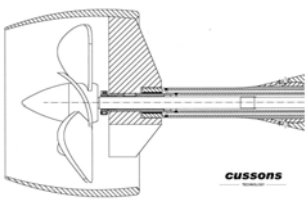


**Cussons develops an all-new Open Water Propeller Dynamometer**

Cussons Technology has developed the all-new low-noise H150 to meet the increasing demand for a single device capable of carrying out a number of different open-water propeller tests, including for single or contra-rotating propellers or ducted pump jet systems, with the option of an integrated Six-Component Balance. With full independent control over each motor, the H150 can also be used for the development of pump-jet propulsion systems, measuring the torque and thrust of a duct fitted to one output shaft, whilst a propeller is fitted to the other.

**Modular Design**

The product is based on a modular design approach, which permits a broad range of options to be offered including variants for a single propeller, or two propellers with or without an integrated six-component balance if required. The innovative nature of the design incorporates one or two integrated drive motors within the gondola, thus removing the requirement for external drive arrangements including shafts and gearboxes, which are complicated and an obvious source of noise.



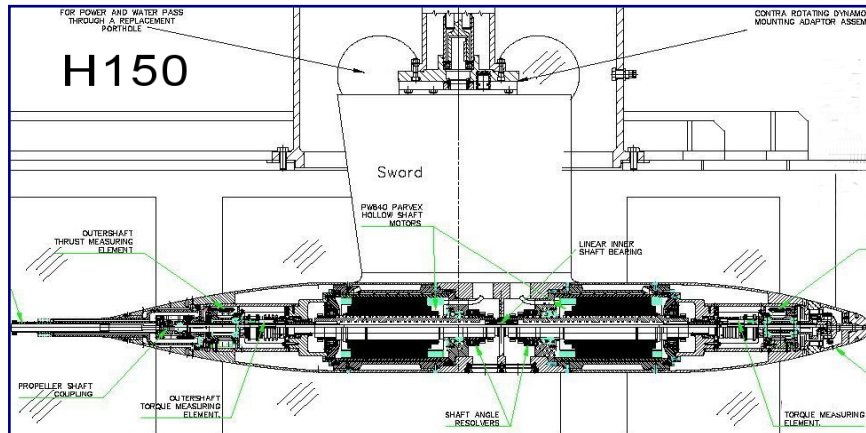
*Pump-Jet tests – An illustration of how the H150 may be used*

**Integrated Drive Motors with no gearing lead to low-noise solution**

As can be seen in the illustration on this page, the integrated motors installed within the gondola drive directly to the propellers, thus minimising the number of moving parts within the gondola to only two. Furthermore, a telemetry system option is available for Torque measurement, thus removing a further source of generated noise, which originates from the slip rings traditionally associated with the torque and thrust measurement equipment. The standard measurement ranges of the H150 are: Torque: 30Nm and Thrust: 600N, although alternative ranges can be manufactured to meet a customer's precise requirements.

The H150 range of Open Water Propeller Dynamometers has been developed to meet a range of research test requirements, including:

- *Single Open Water propeller tests;*



- *Ducted (pump jet) propulsion system tests;*
- *Contra-rotating Open Water propeller tests;*
- *Contra-rotating propeller or ducted propulsor tests with coincidental force and moment measurements.*



*Not a torpedo - The Gondola of the H150*

**An adaptable strut designed by the customer!**

The height of the Sword (Strut) can be specified by the customer and be manufactured and fitted to the gondola with convenient connections to allow easy removal to facilitate access into confined areas such as the airlocks into depressurised Towing Tank buildings.

**Modular Design allows future expansion**

The H150 has been designed in modular form for use either within a Cavitation Tunnel or aboard a Towing Carriage. This permits a customer initially requiring only a basic single shaft, single motor version to develop the system later by adding additional components, so as to increase the capabilities to that of a more highly specified version. As mentioned before, the inclusion of integral motors into the gondola is an important feature of the new H150

design, greatly simplifies the transmission of power to the output shafts and reduces the number of moving parts (and thus generated noise) considerably. Furthermore, unlike earlier versions of K&R designed Open Water Propeller Dynamometers such as the H29, H39, H49 and H50, there is no transmission drive gearbox within the gondola, thus also eliminating a major source of transmitted noise.

**H150 – A cost-effective adaptable tool for any ship-model basin**

With its modular design and flexible and wide-ranging functionality, the H150 is a very desirable piece of equipment for any ship-model basin involved with open water propeller and pump-jet system testing. For use aboard a Towing Carriage or within a large Cavitation Tunnel, the H150's modular design means that it can originally be supplied in basic form, but later expanded to meet a much wider range of applications as purchasing funds become available. The H150 is far more than any one previous product, but can be obtained for a budget far less than the sum of all the products it replaces. It is definitely more affordable than you think – please e-mail for budget prices and a full Product Description.

**New Low-Cost Range of Educational Equipment Introduced**

Cussons Technology has recognised the market demand for a new range of hydrodynamic equipment and instrumentation of the kind traditionally used in the Marine Engineering and Naval Architecture departments of technical universities. In our design brief for the new range, our customers told us that the following key features were essential:

- *Ease of use;*
- *Easy and quick installation;*
- *Low cost and affordable;*
- *Consistency of test results;*
- *Where appropriate - Integrated data capture;*
- *Where appropriate – Battery powered.*

To meet this demand, the company developed the new range of equipment to demonstrate the principles on which marine hydrodynamic research is based, and to facilitate experiments for undergraduate and postgraduate courses. The innovative nature of these educational products later permits upgrading to facilitate use in support of more advanced student projects or full research activities.

This new range of educational products includes an all-new ship-model propulsion module incorporating motor, shafting, stern tube and Torque and Thrust measurement features. We do not believe that a product of this type has ever been offered before.

Other equipment in the Educational Range includes:

- *Towing Carriage;*
- *A Ship Model designed for Self Propulsion and Resistance tests;*
- *A ship model designed for carrying out tests to demonstrate hull hogging and sagging, and the effects of wave action on hull strength;*
- *A ship model with features for demonstrating and calculating stability characteristics;*
- *A tilting Flume incorporating wave making equipment.*

We are continuing to develop this range of products and are very interested in what our customers can tell us with respect to their educational needs. Are you a lecturer involved in undergraduate and postgraduate education? If so, please e-mail us with your ideas and wish-lists and we will do all that we can to help with the product of your needs.

#### **Educational Ship-Model for Stability Tests and Calculations**

A design is also being developed for a stability ship-model, to provide a means of demonstrating the effects on a ship's stability of damage, flooding and cargo movements. This model will also be suitable for demonstrating the functionality of passive stabilizer tanks and also allow students to calculate stability curves from simple experiments.

#### **Cussons Podded Propeller Dynamometer**

The Cussons Technology H101 Podded Propeller Dynamometer has now been in service for over two years and is providing reliable and effective service for a number of customers. The system, originally developed in co-operation with HSVA in Germany was primarily designed for Towing Tank Open Water propeller tests, although

now being increasingly being used within Cavitation Tunnels.

Do you work in the area of podded propulsion systems or does your organisation need such a piece of kit? Why not e-mail us with your requirements, and details of any special modifications you would want incorporated into the dynamometer to meet your unique research requirements?



*H101 Podded Propeller Dynamometer*

#### **New range of small Propeller Dynamometers**

As a spin-off from the H101 system, a range of Propeller Dynamometers for installation into smaller ship-models has been developed. Although single propeller versions are only currently available, future variants are expected to be suitable for single, double or contra-rotating propeller applications. Suitable drive motors with variable speed controllers and digital readouts for thrust and torque will also be available to complement this new range.

#### **Focus on Accuracy & Consistency - Cussons launch a new dynamic Propeller Dynamometer testing service for less than £2k**

Accuracy and Consistency, as we all know, is the key to effective ship-model testing and getting results that can be confidently used in full-scale ship design is essential.

How better therefore than to ensure that your dynamometers, some of which may have been in service for decades, are subjected to dynamic calibration using Cussons Technology's all-new test facilities? The new service is to be introduced from early 2004. Customers will then be able to send their dynamometers to our factory for calibration, or a full health check and condition report, and be dynamically calibrated as part of either process. Our prices start at less than £2k per unit - a small price for peace of mind!

Dynamometers being serviced or repaired will also be dynamically calibrated before being returned to their owners.

#### **Wide range of equipment and instrumentation**

Cussons Technology is one of the leading suppliers of hydrodynamic research equipment and instrumentation in the world today, and can almost certainly meet the

requirements of most ship-model basins. Our team of designers have considerable experience of developing innovative new products to meet the demands of our clients and are always ready to meet new challenges. With new products regularly being introduced into both the educational and K&R ranges, we are certain that we can offer our new and existing clients the right product for the job at a competitive price, particularly when compared with the cost of in-house design and development.

We are prepared to work with your own designers to develop the product of your wishes, so why not give us a try?



*N08 Wake Rake System*

#### **Cussons looks forward to hearing from its customers past, present and future**

We would like to hear from you and to learn more about your future equipment requirements and projects. Please do not hesitate to get in touch with either Shaun Ross or myself by e-mail, telephone or fax to any of the numbers below. Please also take the opportunity to come and meet us should you be visiting UK and be able to come to see us in our new offices in Froude Building, at the Haslar Marine Technology Park. We look forward to hearing from you.

With our kind regards,

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