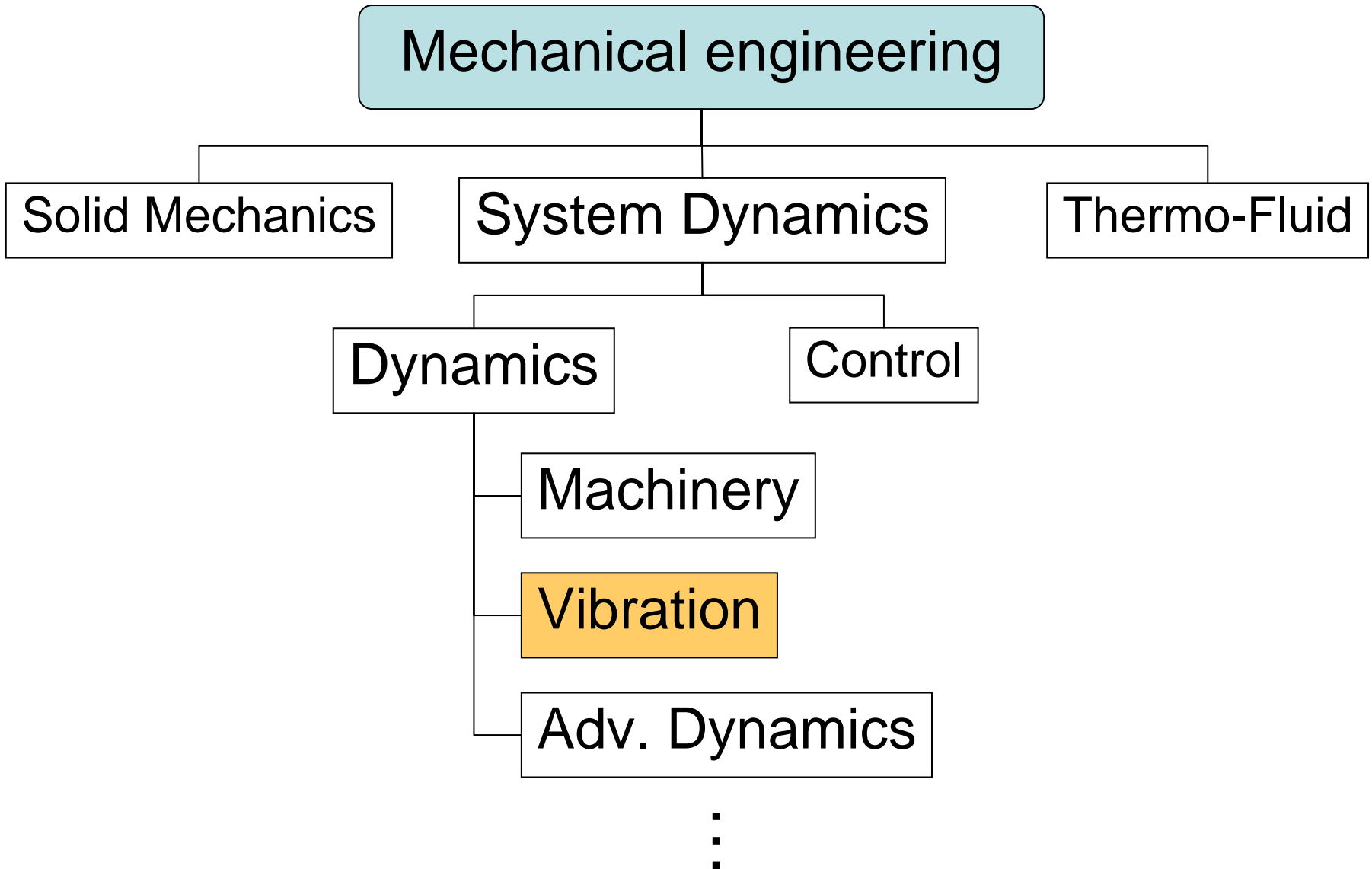


2103433 Introduction to Mechanical Vibration

อ.ดร.นภคณัย อาชวาคม (NAV)

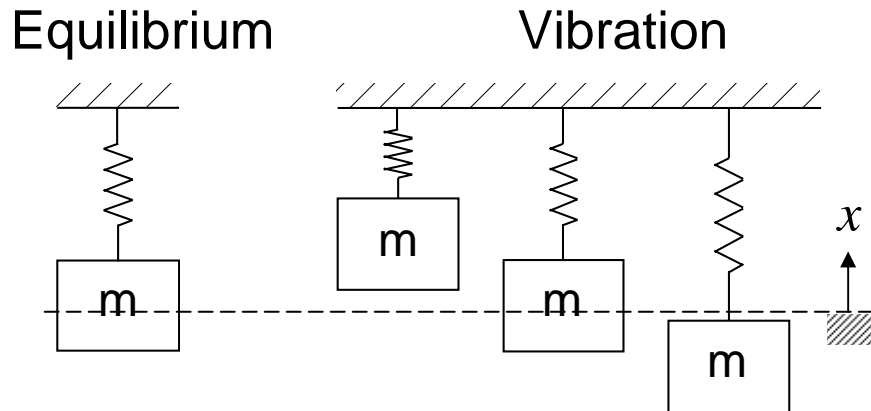
อ.ดร.ชนัตต์ รัตนสุมาวงศ์ (CRW)

Road Map

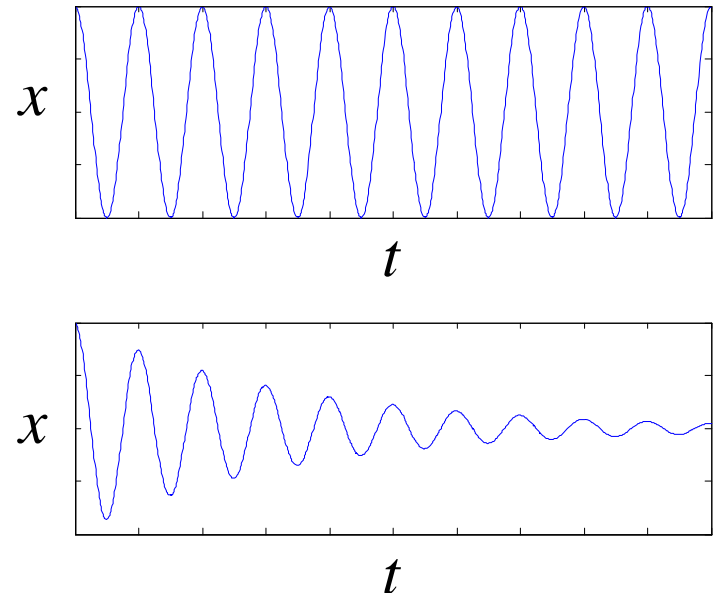


What is vibration?

Vibration is the study of the repetitive motion of objects relative to a stationary frame of reference or nominal position.



vibration waveforms



Importance of the study of vibration (1)

Automobile

- Engine
Engine balancing
- Transmission
Gear noise & Vibration
Gear and Gearbox design

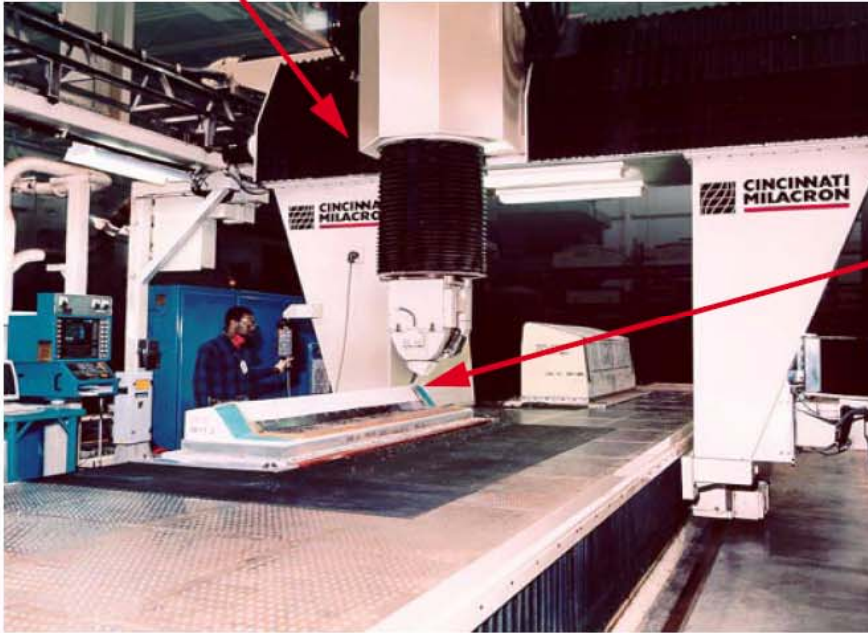
- Ground
Suspension system



Importance of the study of vibration (2)

Machine Tools & Metal Cutting

Vibration in Machine Tool Structure



Vibration Isolation in Foundation



Chattering Vibration in Tool Spindle

Importance of the study of vibration (3)

Agricultural machine

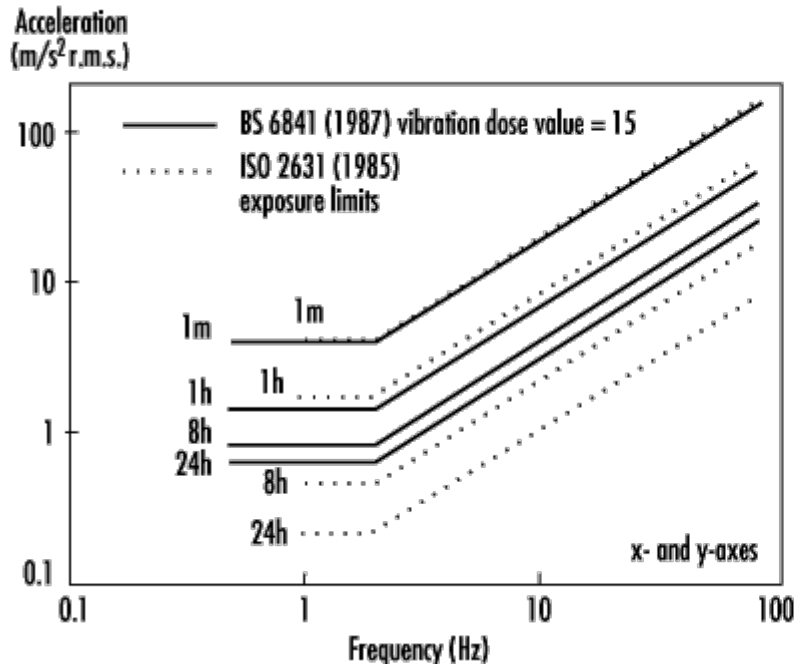


- Vibration comes from
- Blade resistant force
 - Engine & Power transmission

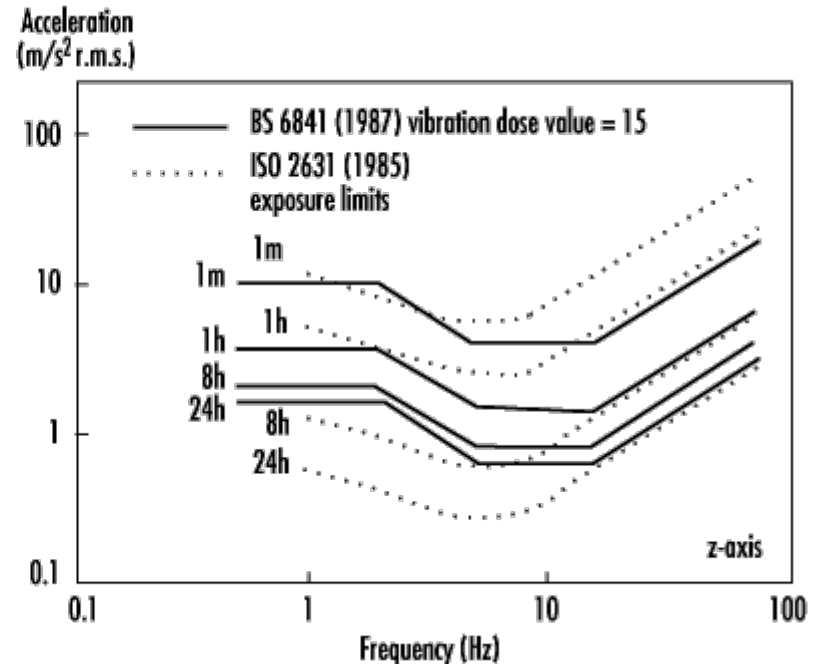
- Vibration is directly transmitted to the operator
- Health-problem
 - Working efficiency

Importance of the study of vibration (4)

Vibration and human tolerance



Transverse & lateral



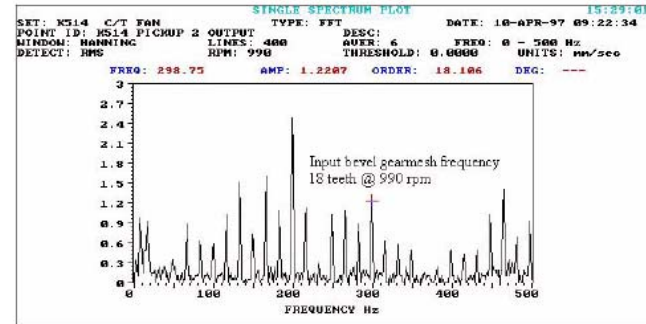
Vertical

Importance of the study of vibration (5)

Machinery Diagnosis



Vibration spectrum

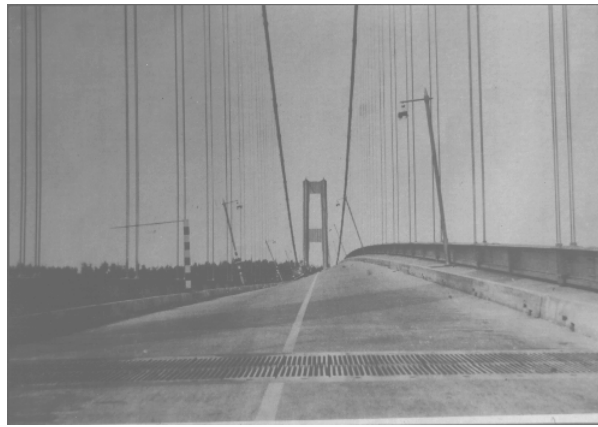
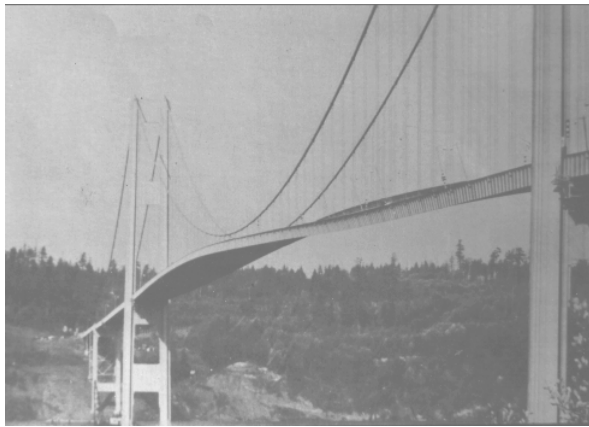


Gearbox Vibration Monitoring



Importance of the study of vibration (6)

- Structure**
- Wind excitation
 - Earthquake



Tocomo Bridge
Nov.7, 1940