Michael Schmiechen

3rd, virtual INTERACTION 2017

On trustworthy results of ship powering trials and monitoring

Call for Contributions

Two letters to colleagues

-----Original message-----
From: Michael Schmiechen
Sent: Tuesday, May 2, 2017 2:18 PM
To: Klaus Wagner ; Daniel Wiens ; Dirk Jürgens ; John Hoyt III ; Alexander Landsburg ; Giulio Gennaro ; Heinrich Söding ; Helgi Kringel ; Horst Nowacki ; Jacques Hadler ; Jens J. Kappel ; Jose Falcao de Campos ; Josef Luszcz ; Karsten Hochkirch ; Kuniharu Nakatake ; Luigi Iannone ; Maarten Flikkema ; Mathias Paschen ; Max Steden ; Mehmet Atlar ; Michael Baur ; Michiel Verhulst ; Mitsuhiro Abe ; Naoji Toki ; Neil Bose ; Patrick Hooijmans ; Ramchandra Gokarn ; Ryszard Lech ; Sebastian Uharek ; Serge Sutulo ; Som D. Sharma ; Stefan Krüger ; Tom van Terwisga

Subject: Fw: On trustworthy results of ship powering trials and monitoring

Dear colleagues and friends,

my mail attached on the state of my continued work on ship powering trials and monitoring to members of pertinent ITTC Committees may also be of interest to you.

And I am of course interested in and will be grateful for any substantial comments and criticism you may care to contribute.

With kind regards yours,

Michael Schmiechen.

----- Original message -----
From: Michael Schmiechen
Sent: Tuesday, May 2, 2017 1:40 PM
To: Dominic Hudson ; Sebastian Bielicki ; Sofia Werner ; Masaru Tsujimoto ; G. Grigoropoulos ; Jinbao Wang ; Hironori Yasukawa ; Tae Il Lee ; Koutaku Yamamoto ; Henk van den Boom
Cc: Takuya Ohmori ; Lampros Nikolopoulos ; Steve Ceccio ; Ramon Quereda ; Chenjun Yang ; Lars Greitsch ; Mario Felli ; Jin Kim ; Wentao Wang ; Sakir Bal ; Richard Pattenden ; Hisao Tanaka ; Weimin Chen ; Michael Woodward ; Joel Park ; David Clelland ; Michael Morabito ; Marco Ferrando

Subject: On trustworthy results of ship powering trials and monitoring

3rd virtual INTERACTION

On Applications of the Rational Theory of Ship Hull-Propeller Interactions

Call for Contributions and Tests on Model and Full Scale

Dear Members of the 28th ITTC Committees on Performance of Ships in Service, on Propulsion and on Resistance, and of the ITTC Quality Group!

This mail, following up my mail of June 23, 2016, is intended to draw your attention to the publication of the latest results of my work on further conceptual developments and correspondingly advanced evaluations of my quasi-steady 'model' propulsion trial of 1986.

That test had been performed prior to the quasi-steady METEOR tests in the Greenland Sea 1988 to demonstrate the feasibility of extremely short and efficient quasi-steady trials and monitoring of ship powering performance on model and on full scale.

The METEOR project and its results have been subject of the international workshop 2nd INTERACTION held at VWS in Berlin 1991, attended among others by all Members of the ITTC Powering Performance Committee, the detailed Proceedings to be found on my website.

Retired already twenty years ago I personally can of course not arrange for another 'real' workshop, but only for the 'virtual' exchange of contributions, test results in particular, to be documented on my website.

But maybe sometime not too far from now the ITTC and/or the ATTC

will arrange pertinent sessions. According to my experience the evident problems cannot be 'solved' by ignoring them any longer.

Triggered by the rigorous scrutiny of my colleague Dr. Klaus Wagner and of Daniel Wiens, a master's student of numerical mathematics, who has studied applications of my methods for Voith-Turbo, I have 'finally' finished a satisfactory re-evaluation of the 'model' trial, now hopefully free of any mistakes and bugs.

All details and recent results are conveniently and intuitively documented in seven Mathcad 15.0 worksheets preceded by a corresponding list of appropriate (!) symbols and terminology, altogether published with some explanatory notes in the 'News flash' on my website www.m-schmiechen.de.

The routines developed are now ready to be tested and jointly further to be developed. Quasi-steady trials at any condition are extremely efficient, requiring no extra instrumentations and calibrations. But the use of the advanced numerical and statistical routines developed for the analysis is absolutely mandatory.

Based on a coherent model and coherent data, quickly and cheaply acquired, the procedures avoid most of the serious deficiencies of the traditional conventions and procedures. But after all inexperienced beginners, who do not even know how solve linear equations, should no longer be charged to assess the potential and the merits of my procedures and their state of development.

In this context it is important to remember, that the problem solved is not a mathematical problem. It is a conceptual problem, a matter of conventions. And 'perfect', lasting conventions meeting current purposes and requirements are formal languages, in terms of logics they are axiomatic systems, a term I have 'consequently' used in my inaugural paper of 1980, evidently shying away my traditionally trained, not to say 'indoctrinated' colleagues.

For ready reference the following short abstract provides another summary of the current state of my research and developments, hopefully in an easily digestible language. Further abstracts for any 'taste' and discussions concerning any related question have been published on my website whenever felt appropriate and in time.

Now I am looking forward to your substantial contributions to the solution of any remaining problems and, hopefully, to results of tests on model and/or full scale. Students' exercises based on simulated data are definitely of no use, except to 'confirm', not to say 'validate', widely

entertained prejudices concerning the traditional and rational conventional approaches and the comparison of their 'results', as I have discussed and published in detail years ago.

With kind regards yours,

Michael Schmiechen.

PS. Another short executive abstract

PREAMBLE: In his 'Unended Ques ' of 1974 Karl Popper noted: " ... always remember that it is impossible to speak in such a way that you cannot be misunderstood: ... If greater precision is needed, it is needed, because the problem to be solved demands it." Therefore it has always been good professional practice not only to listen to the 'words' of an author, but to look at his 'works', to what he has actually done.

Proving predictions of the powering performance of ships based on physical and/or numerical experiments on model and full scale constitutes a fundamental problem of ship theory. But although being of utmost interest and importance for further theoretical developments and for far reaching decisions of clients, the community concerned has left this problem to traditionally trained practicians.

Thus it is still treated, and even standardised by ITTC, ISO and IMO

(despite being seriously error prone as demonstrated and documented well in time), in the inherited interpretation of Froude's conceptual frame work, inadequate and insufficient for today's purposes.

In view of trustworthy full scale trials and monitoring of the powering performance my own goal since 1980 has been to develop robust methods getting along without reference to any prior data, in particular those resulting from hull towing and propeller open water tests, impossible under full scale service conditions.

The rational evaluation of traditional steady trials, based on the reliable identification of the prevailing currents and the propeller performance in the behind condition, requiring only the solution of a set of linear equations (!), has been developed to maturity since 1992. The analyses of two very delicate trials have been documented in every detail in the first two volumes of the Festschrift of 2013 and 2014, respectively, commemorating the METEOR project.

This method applied to the ten (!) stationary states passed during the quasi-steady 'model' trial of only two (!) minutes duration permitted to identify the propulsive efficiency and thus the resistance of the model at steady conditions. But to arrive at the hull-propeller interactions and the partial efficiencies turned out to take much more brain power I had expected.

Only after abandoning my naive prejudices concerning the solution of non-linear problems and forgetting my ill-defined optimum problem and avoiding any further rash jumps to conclusions, I found a reliable way to identify the thrust deduction fraction. For routine applications the simple minded procedure published will of course have be replaced by a further advanced procedure. [The originally intended iterative procedure turned out to suffer from lacks of transparency and stability.]

Together with the resistance identified this result substantiates my earlier enthusiastic, in hindsight premature claim, that even measurements of thrust, full scale routinely impossible anyway, are not necessary reliably to evaluate the powering performance of ships on model scale and on full scale at any service conditons.

Berlin, May 02, 2017.