$$\Delta P_{Gw1} = \Delta P_{dw1} \times \frac{1}{1+sT_{wD1}} \times K_{w1}$$

$$\boxed{\frac{\Delta P_{Gw1}}{\Delta P_{dw1}} = \frac{K_{w1}}{1+sT_{wD1}}} \rightarrow \mathrm{I}$$

$\Delta P_{Gw1} + s\Delta P_{Gw1} T_{wD1} = K_{w1} \times \Delta P_{dw1}$

$\Delta P_{Gw1} + d(\Delta P_{Gw1}) T_{wD1} = K_{w1} \times P_{dw1}$

$$\boxed{d(\Delta P_{Gw1}) = \frac{+K_{w1} P_{dw1}}{T_{wD1}} - \frac{\Delta P_{Gw1}}{T_{wD1}}}$$

$\boxed{\Delta \dot{P}_{Gw1}}$ $\boxed{P_{dw1}}$ $\boxed{\Delta P_{Gw1}}$

26

$$[\Delta \dot{P}_{Gw1}] = \begin{bmatrix} \frac{K_{w1}}{T_{wD1}} & -\frac{1}{T_{wD1}} \end{bmatrix} \begin{bmatrix} \Delta P_{dw1} \\ \Delta P_{Gw1} \end{bmatrix}_{26}$$

$\boxed{\Delta P_{dw1} \text{ belongs to } C}$

$\boxed{\Delta P_{Gw1} \text{ belongs to } A \ B}$

(1')

$$\begin{bmatrix} \Delta \dot{P}_{Gt1} \\ \Delta \dot{P}_{Rt1} \\ \Delta \dot{X}_{Gt1} \end{bmatrix} = \begin{bmatrix} -\frac{1}{T_{r1}} & \frac{K_{r1}}{T_{r1}} - \frac{K_{r1}K_{t1}}{T_{t1}} & \frac{K_{r1}K_{t1}}{T_{t1}} \\ 0 & -\frac{1}{T_{t1}} & \frac{1}{T_{t1}} \\ 0 & 0 & -\frac{1}{T_{g1}} \end{bmatrix} \begin{bmatrix} \Delta P_{G1} \\ \Delta P_{R1} \\ \Delta X_{G1} \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ \frac{1}{T_{g1}} \end{bmatrix} \Delta P_{C1} + \begin{bmatrix} 0 \\ 0 \\ -\frac{1}{R_1 T_{g1}} \end{bmatrix} \Delta F_1$$

$\leftarrow a_{61}$

ΔP_{Gt1} output

should be present in A matrix itself

$\Longrightarrow \Delta F_1$ is also an output at later stage

$$
\begin{array}{c} 7 \\ 8 \\ 9 \end{array}
\begin{bmatrix} \Delta \dot{P}_{Gh1} \\ \Delta \dot{X}_{h1} \\ \Delta \dot{X}_{RH1} \end{bmatrix}
=
\begin{array}{ccc} 7 & 8 & 9 \\
\left[\begin{array}{c} -2/T_{W2} \\ 0 \\ 0 \end{array}\right. &
\begin{array}{c} \left(\dfrac{2K_{h1}}{T_{W1}} + \dfrac{2K_{h1}}{T_{Gh1}}\right) \\ -\dfrac{1}{T_{Gh1}} \\ 0 \end{array} &
\left.\begin{array}{c} \left(\dfrac{2K_{h1}T_{R1}}{T_{Gh1}T_{RH1}} - \dfrac{2K_{h1}}{T_{Gh1}}\right) \\ \left(\dfrac{1}{T_{Gh1}} - \dfrac{T_{R1}}{T_{Gh1} \cdot T_{RH1}}\right) \\ -\dfrac{1}{T_{RH1}} \end{array}\right]
\end{array}
\begin{bmatrix} \Delta P_{Gh1} \\ \Delta x_{h1} \\ \Delta x_{RM} \end{bmatrix}
$$

$$
+ \begin{bmatrix} \dfrac{T_{R1}(2K_{h1})}{T_{RH1} T_{Gh1}} \\ \dfrac{T_{R1}}{T_{RH1} \cdot T_{Gh1}} \\ \dfrac{T_{R1}}{T_{RH1}} \end{bmatrix} \Delta P_{C1}
+ \Delta F_1 \begin{bmatrix} \dfrac{(2K_{h1})T_{R1}}{(T_{RH1} T_{Gh1}) R_1} \\ -\dfrac{T_{R1}}{(T_{RH1} T_{Gh1}) R_1} \\ -\dfrac{T_{R1}}{T_{RH1} R_1} \end{bmatrix}
$$

(5)

$$
\begin{bmatrix} \Delta \dot{P}_{Gg1} \\ \Delta \dot{P}_{FC1} \\ \Delta \dot{P}_{VP1} \\ \Delta \dot{X}_{g1} \end{bmatrix}
=
\begin{bmatrix}
-\frac{1}{T_{CD1}} \; {\scriptstyle 10,10} & \frac{K_{g1}}{T_{CD1}} \; {\scriptstyle 10,11} & -\frac{(T_{CR1})(K_{g1})}{(T_{F1})(T_{CD1})} \; {\scriptstyle 10,12} & 0 \\
0 & -\frac{1}{T_{F1}} \; {\scriptstyle 11,11} & \frac{1}{T_{F1}} + \frac{T_{CR1}}{T_{F1}^2} \; {\scriptstyle 11,12} & 0 \\
0 & 0 & -C_1/G_1 \; {\scriptstyle 12,12} & {\scriptstyle 12,13} \; 1/G_1 \\
0 & 0 & 0 & {\scriptstyle 13,13} \; -1/Y_1
\end{bmatrix}
+
\begin{bmatrix} 0 \\ 0 \\ X_1/G_1 Y_1 \\ \frac{1}{Y_1} - \frac{X_1}{Y_1^2} \end{bmatrix}
\begin{matrix} \\ \Delta P_{C1} \\ b_{12,1} \\ b_{13,1} \end{matrix}
+
\begin{bmatrix} 0 \\ 0 \\ -X_1/G_1 Y_1 \\ -\left(\frac{1}{Y_1} - \frac{X_1}{Y_1^2}\right) \end{bmatrix}
\begin{matrix} a_{12,1} \\ \frac{\Delta F_1}{R_1} \\ \\ a_{13,1} \end{matrix}
$$