Ex. No. 2 - SIMULATION ANALYSIS ON SLIDER CRANK MECHANISM

DATE: 21-04-2025

AIM:

To determine & simulate the displacement & velocity analysis for the given slider crank mechanism.

An engine mechanism is shown. The Crank CB = 200mm and the connecting rod BA = 600mm. In the position shown, the crankshaft has a speed of 50 rad/s and an angular acceleration of 800 rad/s2

REQUIREMENTS:

- Mech Analyzer software.
- Processor: Minimum 1.5 GHz
- RAM: Minimum 512 MB
- Operating System: Windows XP, Windows Vista, Windows 7, Windows 8 or higher.
- Dependencies: Microsoft .Net 2.0 framework
- Mini Drafter.
- Geometry instruments.

PROCEDURE:

Configuration diagram

Assume scale 1:10

1. Draw a horizontal line and locate C

2. At C, draw CB of length 20 mm inclined at 120°

3. With B as centre, BA 60mm, draw an arc to cut the horizontal at A. Join BA to complete the configuration diagram

$$v_B = 50 \times \frac{200}{1000}$$

Velocity diagram

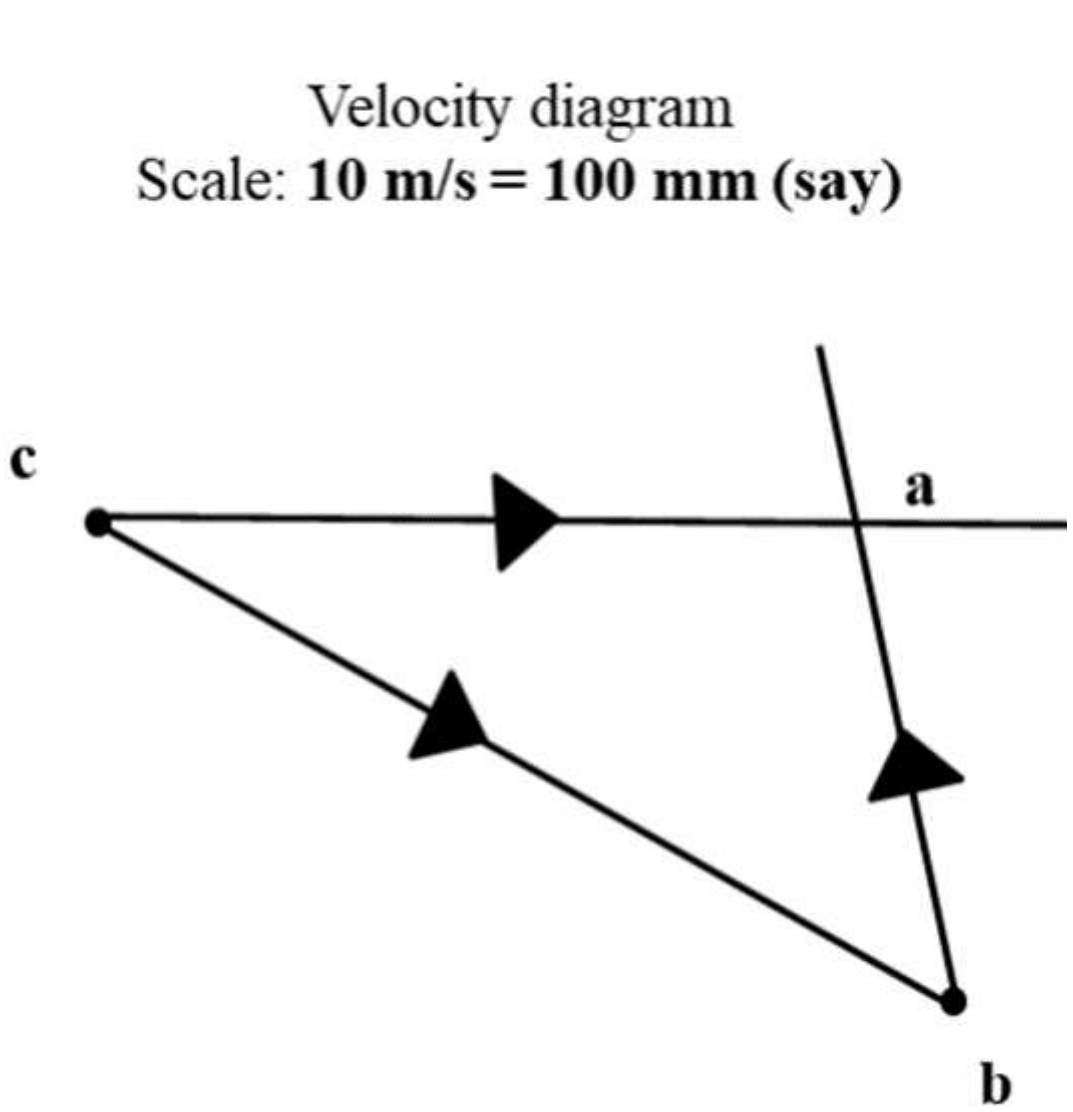
Scale: 10 m/s = 100 mm (say)

1. The fixed point C appears as a stationary point in the velocity diagram

2. Draw the vector bc of length 100 mm, perpendicular to the crank CB from the configuration diagram

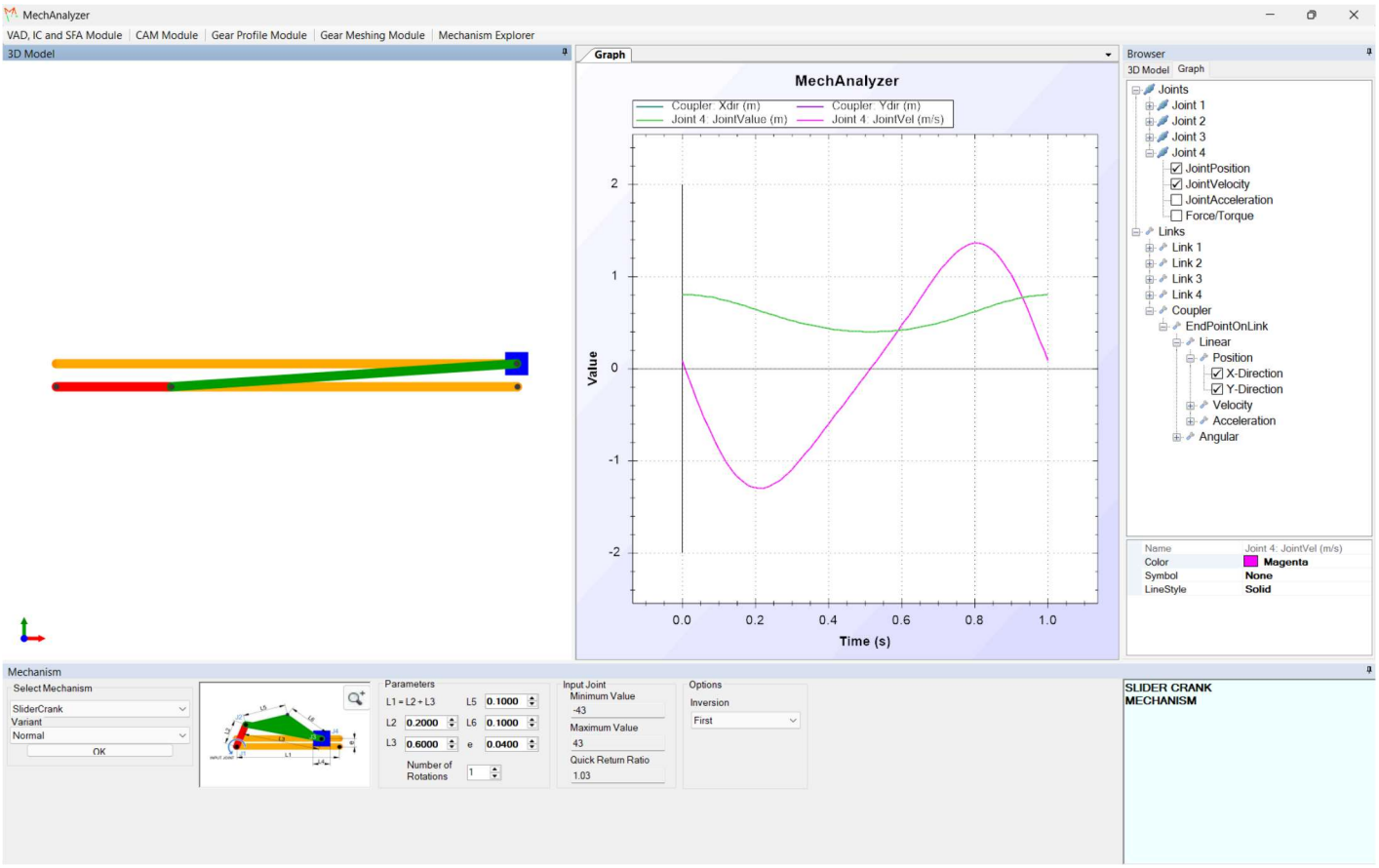
3. At b, draw a projection line perpendicular to AB from the configuration diagram

4. Draw a horizontal at c, meeting the projection from b at a. join ca to complete the velocity diagram.

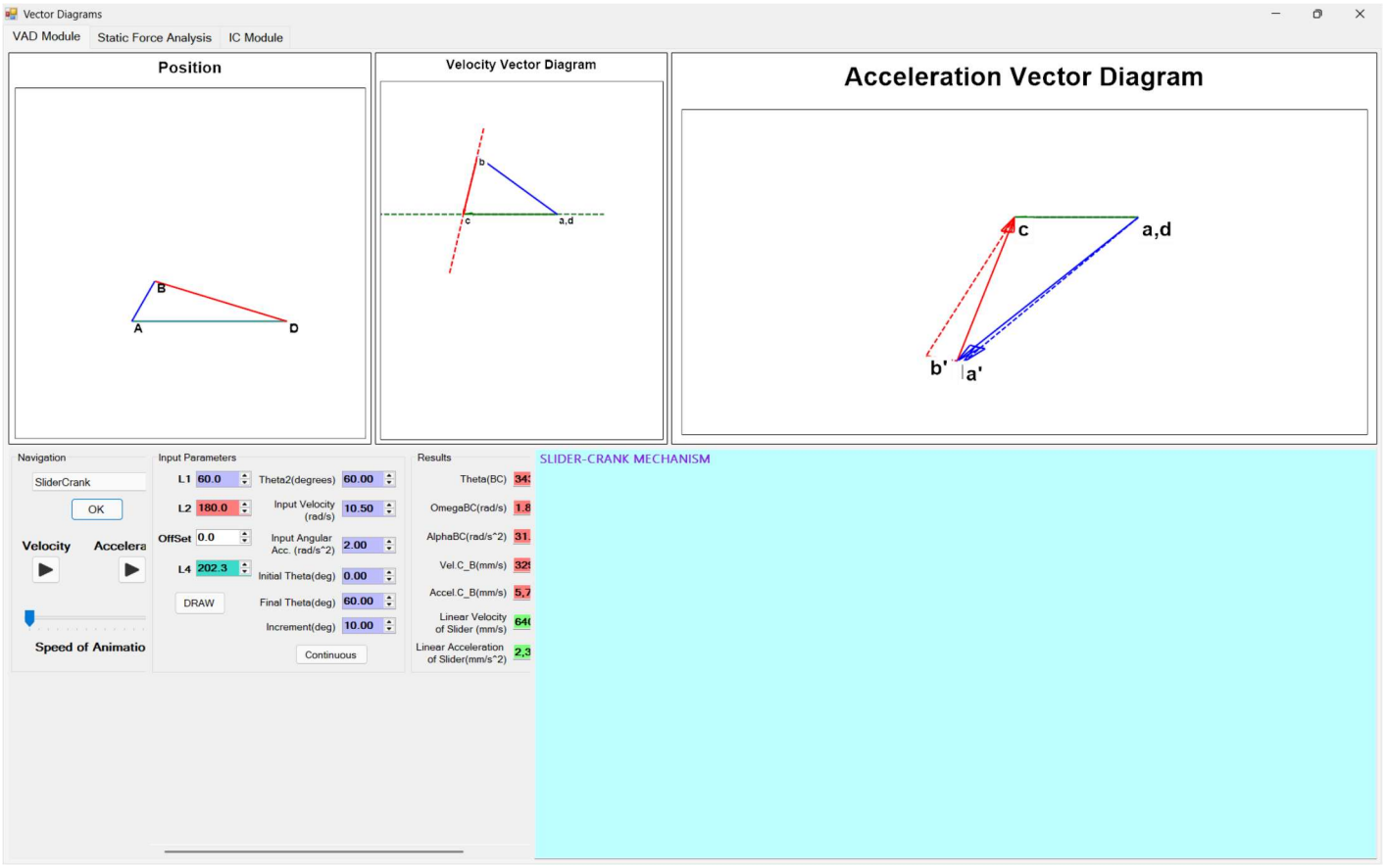


Output

MechAnalyzer Graph



VAD, IC and SFA module



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RESULT:

Thus the displacement & velocity analysis for the given four bar chain mechanism is simulated.