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## The Bucintoro preliminary design: static and hydrodynamic assessment

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The Bucintoro project has been relaunched after years in stand-by under the name of “Bucintoro of the Third Millennium”. Many contributors from Italy and even from France have accepted the challenge with the purpose of building the modern version of the last Bucintoro burned by Napoleon troops at the end of the Venetian Republic. The previous phase of development brought to a business plan aimed at managing the building and management of the new golden vessel. The hull form of the new Bucintoro will be a perfect copy of the historical one with a special double deck galley with a lower deck for 168 rowers seated in four at 21 oars each side and upper deck for authorities, both fitted now with modern systems in order to improve safe navigation. The complete structural scantling drawings with midship section have been already certified by RINA classification society.

After a summary on the age-old history of the vessel and a review of technical issues developed up to certification by RINA, this paper addresses primary static and hydrodynamic topics. To this end, optimal subdivision of internal volumes to comply with intact and damage stability rules as well as theoretical assessment of resistance and powering performance are carried out. Since the Bucintoro will sail in an urban area, in the restricted waters of Venice Lagoon and in natural parks, manoeuvring and hybrid propulsion are of major concern also to cut emissions. All these issues will be theoretically assessed by means of analytical and numerical codes.

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