CONVEYORS

By Assistant lecturer: Omer H. Kanam
College of Petroleum and Mining Engineering
Mining Department-III-CLASS
University of Mosul
LEC. NO. 4 ,5,6

CONVEYORS
LECTURE-5
PART-II

2. CHAIN CONVEYOR

- It means a group of different types of conveyors used in diverse applications, characterized by one or multiple strands of endless chains that travel entire conveyor path, driven by one or a set of sprockets at one end and supported by one or a set of sprockets on the other end.

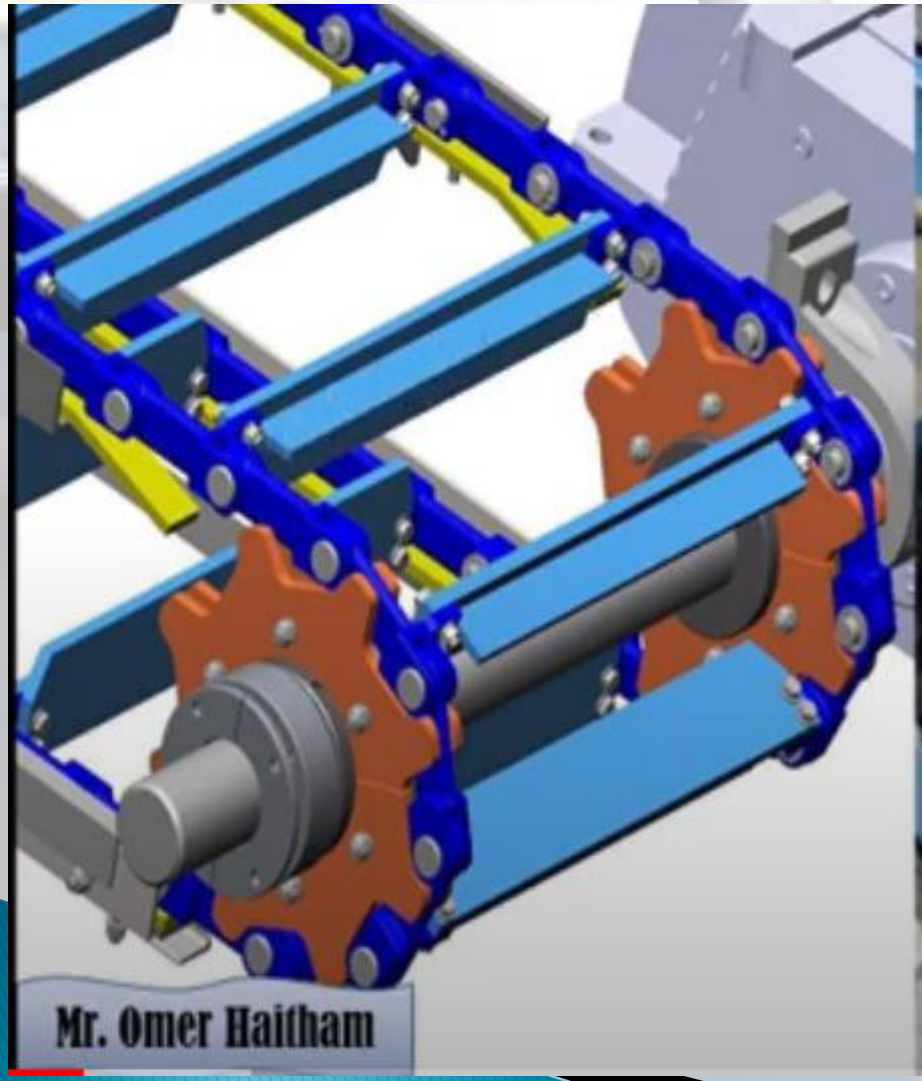
2. CHAIN CONVEYOR

- **Advantages**
- 1. Easily wraparound sprockets of small diameter.
- 2. no slippage takes place between chain and sprocket.
- 3. The chain stretch is also little.
- **Disadvantages**
- high weight,
- high initial cost,
- higher maintenance cost
- limited running speed
- Maximum length and maximum lift of chain conveyors are limited by the maximum allowable working tension of the chain used.

2. CHAIN CONVEYOR TYPES

- 1. Apron or pan
- 2. Slat
- 3. Cross-bar or arm
- 4. Car type/pallet
- 5. En-mass
- 6. Carrier chain and flat-top
- 7. Trolley 8. Power and free
- 9. Suspended tray or swing-tray

2. CHAIN CONVEYOR TYPES



2. CHAIN CONVEYOR TYPES

2. CHAIN CONVEYOR TYPES

2. CHAIN CONVEYOR TYPES

2. CHAIN CONVEYOR TYPES

- **Applications**
- large quantities of bulk load such as coal, ore, slag, rock, foundry sand etc.
- unit loads, coils, hot forgings
- conveying and elevating or lowering unit loads like barrels, drums, rolls, bags, bales, boxes etc.
- heavy or irregular shaped large objects like moulds in foundries, coils for rolling plants etc.
- Handling conveyors in the arrival section of an airport
- Movement in Three dimensional and easily adopted to changes in the direction.

2. CHAIN CONVEYOR TYPES

- **Structure**
- (*i*) Pulling chain,
- (*ii*) Sprocket to drive and support the chain,
  (*iii*) Take-up arrangement,
- (*iv*) Drive arrangement,
- (*v*) Various other components specific to various type of chain conveyors.

2. CHAIN CONVEYOR TYPES

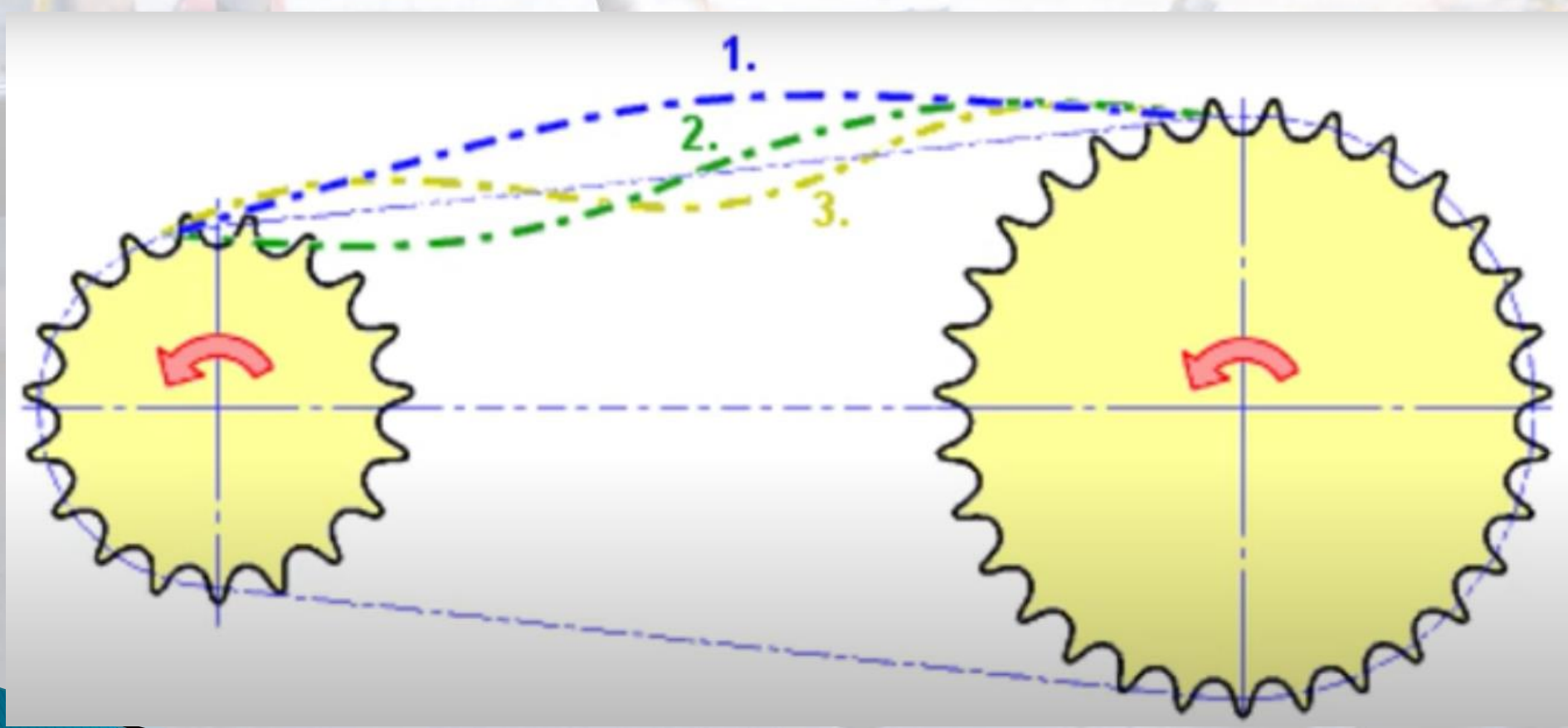
- **Aspect of Design**

- *(a)* **Dynamic Phenomena in Chain Conveyors**
- **Chordal Action**
- (*b*) **Chain Pull and Conveyor Horsepower**
- The entire weight of materials and the moving parts of a chain conveyor is pulled by the chain or chains employed. It is, therefore, important to calculate the tension of each chain and select the chain with adequate strength to work safely under the working pull.

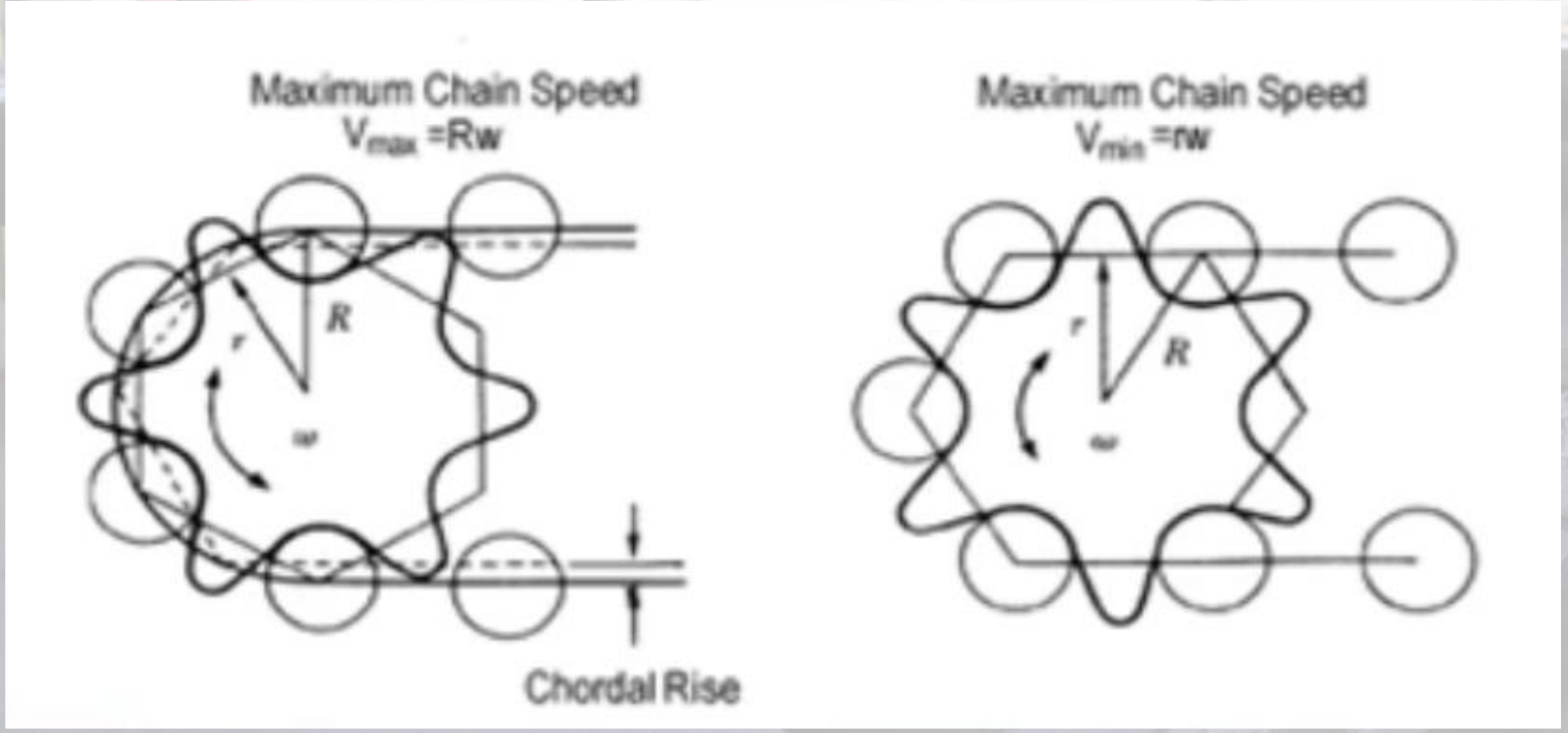
2. CHAIN CONVEYOR TYPES

- **Chordal Action**
- Chain and teeth fluctuates
- Chain vibrates with fluctuation
- Increasing no. of teeth decreasing the vibration
- Hight of engagement differs when chain engaged in a tangent position
- Chain speed is not steady according to a ratio of the sprocket radius with chordal action
- Ratio of speed change= (Vmax-Vmin)/Vmax
  = 1-cos(180/N)

2. CHAIN CONVEYOR TYPES



2. CHAIN CONVEYOR TYPES



2. HAULAGE CONVEYORS

- is a special group of chain conveyors. As the name implies, the material is dragged, pushed or towed by means of a chain or chains, making use of flights or surfaces which are parts of the chain themselves.

- (A special class of chain conveyor in which load is pushed or pulled and weight is carried by stationary troughs, surfaces or rail.)

2. HAULAGE CONVEYORS

- Characteristics
- the material is generally carried by stationary troughs, surfaces, or wheeled trucks/dollies on rails/floor.
- the chain may be replaced by cables.
- Run at slow speed (15 to 60 mpm)
- built for heavy duty
- need little maintenance.
- work in one direction only.

2. HAULAGE CONVEYORS

- Types
- 1. drag chain
- 2. flight
- 3. tow
- (a) over-head
- (b) flush-floor
- (c) under-floor

2. HAULAGE CONVEYORS

- Types
  - Drag Type
  - Flight Type

2. HAULAGE CONVEYORS

- Types

- Overhead Type

Flush Type

2. HAULAGE CONVEYORS

- Applications

- Bulk materials,
- Hot materials, (transferring hot steel sections)
- Abrasive materials,
- Logs/timber,
- Packages,
- Moving car assembly,
- Handling refuse materials like clinkers,
- Handling coal, ashes, sand, ore, wood chips,
- Handling of unit loads like boxes, barrels, crates, cartons,
- Moving automobiles, wash racks


End of Part-II