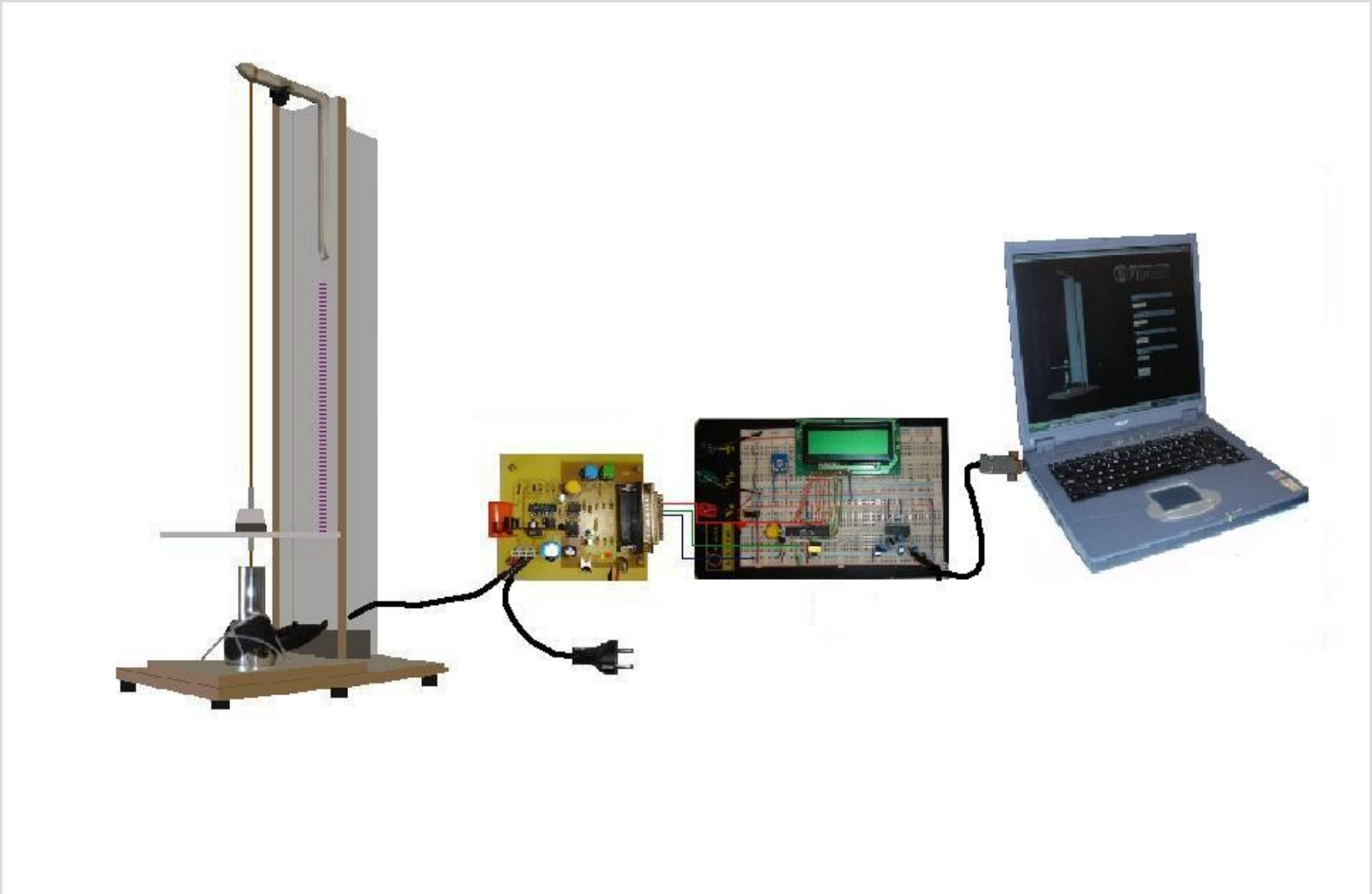
Levitação de um disco com um secador

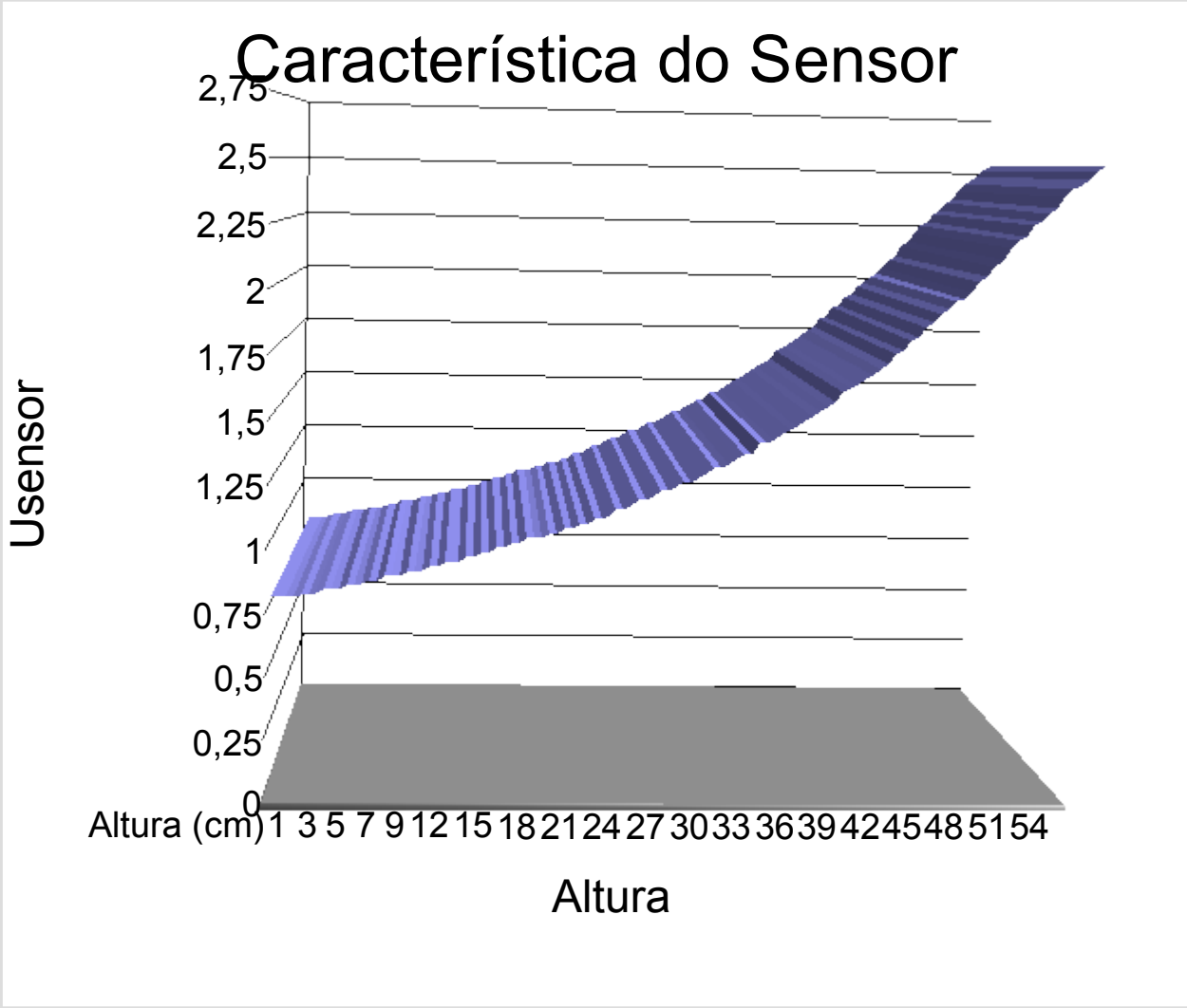
Levitação de um disco com um secador

- Modelização do sistema
- Substituição do controlador Fuzzy por um controlador PID

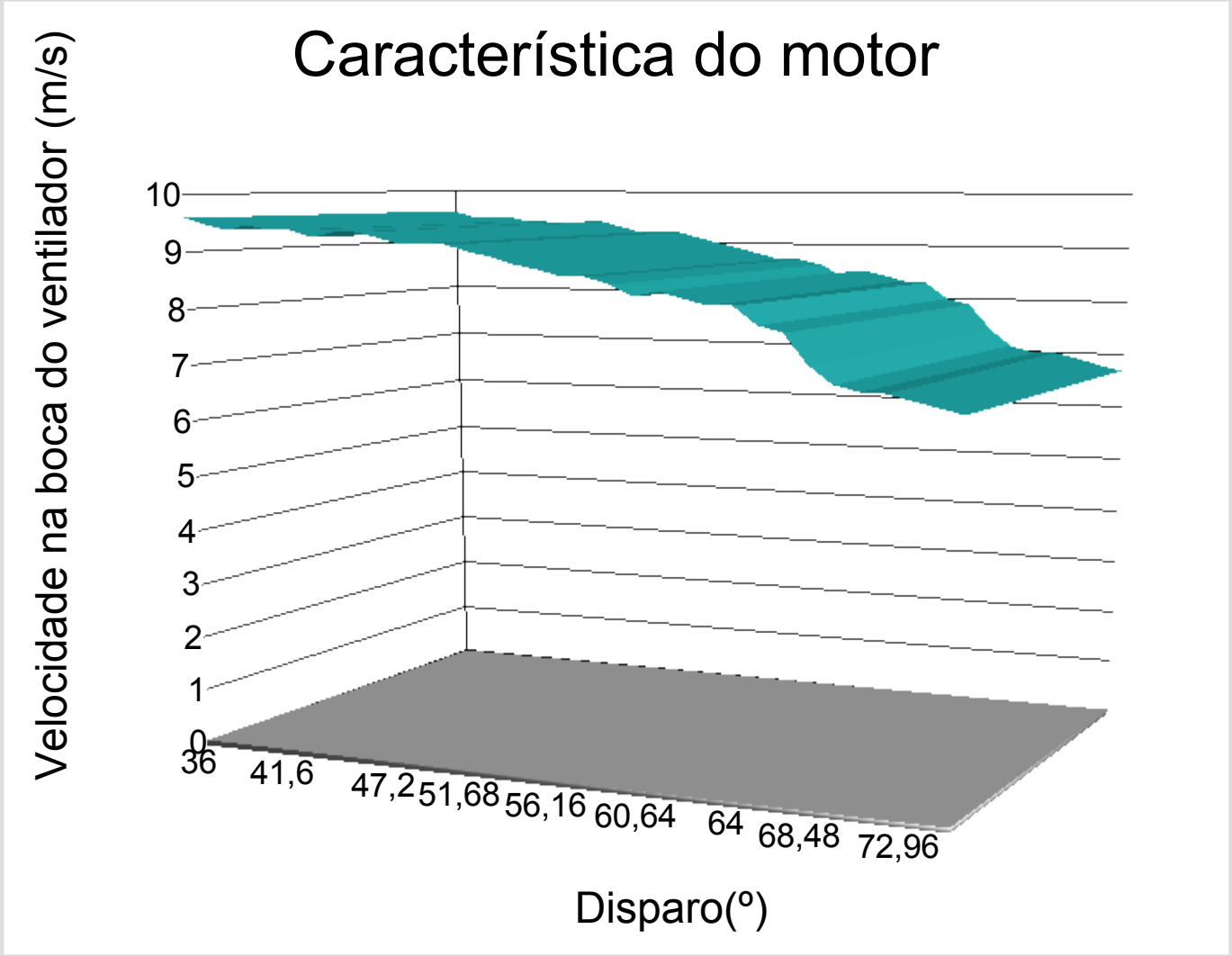
Composição



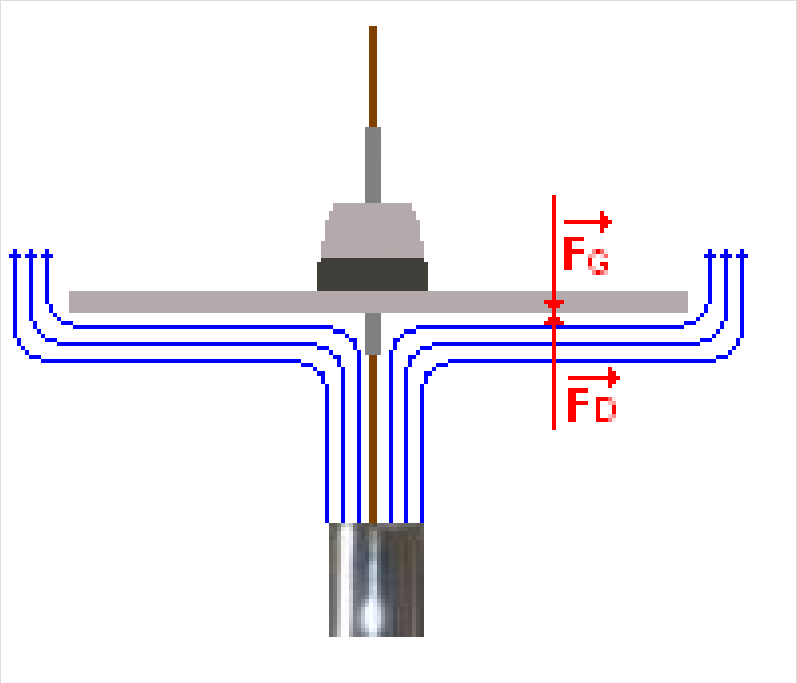
Modelação do Sensor



Modelação do Motor



Modelação do sistema Ar-Disco

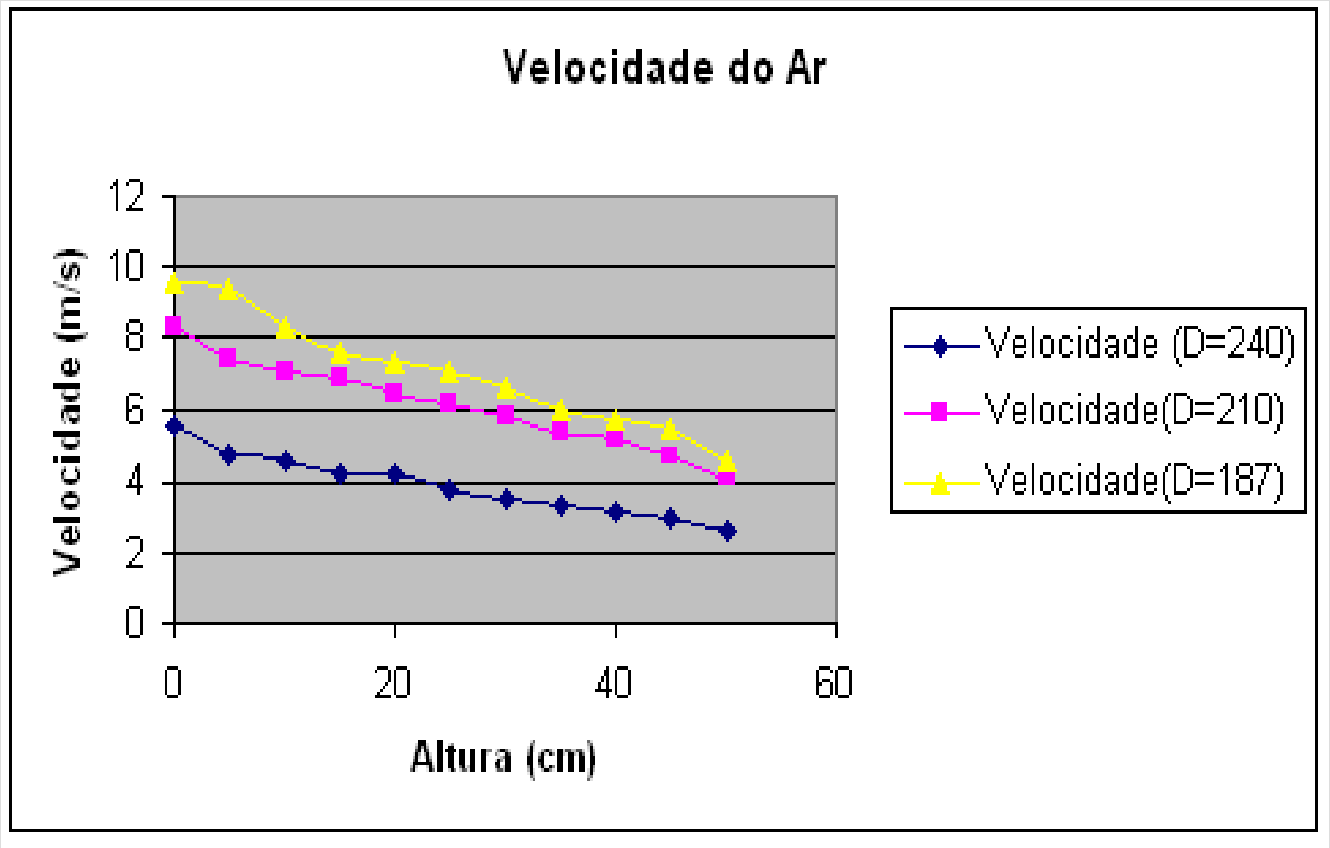


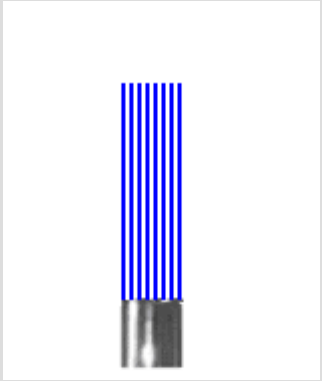
$$\vec{F}_g + \vec{F}_d = \vec{0}$$

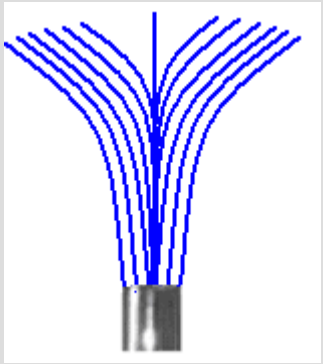
$$F_g = m * g = (m_{disco} + m_{carga} + m_{plastico}) * g$$

$$F_d = A * P_d * C_d = A * \rho_{ar} * V^2 * C_d$$

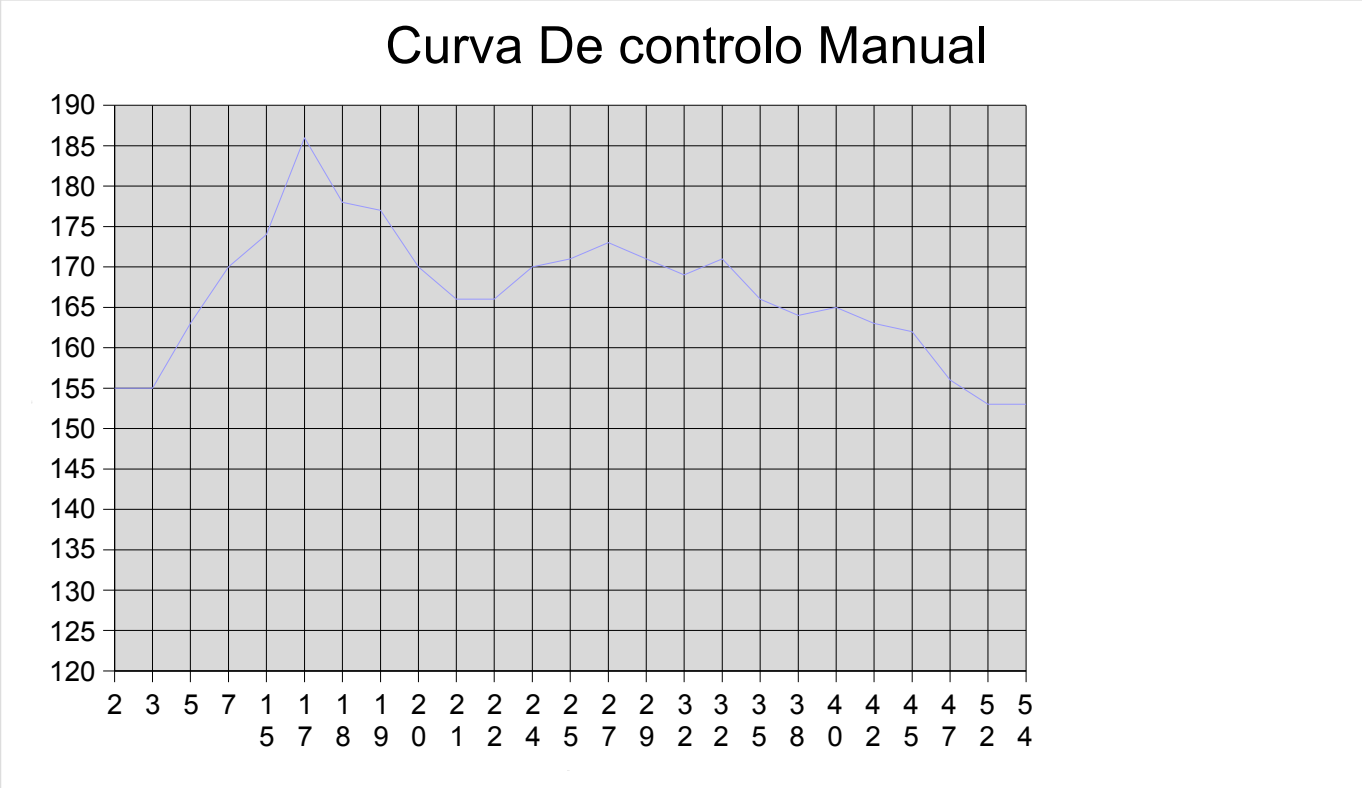
Modelação do sistema Ar-Disco







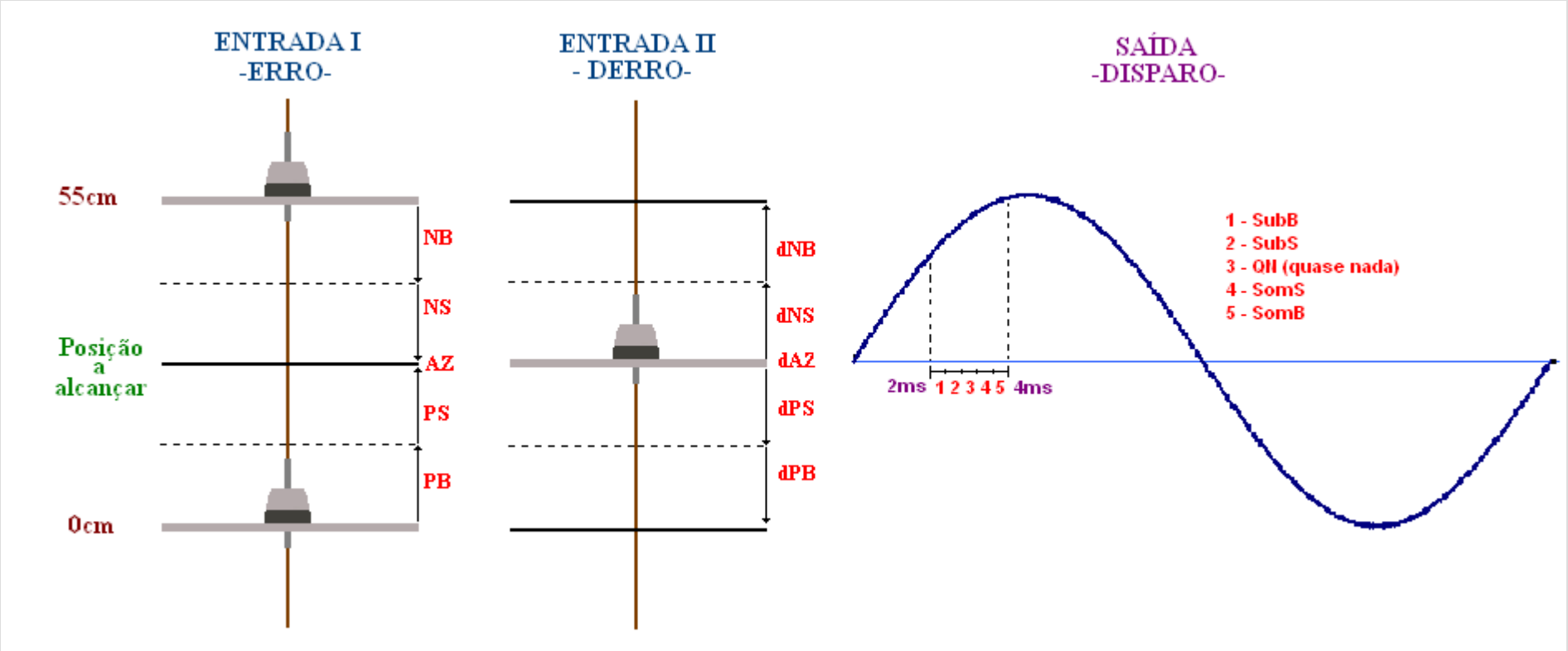
Modelação do sistema Ar-Disco



Tipologias de Controlo

- Controlador fuzzy-Logic
- Controlador Proporcional Derivativo

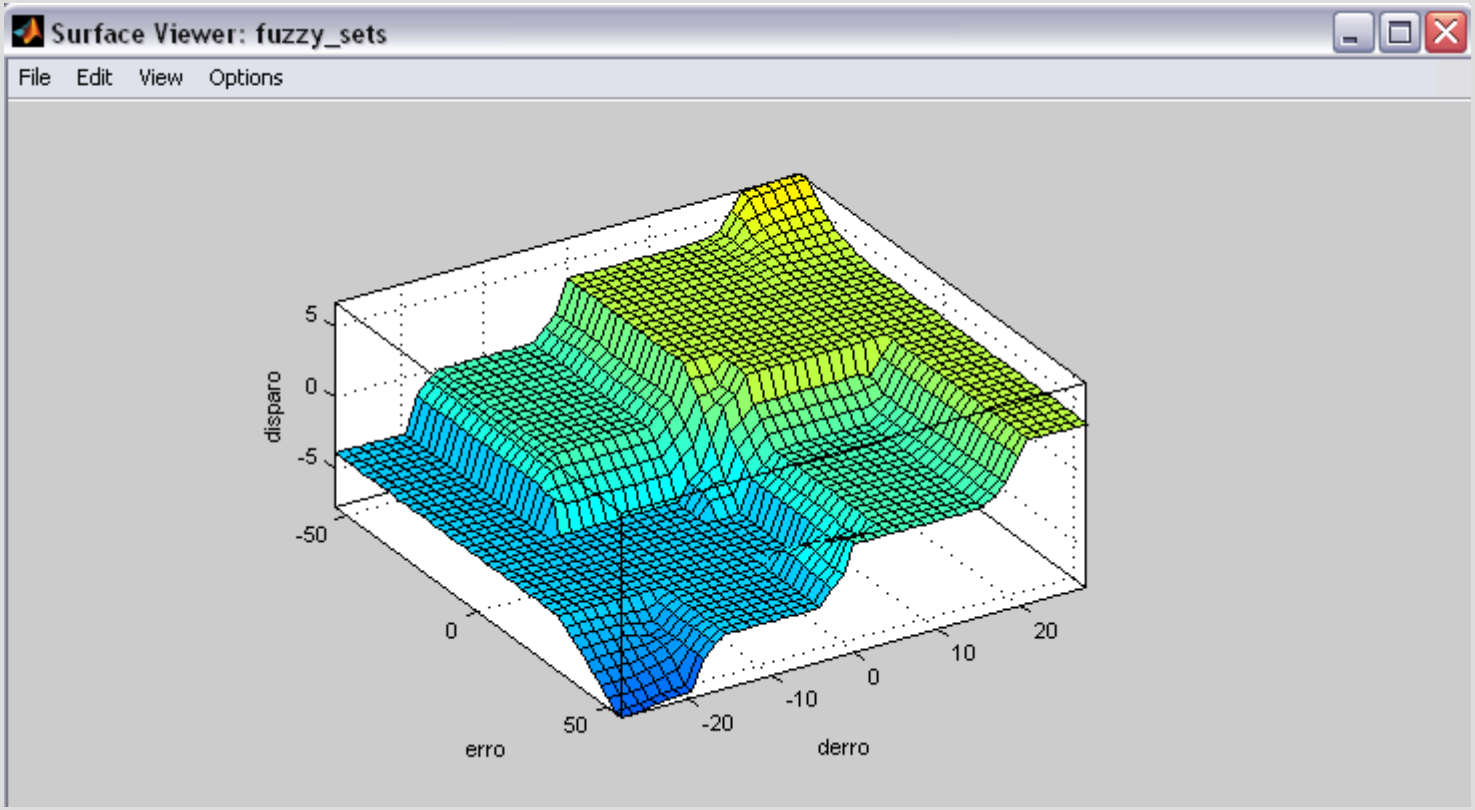
Raciocínio de controlo



Regras de Controlo

		ERRO				
		NB	NS	AZ	PS	PB
D E R R O	dNB	SubtraiS	SubtraiS	SubtraiS	SubtraiS	SubtraiB
	dNS	QN	QN	SubtraiS	SubtraiS	SubtraiS
	dAZ	SomaS	SomaS	QN	SubtraiS	QN
	dPS	SomaS	SomaS	SomaS	QN	QN
	dPB	SomaB	SomaS	SomaS	SomaS	SomaS

Superfície de controlo



Controlador PD

- Faltam pequenos ajustes

$$Disparo = -K_p * Erro - K_d * Derro$$

Diagrama de Blocos Actual

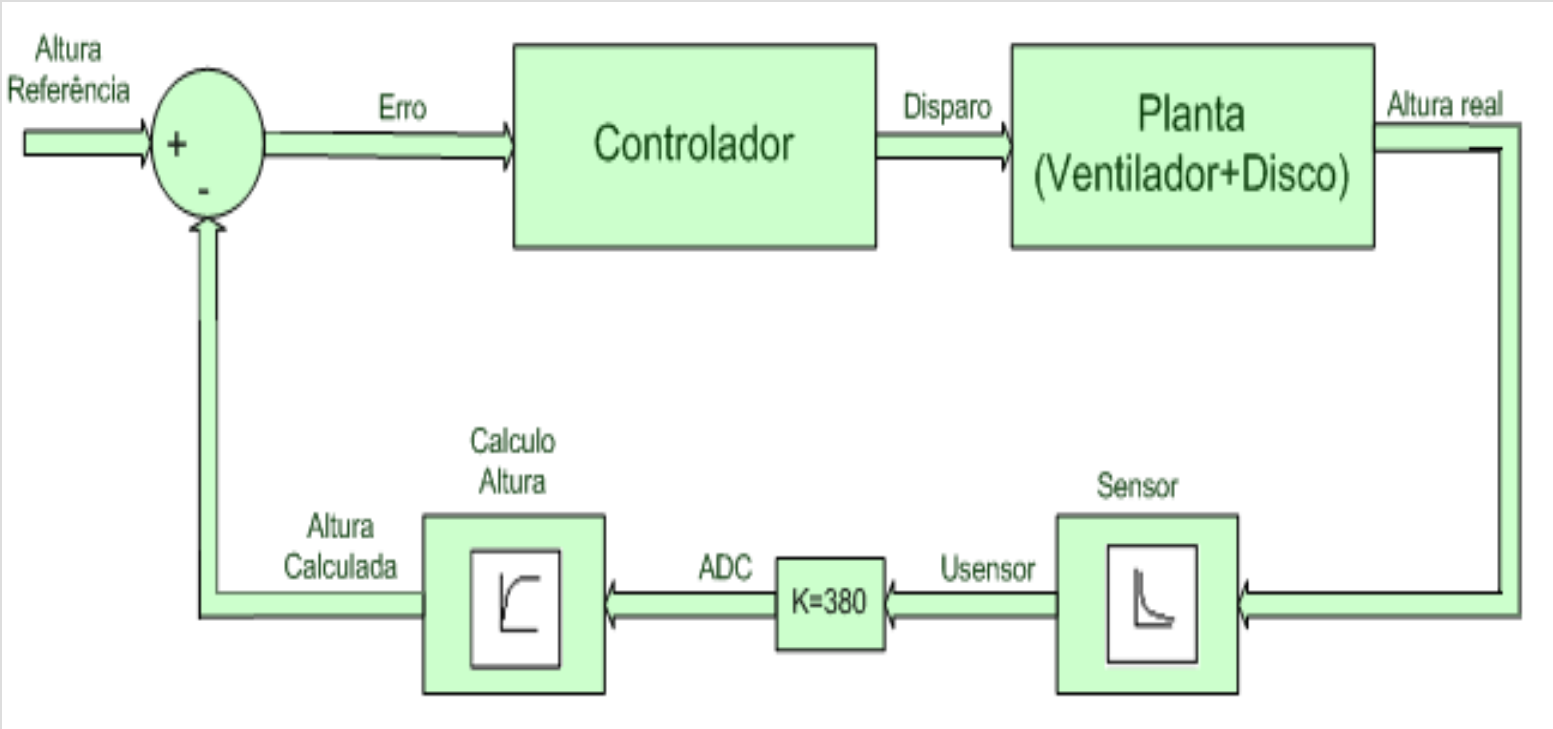


Diagrama de Blocos Ideal