

## Svensson Bolennarth

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**Ämne:** Simple designs and separate technical unit.

Dear Experts of the IWG-R55,

I have been thinking a bit on the items that we have in our list for work in the IWG\_R55. In particular I have put some thoughts in to the items on defining simple designs and separate technical units. Whatever you do on these items it becomes fairly involved.

A thought that came to my mind would be to turn the issue around asking for verified calculation methods. Hence I challenge you with a new approach.

This could be set up like this:

Any manufacturer that intend to use calculation methods as the basis for approval and certification shall have a certified design and calculation method for that specific structural layout and complexity.

The verification of the design and calculation methodology used shall be executed by a technical service having the accreditation to verify these calculation based procedures.

The verification shall be done in three steps.

1. The first step is to have the design and calculation process documented and assessed by a technical service. The process shall include a standardized and internationally recognized fatigue assessment method. The safety margins applied shall be part of the verified process.
2. The second step is to document the design and perform the calculations. The documentations including the calculation results are then sent to the technical service. The design chosen within the set structural layout shall by the technical be judged as a worst case.
3. The third step is to have two specimens of the actual structure fatigue tested in compliance with the requirements of the regulations 55. This step three may not be started before the second step is completed.

When both of the specimens pass the fatigue test the calculations based procedure is approved for that particular structural layout.

Following this verification of the procedure consecutive designs are approved following a two-step procedure:

1. The design is cleared with the technical service to be of the same structural layout for which a verified procedure exists.
2. Then the documentation including the calculation results from all major steps are sent to the technical service for approval of the new variant.

The technical service per se shall be accredited to verify calculations based procedures. This accreditation task can be assigned to a classification society like "Det Norske Veritas" (DNV). DNV has worked with verified calculation based approval procedures for a very long time.

With a procedure like this in place it shall be postulated that a drawbar is always a separate technical unit. For the purpose of verification of a calculation based procedure for drawbars it should be stipulated that drawbars shall be fatigue tested under the same boundary conditions as is mandated for drawbeams.

In cases where the drawbar is constituted as a continuous material from the trailer frame the drawbar shall be judged to end in line with the forward end of the loading area of the trailer. In such cases a part of the trailer frame may be included in the test sample to enable a fair boundary condition in testing.

Your comments are most welcome.

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