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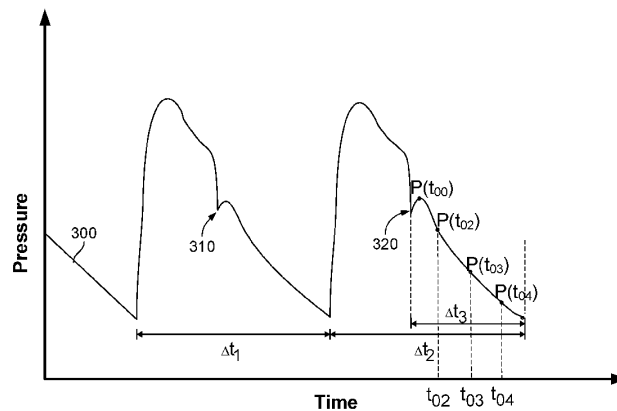


FIG. 3

(57) Abstract: The systems and methods described herein determine metrics of cardiac or vascular performance, such as cardiac output, and can use the metrics to determine appropriate levels of mechanical circulatory support to be provided to the patient. The systems and methods described determine cardiac performance by determining aortic pressure measurements (or other physiologic measurements) within a single heartbeat or across multiple heartbeats and using such measurements in conjunction with flow estimations or flow measurements made during the single heartbeat or multiple heartbeats to determine the cardiac performance, including determining the cardiac output. By utilizing a mechanical circulatory support system placed within the vasculature, the need to place a separate measurement device within a patient is reduced or eliminated. The system and methods described herein may characterize cardiac performance without altering the operation of the heart pump (e.g., without increasing or decreasing pump speed).

[Continued on next page]

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