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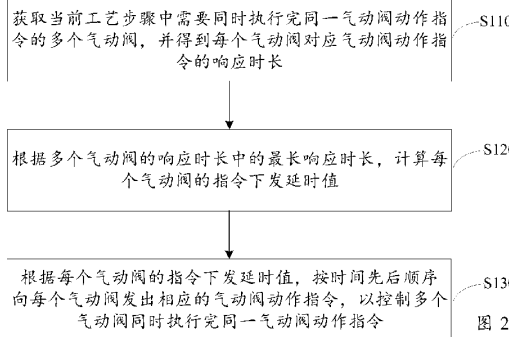
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(54) **Title:** SEMICONDUCTOR PROCESS DEVICE AND PNEUMATIC VALVE CONTROL METHOD THEREFOR

(54) 发明名称: 半导体工艺设备及其气动阀控制方法



S110 Acquire a plurality of pneumatic valves in the current process step that need to simultaneously execute the same pneumatic valve action instruction, and obtain a response duration of each pneumatic valve that corresponds to the pneumatic valve action instruction.
S120 According to the maximum response duration from among response durations of the plurality of pneumatic valves, calculate an instruction issuance delay value of each pneumatic valve
S130 According to the instruction issuance delay value of each pneumatic valve, send the corresponding pneumatic valve action instruction to each pneumatic valve in chronological order, so as to control the plurality of pneumatic valves to simultaneously execute the same pneumatic valve action instruction

图 2

(57) **Abstract:** The present application belongs to semiconductor process technology. Disclosed are a semiconductor process device and a pneumatic valve control method therefor. The pneumatic valve control method comprises the following steps: acquiring a plurality of pneumatic valves in the current process step that need to simultaneously execute the same pneumatic valve action instruction, and obtaining a response duration of each pneumatic valve that corresponds to the pneumatic valve action instruction; according to the maximum response duration from among response durations of the plurality of pneumatic valves, calculating an instruction issuance

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delay value of each pneumatic valve; and according to the instruction issuance delay value of each pneumatic valve, sending the corresponding pneumatic valve action instruction to each pneumatic valve in chronological order, so as to control the plurality of pneumatic valves to simultaneously execute the same pneumatic valve action instruction. The technical solution can well realize the simultaneous opening or simultaneous closing of a plurality of pneumatic valves, and ensure that process gases can synchronously enter a process chamber, such that the process gases can be fully reacted in the process chamber, thereby improving the process quality of an entire process while greatly improving the utilization rate of the process gases.

(57) 摘要: 本申请公开了一种半导体工艺设备及其气动阀控制方法, 属于半导体工艺技术。该气动阀控制方法包括以下步骤: 获取当前工艺步骤中需要同时执行完同一气动阀动作指令的多个气动阀, 并得到每个气动阀对应气动阀动作指令的响应时长; 根据多个气动阀的响应时长中的最长响应时长, 计算每个气动阀的指令下发延时值; 根据每个气动阀的指令下发延时值, 按时间先后顺序向每个气动阀发出相应的气动阀动作指令, 以控制多个气动阀同时执行完同一气动阀动作指令。本技术方案, 其可很好地实现多个气动阀同时开启或同时关闭, 确保工艺气体能同步进入工艺腔室, 以在工艺腔室中得到充分反应, 进而大大提升工艺气体的利用率的同时, 提高整个工艺过程的工艺质量。