Active control in cable-stayed bridge

Irawan Tani, author

Abstrak

Studying about cable stayed bridge become trend in the last few years. Since the improvement of the material technology and the need of longer bridge so the cable stayed bridge become more important in the last few years.

Since the span become longer, so the structure will become more flexible and external load such are traffic, wind, rain and earthquake become more significant to the structure. When the displacement of the deck will increase, it will make uncomforting for human. Many scientists and engineers try to make a control of cable stayed bridge, so that the response will become safety and good for human comfort also.

In this study we try to simulate the model from experiment to the behavior of the cable stayed bridge itself. We also try to control the response of the structure. This control that we have done must be realistic and easy to use.

In fact with computer simulation we can do such sophisticated control, but the main problem if it's not applicable the control that we use become useless, otherwise it will be dangerous also if we get a result in reality far from out simulation.

So in this study we do simple control to cable stayed bridge, and do some test that could be realistic in the reality. The sag of the cable is big and it will make a non linear effect. We do some analysis of cable stayed bridge in ANSYS 5.5.3 and do control simulation in SIMULINK by catching the static non linear result from ANSYS 5.5.3.

The simulation that we done here to see the effectives of the control in many cases. We can be sure that the control is good if we get a good solution with the control of the structure.