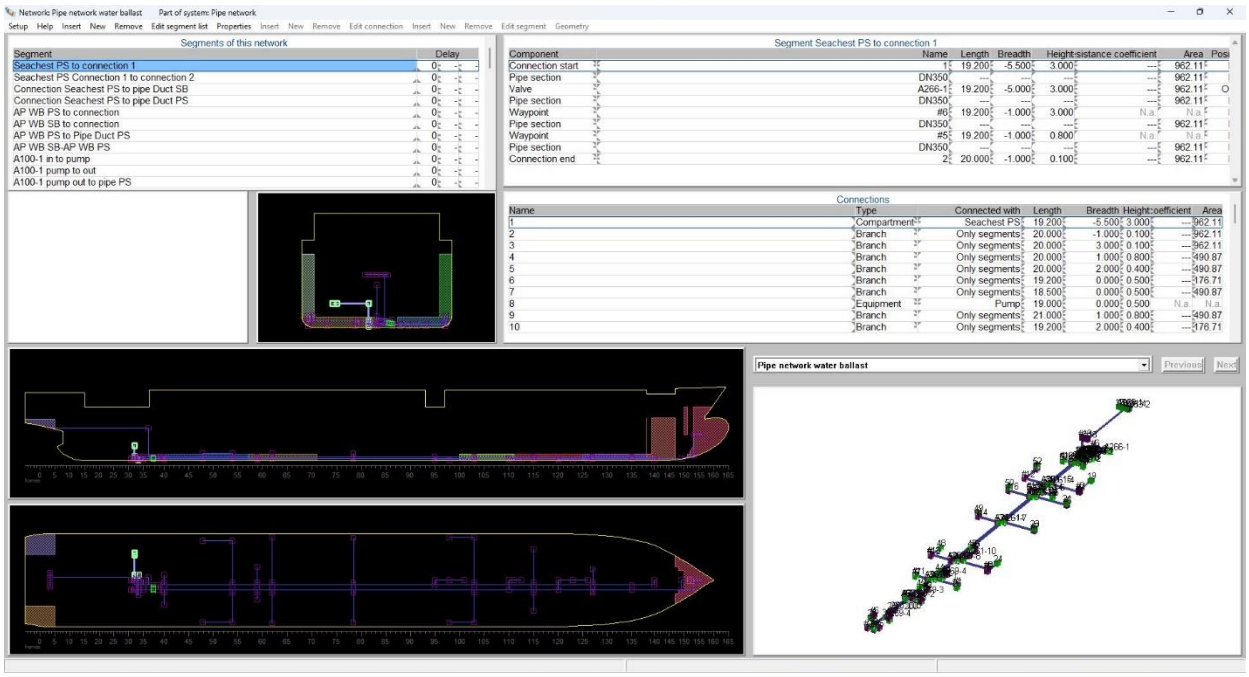
Piping in PIAS

For many years, PIAS has a mechanism for compartment connections and critical points, what can be used when modelling complex stages of flooding. Although this works well, as such, it has never been designed for massive application. However, gradually the users of PIAS , as well as classification societies, are demanding so many of such ‘complex stages’, that their elaboration has become quite laborious. In order to meet this demand, a few years ago we decided to develop a brand new subsystem which offers a much more structured and automated way of calculating this demand. The basis for this

new system is the shape and connectivity of the actual pipe lines and ducts from the ship. As first step, some time ago the GUI for the geometric modelling of a piping system, including its connections to tanks and compartments, is available in Layout. The module can be delivered as early as today and will be gradually expanded, the first two are currently available and are explained in the IMDC paper.

Developments for calculations in PIAS:

1. As alternative to conventional 'connections' in deterministic and probabilistic damage stability.
2. For systematic time domain computations.
3. With the integrated equalization time computations including effects on applicable stability criteria (for intermediate or final stages of flooding).
4. With damage to pipes (i.e. in Probdam generating also damage cases with pipe edges as damage boundaries).



PIAS in D

Something that we hope users will not notice much of but which we would like to bring to your attention anyway. SARC has spent years on a development that you don't see reflected, but why? We want to future-proof the software and with a move to the D programming language which is being considered as the "better C", we expect to lay a new basis under PIAS for at least decades. Right now, colleagues are busy testing all the functions contained in PIAS in the new programming language. We are expected to deliver the first version in 2025. This update is available for users using updates and support for PIAS.

Interfaces with different software packages

In recent years, several options have been added to import or export files such as NURBS surfaces via 3D IGES or interfacing with CADMATIC. These are all ready-made solutions for the PIAS user. In addition, XMLPIAS has recently also considerably expanded and this is a great tool for the user with some programming knowledge. More and more modules have a feature of exporting ship data or computation results to XML. This enables PIAS to be integrated with other computer tools. XML is a standard for structuring information in files. For example, one customer uses the XML route to compile damage stability overviews according to own preference and design.

- Advantage: you can make **whatever you like**.
- Condition: **you** can make whatever you like.

Initial PIAS training
Being experts in the field of many aspects covered by our software, SARC shares its knowledge by means of courses or training. Initially, we want to help the novice user to get started in PIAS. in these exercises the essentials of working with PIAS are taught by defining a vessel and execute (damage) stability and strength calculations. The training with its exercises and explanatory videos has proven to be sufficient for anyone with a naval engineering background.

We want to share the course for free with anyone who is interested. The initial PIAS training can be downloaded from our cloud. Feel free to send us an email at sarc@sarc.nl for more information.

Ideas, hints and tips from daily users
SARC would be nowhere without its customers. Hence, we also definitely keep our ears open for ideas from customers. However, there are obviously many customers --- with diverging interest and ideas --- and we cannot fulfil every wish. In any case, know that we take every idea seriously, which is why we created the support@sarc.nl account a few years back. We are also available by phone during office hours and you will speak directly to a user or programmer of the software.

Here are some ideas from clients that have been realized in the past year and a half:

- Easily move to the next/previous damage case just like the sub compartments menu.
- Code signing has been added to PIAS and LOCOPIAS which prevents Windows from giving notifications about any unrecognized software. The digital signature validates the identity of the software author and verifies that the file has not been tampered with since it was signed. This also ensures that virus scanners are less likely to cause problems for PIAS.
- Possibility of specifying part of WT layout. This enables overlapping of fictitious “compartments” to be defined, which are then left out of some integrity tests in PIAS.
- Check if somebody else has a PIAS file already open. It sounds simple but can prevent work to be lost. Get the latest version to take advantage of this.

Other ideas or improvements arise within the confinement of the SARC office. Below are some recent developments that just didn't make it to news:

- Users are applying more and more details for frames, frame points and compartments. In addition to more detail, this inevitably increases calculation time. To still keep the speed manageable, a more efficient iteration algorithm has been applied within PIAS.
- Programmers are currently working hard to realize a multi-window capability. This will eventually allow LOCOPIAS users to have multiple windows open at the same time and use the different graphical modules simultaneously. For example, the user can load the general cargo items on one screen, and redistribute water ballast on another to keep the ship upright. This feature will also be available for Loading in PIAS for the graphical modules such as grain, container and RoRo.

Container lashing in LOCOPIAS
Integrated container lashing and stability software is now available. As announced, the module can be used by ships classified under DNV (Stowlash) and BV Veristar Lashing. In addition to that, A reduction variant for weather dependent lashing is also available in LOCOPIAS. This can be used if the vessel has or applies for the DNV RSCS+ class notation or the BV LASHING-WAF / RSSA notation. At this moment we are expanding the connected software set with GBMS.

LOCOPIAS deliveries
In the past year and a half, some great projects have come along. For instance, we have completed about 160 ships fitted with LOCOPIAS and the most outstanding projects were:

- The entire CF3850 series from Damen is currently being equipped with LOCOPIAS. This LOCOPIAS includes a link for not only reading in tank data but also sending out stability data.
- Supply of LOCOPIAS for the 'GROOT 5200XL' design to Chinese shipyards. Because we use Groot Ship Design's PIAS files and our agent RMT handles everything locally, it is a smooth process.
- To stay with series ships, we would also like to mention the Labrax series for Vertom at Thecla Bodewes. Again, this is a design by Groot Ship Design but Thecla Bodewes also uses PIAS for the engineering. A nice collaboration between all kinds of Dutch companies. Recently, with the Vertom Lisa, the sixth vessel of the series was launched.
- TOWT came to us asking if we could also supply LOCOPIAS for a sailing cargo vessel, which of course is possible. Two ships (Anemos & Artemis) have now been built and we have also built additional features specifically for these ships in the RoRo module. This makes it possible to easily place multiple cargo items on 1 deck by selecting a plane and choosing an item from the database or weight for it.
- The Canopee was another GSD design and also a unique ship. Designed to transport parts of the Ariane 6 rocket from European ports to French Guiana, the vessel is also rigged with Wingsails.
- Wagenborg has equipped many of its ships with LOCOPIAS but last year it added the Amalia, an open top multipurpose ship of the EasyMax type. This was another fine Dutch collaboration through construction at Niestern Sander and design by Conoship.
- The Wolverine Spirit 1 is a marine fuel barge which can be loaded with tank rail cars and is built by Damen Shipyards. A unique project that also required custom-built software. A unique project that also required custom-built software. For instance, a function was created to keep an eye on the ramp angle and depth, but it also included the uploading of tide tables of that specific area.
- Finally we should also not forget all the inland waterway vessels or the series for Arklow, Smit Lamnalco, Briese and Wilson. It was a great year and a half with very many great projects, too many to mention them all.

SMM 2024 Hamburg
In a few weeks, SMM 2024 will take place in Hamburg, SARC will also be present here in Hall B7, stand number 422. There, we would like to show you more about what value PIAS or LOCOPIAS can add to your business operations. In addition, we are also happy to offer our service where, for example, we provide a deepening of a vessel, new container securing manual or probabilistic damage calculations for your vessel. At SARC you can leave the project worry-free and we will get the most out of your ship with the (damage) stability expertise we have.

We are happy to demonstrate live the developments highlighted in this newsletter. Bring a Baplie file with dangerous goods and test out our EDI-IMDG validator. Come discuss new projects with us where we may be able to provide some tips on ship stability. We will be happy to discuss it at stand 422 in Hall B7 (on the Holland Pavilion).

Appendix: Individual newsletters Januari 2023 – July 2024

17 January 2023

The Smart EUropean Shipbuilding project (SEUS)

Smart European Shipbuilding project – integrated platform for a combined solution incorporating CAE, CAD, CAM, and PDM software

The Smart European Shipbuilding project (SEUS) aims to create a framework for European shipyards by developing an integrated platform for a combined solution that incorporates CAE, CAD, CAM, and PDM software and testing it at shipyards.

The new platform solution will be built with the best EU shipbuilding expertise provided by academic and industrial consortium participants. It will develop novel practices for human-centric knowledge management, data-driven AI design elements, intelligent technology, and an Industry 5.0 concept for shipbuilding.

The consortium partners represent state-of-the-art development in three main areas:

- Computational tools development
- Industrially applied research
- End-users of the new technology – shipyards.

The ambition is to achieve up to a 30% reduction in the time needed for engineering and up to 20% for assembly and construction at European shipyards. The elimination of gaps in digital information flows and the optimization of work processes present the area for time and cost optimization, providing significant economic impacts on shipbuilding.

The identified impacts include the following:

- Development of computational platform solution
- Facilitation of digital transformation of shipbuilding
- Traceability and integration of the early design impact of the design process
- Competitive advantage for EU shipbuilders through time savings in design and production stages
- Expansion of shipyards' exposure to the ship life cycle: for retrofit, revitalisation, use of data from operation and maintenance, human-centric shipbuilding knowledge management, and EU workforce skills and expertise development.

Participants
Project SEUS brings together development work for computational tools, the highest research expertise from academic partners, applied to the field of shipbuilding and Industry 5.0, and future users of the platform – shipyards. This ensures that the development process has a product-service design backbone and nurtures a value co-creation process in the development of IT tools.

- NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, NORWAY (NO)
- CONTACT SOFTWARE (CONTACT), GERMANY (DE)
- NHL STENDEN UNIVERSITY OF APPLIED SCIENCES (NHL)
- UNIVERSITY OF TURKU (UTU), FINLAND (FI)
- CADMATIC OY (CADMATIC), FINLAND (FI)
- ULSTEIN GROUP (ULSTEIN), NORWAY (NO)
- SARC BV (SARC), NETHERLANDS (NL)
- ASTILLEROS GONDAN SA (GONDAN), SPAIN (ES)

The SEUS project has received funding from the Horizon Europe Framework Programme (HORIZON) EU program under grant agreement No 101096224.

This website reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains. The website http://seus-project.eu/ will be kept up to date during the entire duration of the project.

24 January 2023

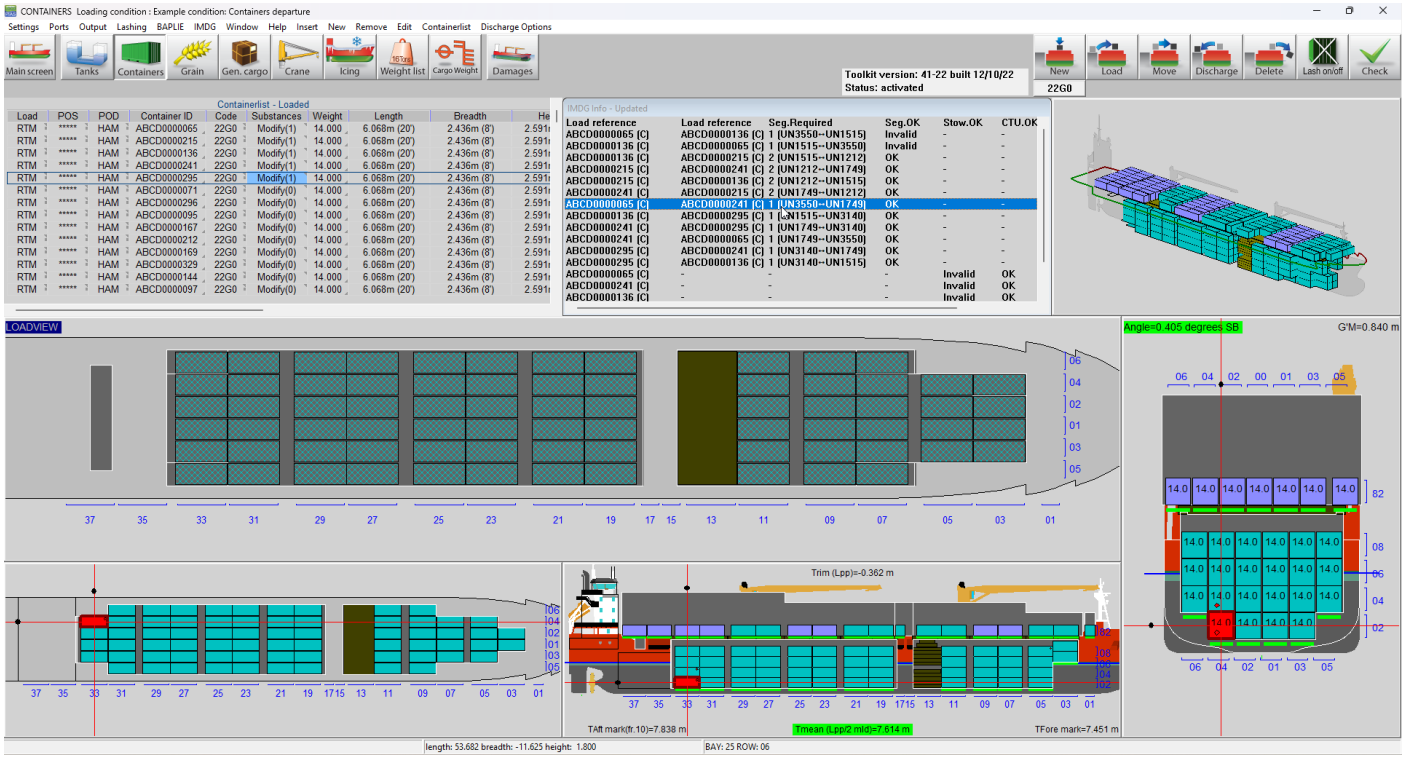
IMDG amendment 41-22 update in LOCOPIAS container module and SARC EDI-IMDG validation tool.

The IMDG code extension in the LOCOPIAS (on-board loading computer software) container module assists in the loading of dangerous cargo by real time validation against the IMDG code.

The stand alone EDI-IMDG validation tool can operate without any predefined ship geometry and is based on a schematic bay plan. This bay plan is derived from an Electronic Data Interchange file (EDI/Baplie). The tool is meant for ship owners, shipping lines, crew and port authorities and can assist in attaining a higher standard of safety at lower effort.

The IMDG Code, 2022 Edition (inc. Amendment 41-22) comes into force on 1 January 2024 and may be applied voluntarily as from 1 January 2023.
The IMDG Code Supplement, 2022 Edition renders obsolete the previous 2020 edition.
The overview of changes has been published by EXIS Technologies.

The LOCOPIAS IMDG module is available since 2018.
Now SARC has integrated the IMDG Amendment 41-22 into the LOCOPIAS IMDG module and the EDI-IMDG validation tool.
The updated module is available and ready to be delivered.
If you would like to request the updated LOCOPIAS IMDG module (IMDG Amendment 41-22) now, please send us a message.

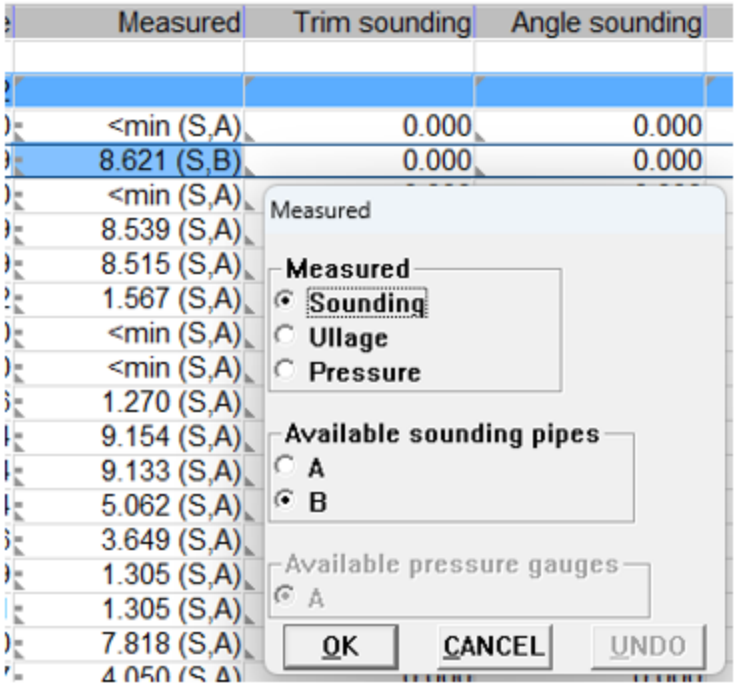


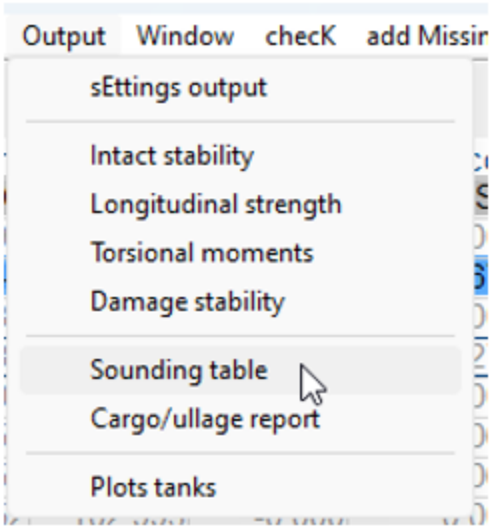
25 April 2023

Sounding in Loading

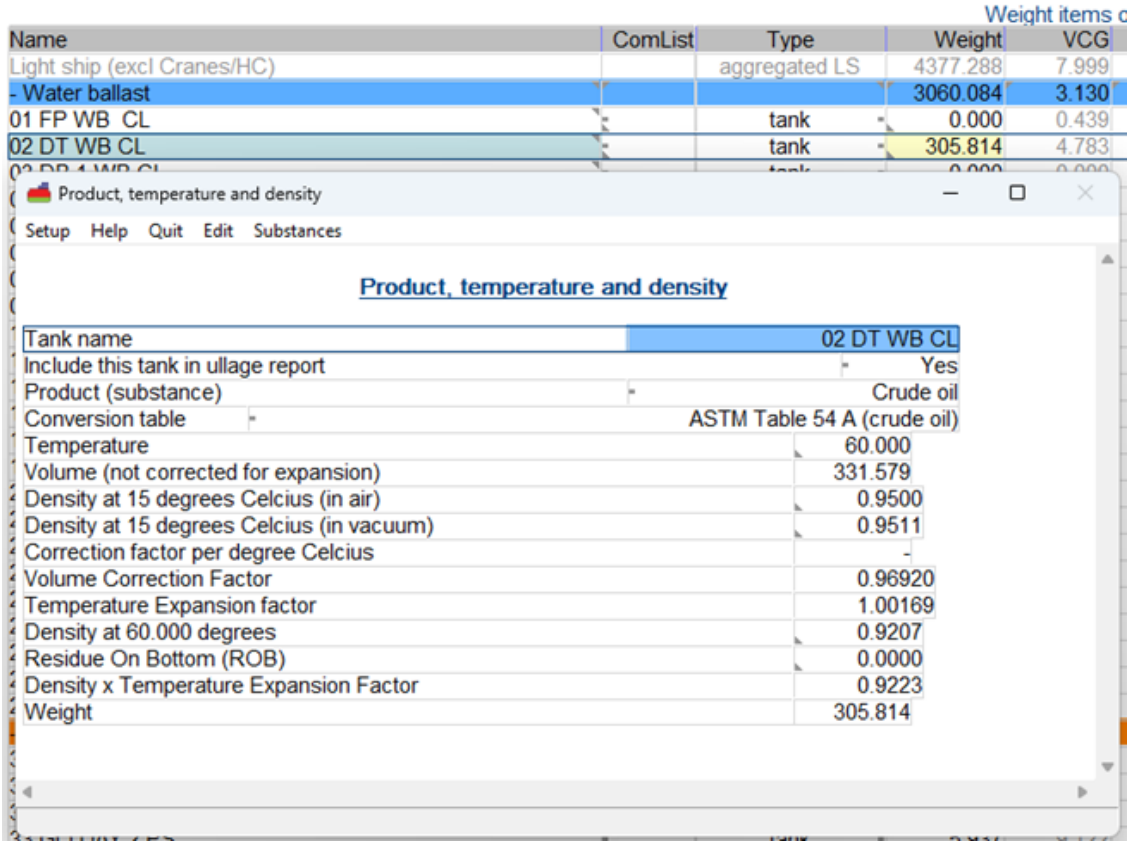
In the weight item list of a loading condition, 3 columns have been added for displaying the value of a measuring instrument. The printed value is calculated for the trim and heeling angle specified with that tank. The center of gravity and FSM are always calculated for an even-keel vessel.

If multiple sounding pipes or pressure sensors are specified at a tank, the gauge can be selected with which is measured or whose value is to be printed.





You can find the data of the measured values in the output of the 'Sounding table'. Loading can be expanded with an option for temperature correction tables and a cargo/ullage report.



Lloyd's Program ID / Version Number: 08/01/2021.
Version: r27547M - 18 April 2023 18 Apr 2023 18:48:13

Morgenstond (Demo version)

CARGO, SOUNDING AND ULLAGE REPORT

Trim = -1.489 m (trim by stern)
Draft from baseline on FPP = 3.972 m
Draft from baseline on APP = 5.461 m
Angle of inclination = 0.973 degrees (to PS)

Port of loading / discharge:
Berth:
Voyage number:

Tank	Product	Temp.	Volume	TEF	Obs.Volume	Method	Table
30 GO PS	No substance selected	15.0	29.453	1.00000	29.453	MANUAL	
31 GO SB	No substance selected	15.0	46.595	1.00000	46.595	MANUAL	
32 GO DAY 1 PS	No substance selected	15.0	5.967	1.00000	5.967	MANUAL	
33 GO DAY 2 PS	No substance selected	15.0	6.597	1.00000	6.597	MANUAL	
41 GO MID SB	No substance selected	15.0	172.741	1.00000	172.741	MANUAL	

Tank	Corr./degr.	VCF	Volume 15	Density 15 Vacuum	Density 15 Air	Weight Vacuum	Weight Air
30 GO PS		1.0000	29.453	0.9011	0.9000	26.537	26.508
31 GO SB		1.0000	46.595	0.9011	0.9000	41.982	41.936
32 GO DAY 1 PS		1.0000	5.967	0.9011	0.9000	5.376	5.370
33 GO DAY 2 PS		1.0000	6.597	0.9011	0.9000	5.944	5.937
41 GO MID SB		1.0000	172.741	0.9011	0.9000	155.638	155.467

Volume : Volume corrected for list and trim
Obs.Volume : "Observed" volume: corrected for tank expansion (TEF)
Volume 15 : Volume at 15 degrees (corrected for cargo expansion)
Density 15 : Density at 15 degrees Celsius
TEF : Temperature Expansion Factor
Table : Table used for temperature correction
Corr./degr. : Volume correction per degree Celsius
VCF : Volume Correctie Factor

For stabilised crude oil K0 = 613.9723 and K1 = 0 (for metric units)

Shipper / Receiver (On behalf of) the master

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25 May 2023

Presentations SARC user day 2023

Monday 15 May 2023 marked the sixth SARC user day. This was another successful day with around 60 people from over 40 different companies. The event kicks off with an enlightening talk by Herbert Koelman, a renowned expert in the field, about Exploring Novel Tools and Methods in PIAS. Later Mark spoke about support and implementing insights.
Video: https://www.youtube.com/watch?v=XXj33Q6JhVc
Presentation: Novel tools and methods in PIAS – Collaboration and interfacing – Herbert Koelman

In the afternoon, there was room for specific presentations, namely:

LOCOPIAS
Video: https://www.youtube.com/watch?v=R52Y9JzLVVY
Presentation: LOCOPIAS workshop – Abraham de Ronde

Fairway
Video: https://www.youtube.com/watch?v=6CjOwXLy0Kg
Presentation: Fairway workshop – Bart Soede

Probdam
Video: https://www.youtube.com/watch?v=4QnVZIR1hjs
Presentation: Probabilistic damage stability workshop – Douwe Plukkel

In the afternoon, Justin Phaff, Casimir Koelman and again Herbert Koelman took the floor. They spoke about tips and tricks on PIAS, AutoCAD Plugin and Herbert gave a Keynote speech.
Video: https://www.youtube.com/watch?v=Jv94Jl13giM
Presentations:
Tips and tricks for beginner and advance user of PIAS – Justin Phaff

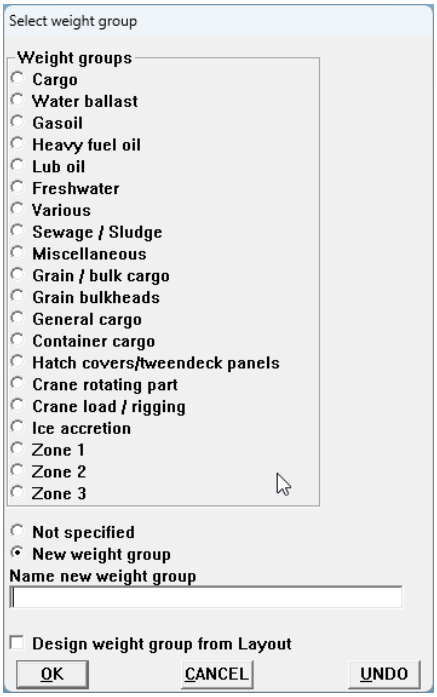
Tell me – Herbert Koelman

Of course, it may be that you were unfortunately not present, fortunately there is the possibility to watch everything back via YouTube: https://youtube.com/playlist?list=PL0rSumyvsLmCXCFp4jQEZzx-ElEWpbigu

Photos taken during the SARC User day: https://www.dropbox.com/scl/fo/nzox8tn8wyc81s3blur5f/h?dl=0&rlkey=zpnqep9mhxg138duarc6lfxfy

25 July 2023

Weight group information improved



The use of weight group numbers has been changed. From now on, the numbers are generated by the program itself and can no longer be defined manually by the user. The numbers are no longer visible anywhere, only the defined weight groups can be selected.
As an additional option, the definition of a new group has been added, see the popup selection window to the right. This way a new group can always be added, without going to the weight groups menu first.

In the weight groups menu, the groups can be moved with the 'Move' option. If the weight items in the list are sorted by weight group, then the order of the groups in the menu is maintained.

19 September 2023

Maximum VCG' calculations multi-threaded

The maximum VCG'-intact and -damaged calculations in the Hydrotables module can now be computed multi-threaded. This means that the calculation of each maximum allowable VCG' is put on a new thread. With a multi-core computer, this can save a considerable amount of time. For this, the appropriate PIAS extension must be purchased.

30 October 2023

Maximum VCG' calculations multi-threaded

In the realm of maritime research and ship design, an enhanced version of the inclinometer sensor has emerged, offering a refined approach to inclining experiments. This updated hardware provides more precise measurements, improving the assessment of vessel stability and safety in the maritime industry. Inclining experiments are pivotal for ship design, primarily used to evaluate a vessel's stability, especially its vertical center of gravity.

The inclinosensor can be purchased or rented. SARC also provides a in-house calibration service for these inclinosensors.

Key Features of the Upgraded Inclinosensor:

- **Enhanced Precision:** The improved inclinosensor provides more accurate measurements, reducing the potential for errors and empowering ship designers with more reliable data.
- **Robust Build:** Its design ensures reliability even in challenging maritime conditions, making it suitable for use in demanding environments.
- **Efficient:** The sensor is optimized for efficient data collection and transmission, streamlining the inclining experiment process and making it more cost-effective.
- **Compact:** The inclinosensor is very compact and therefore easy to carry and setup. This eliminates the need of finding a large space for setting up one pendulum or u-tube.

If interested, please send us a message or give us a call.

2 January 2024

IMDG amendment 41-22 included in LOCOPIAS IMDG module

IMO have released a small update to the IMDG Code amdt 41-22. The changes are mostly to the chapters of the Code, there are none at all to the Dangerous Goods List and just two to the Special Provisions. As a reminder, 31 Dec 2023 was the end of the transition year during which either the old amdt 40-20 or the new amdt 41-22 could be used. From 1 Jan amdt 40-20 is no longer valid for operational use and only 41-22 is valid. The latest version of the updated IMDG amdt 41-22 is included with the LOCOPIAS IMDG module from today.

8 February 2024

Probabilistic damage stability calculations multi-threaded

In recent years, a lot of time has been spent developing multi-threading computation. Now a new version of PIAS has been released that makes probabilistic damage stability calculations up to 25% faster.

Determining optimal damage boundaries can be performed multi-threaded for some time, but now the damage stability calculations can also be performed multi-threaded. This saves a significant amount of time. Everyone who has the multi-threaded extension of PIAS now benefits from this. The difference in speed between a multi-threaded and a standard version of Probdam is increasing. All the more reason to buy the extension or upgrade to additional cores.

Please note that the test was conducted using all three multi-threading modules (ES1, ES 2 & ES 3) on a computer with 12 cores.

23 April 2024

Additional method for the inclining experiment

An inclining experiment is executed to establish light ship weight and its center of gravity.

SARC has had a module to run calculations required and generate a test report for decades. And even such simple module has been developed quite a bit. The current module Incltest can be used even if test weights are variable (as may occur when ballast water is used for test weights), if test weights come on board after the draft measurements, and if the waterline is not continuous. Note that in the last case additional draft measurements may be defined to give better results for non-constant KM values.

However, things are not always that difficult. We have therefore deemed it a good idea to implement a conventional method for the inclining experiment.
This method is not our invention, we have simply followed the IMO recommendation to the letter:

- The measured heeling angles for all devices used are presented in a graph:
  $\tan(\varphi)$ against moments per pendulum / inclining sensor / tube.
- The G'M value will be calculated with linear regression (least squares method) from these measurements.

Some features not explicitly listed in the IMO recommendation:

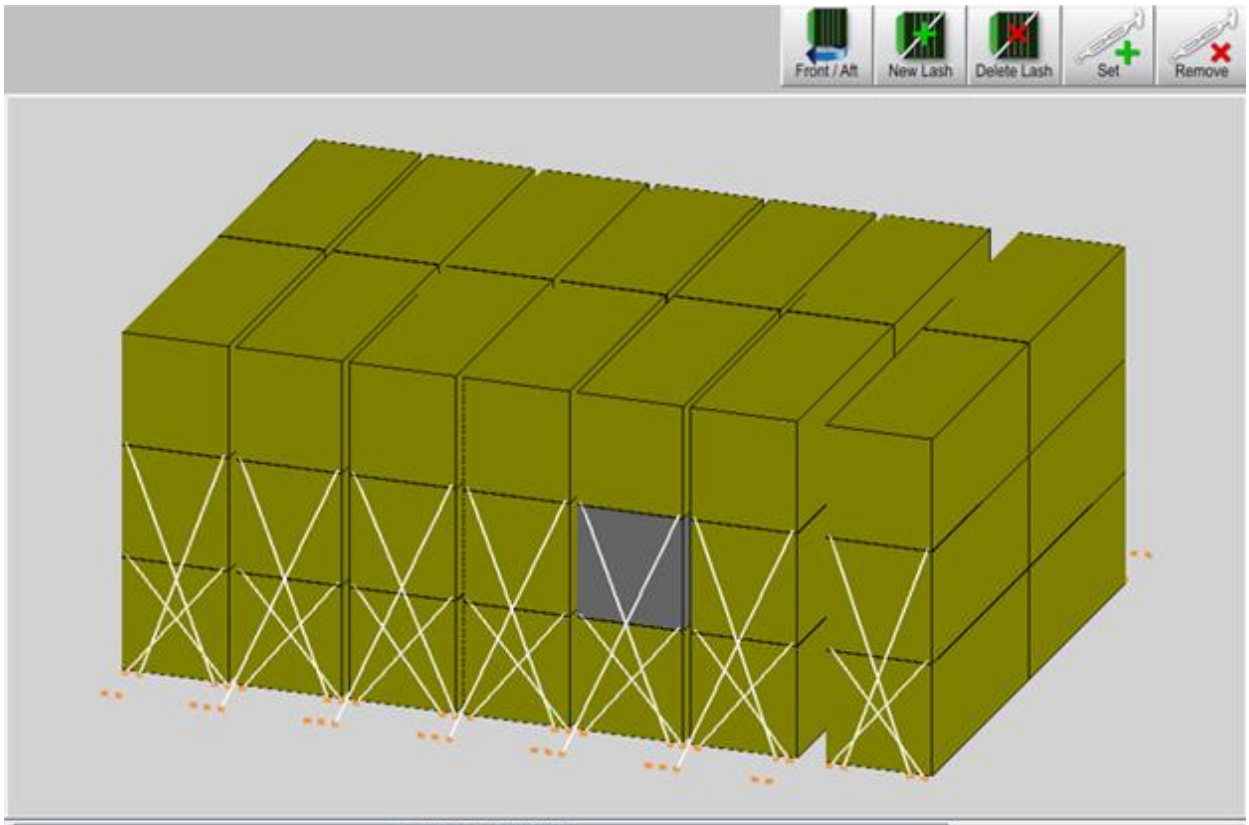
- For moment = 0, the heeling angle found in the draft survey is used.
- The intersection of the calculated curve with $\tan(\varphi) = 0$ is used to calculated TCG.
- Per device, any measured heeling angle can be rejected if deemed invalid. Regression will simply use one less value.
- The tube is added as a measuring device.

We trust that the 'conventional method' will be easier understood than our 'non-conventional' method. For this reason it is selected by default for new projects.

7 May 2024

Calculate container lashing system including weather dependent approach

The lashing system is designed to prevent the containers from shifting or tipping over during rough seas. These systems are crucial for safe and efficient transport of cargo containers. Installing these lashing rods, twistlocks, and turnbuckles takes time so you don't want to use too many lashings. It is best to calculate the forces acting on the containers before a new voyage. In the Lashing module for LOCOPIAS all the container information is already available from the stability calculation. DNV's Stowlash or BV's Veristar Lashing calculation kernels are incorporated into the software to calculate all these forces. So the user knows with the applied lashings if the loading condition complies with the rules.



undefined / 0090184

	PS wind			SB wind	
	aft	fore	Criterion in kN	aft	fore
Racking force	3.04	5.72	150.00	3.18	5.65
Loads at bottom	47.05	35.76		45.29	36.08
Corner Post Load	19.60	10.87	848.00	19.72	11.49
Lifting force	-7.26	-2.23	250.00	-7.11	-1.71
Twist locks	-7.26	-2.23	210.00	-7.11	-1.71
Lashing force at top casting PS	0.00	0.00	125.00	0.00	0.00
Lashing force at bottom casting PS	0.00	0.00	245.00	22.19	10.89
Lashing force at top casting SB	0.00	0.00	125.00	0.00	0.00
Lashing force at bottom casting SB	22.16	10.42	300.00	0.00	0.00
Lashing force in no lashing top PS	0.00	0.00		0.00	0.00
Lashing force in lashing device bottom PS	0.00	0.00	250.00	22.19	10.89
Lashing force in no lashing top SB	0.00	0.00		0.00	0.00
Lashing force in lashing device bottom SB	22.16	10.42	250.00	0.00	0.00

Wind force : 1.00 kN/m² Sloshing force : 1.00 kN/m²

The major advantage of the Lashing module within LOCOPIAS on-board loading computer software is that all information regarding containers is already included in the software. In addition to checking stability the user can directly add lashings to containers already imported with a BAPLIE, for example. This will save labor and prevent errors, especially when the intended loading plan has to be modified, because of e.g. stability or IMDG constraints.

In the case weather-dependent lashing is allowed — with DNV RSCS+ or BV RSSA/WAF class notation, and an actual wave forecast in the case of a voyage of less than 72 hours — this new LOCOPIAS function offers a convenient way of determining the proper lashing arrangement for a specific voyage. In test calculations for such a case we have seen, depending on metacentric height, a significant reduction of number of necessary lashing rods.

Also in the case of unrestricted voyage a direct calculation of lashing forces offers advantages, because it takes the actual stack weight and height, and metacentric height into account, contrary to the standard lashing scheme of the Cargo Securing Manual, which is based on the worst anticipated condition. On the other hand the software adds more safety to the cargo in case the actual loading condition is worse than anticipated. To demonstrate the application, an example calculation has been made and the corresponding demo software can be downloaded.

11 June 2024

Two papers published by SARC at IMDC ‘24

Last week the 15th International Marine Design Conference (IMDC 2024) took place in Amsterdam. Two papers had been submitted for this, on which SARC was involved. The first explores data standards in maritime applications, data models of PIAS and CADMATIC and the direction for integrating these models in the SEUS project. The other is about adding pipe systems in PIAS for the purpose of stability assessment. This year, we will launch our Piping module which provides more realistic calculations for damage stability. More information will follow later this year, please also feel free to visit us during the SMM at Hall B7, Stand 422 from September 3 until September 6, 2024.

The link to both papers can be found below along with a abstract. All publications written by people at SARC are available at https://www.sarc.nl/publications/.

Closing the Gap between Early and Detailed Ship Design Models

Conventionally, ship design and engineering are segregated activities, carried out with different software packages that thus each have their own place, qualities and tools. And consequently, a different data model. As a report on ongoing work to bridge that gap, this paper first explores existing neutral data models and standards employed or considered in maritime applications and concludes that none of these is directly applicable. It continues with describing the requirements and derived abstract data model of the SEUS project and its design and engineering applications. A graph database is identified as a potentially useful tool for SEUS data modelling, and a hands-on experiment confirms this presumption.

Piping Layout Integrated in Ship Design and Stability Assessment

Damage stability assessment in ship design is a well-established area of our trade. However, where originally only a limited number of aspects were involved, gradually more details are included. Notably compartment connections by pipes and ducts etcetera. Combined with a high number of damage cases, in practice this results in a set of computations which is not complex as such, yet complicated by its sheer size. Although in the PIAS ship design software suite quite some dedicated tools are available, those have never been designed to support the requirements from today. In this light the software has been extended with a new system to fully define shape and topology of compartments and their connections. This paper reports on the system design, its application in damage scenarios, and on complications.

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Maritiem Masterplan: Four digitization experts join forces for JMDP

Through the Maritime Master Plan, the maritime sector is getting a significant boost to speed up sustainability. Essential for success in this is a commitment to innovation. Knowledge about and experience with new propulsion technologies, such as methanol, hydrogen and LNG with carbon capture, must be developed. The ambitious plan relies on a digital platform for cooperation and data sharing, the Joint Maritime Digital Platform (JMDP). Also called Digital Collaboration by insiders. But how is this process progressing? Are there opportunities for improvements with techniques such as Digital Twins, Model-Based Systems Engineering (MBSE) or data-driven document management? We put these questions to a newly established partnership of four digital experts from the maritime sector: Jacques Hoffmans, Herbert Koelman, Geert Schouten and Ronald de Vries. Under the name Maritime Digital Masters, they aim to make the JMDP a digital success all at once.

The entire article can be read online in Dutch at https://www.sarc.nl/news/maritiem-masterplan-vier-digitaliseringsexperts-bundelen-krachten-voor-jmdp/