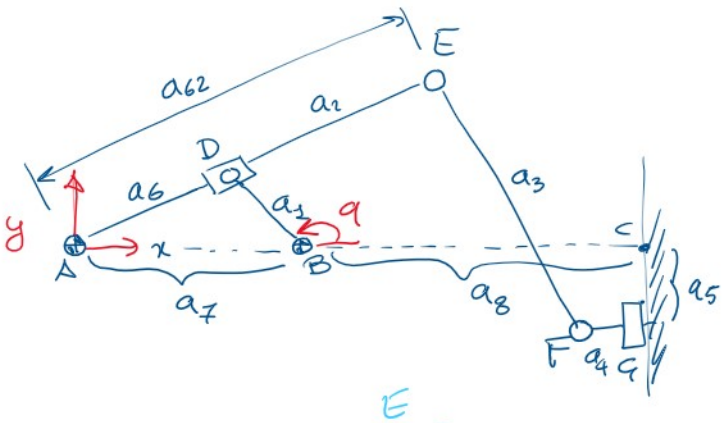
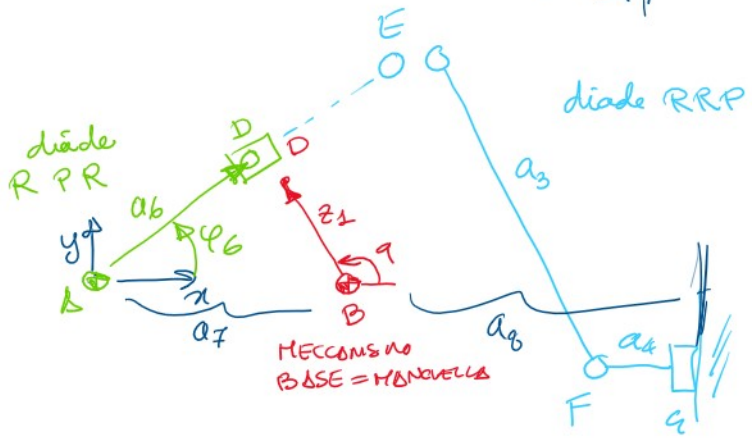
Guida di Fairbairn modificata



$a_1 = 130$ mm
$a_3 = 360$ mm
$a_4 = 70$ mm
$a_7 = 330$ mm
$a_8 = 440$ mm
$a_{62} = 550$ mm
$q = 130°$



$x_B = a_7 = 330$ mm
$y_B = 0$

$x_D = x_B + a_1 \cos q = 330 + 130 \cos(130°) = 246{,}4$
$y_D = y_B + a_1 \sin q = 130 \sin(130°) = 99.6$

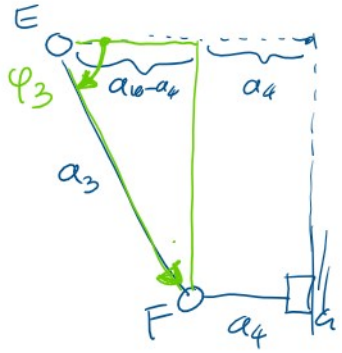
$$a_6 = \sqrt{(x_D - x_A)^2 + (y_D - y_A)^2} = \sqrt{246{,}4^2 + 99.6^2}$$

$$\varphi_6 = \operatorname{atan} \frac{y_D - y_A}{x_D - x_A} = \operatorname{atan} \frac{99.6}{246.4}$$

$a_6 = 265.7$ mm
$\varphi_6 = 22{,}0°$

$x_E = x_A + a_{62} \cos\varphi_6 = 550 \cos 22°$
$y_E = y_A + a_{62} \sin\varphi_6 = 550 \sin 22°$

$x_E = 510$ mm
$y_E = 206$ mm



$a_3 = 360$ mm
$a_4 = 70$ mm

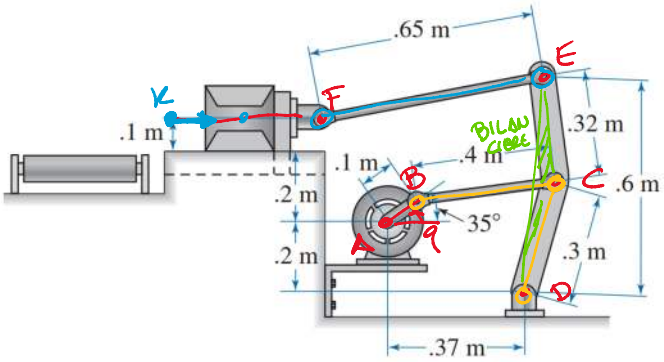
$x_G = a_7 + a_8 = 770$ mm
$x_F = x_G - a_4 = 700$ mm

$$\varphi_3 = -\arccos \frac{x_F - x_E}{a_3} = -\arccos \frac{190}{360}$$
$$y_F = y_E + a_3 \sin\varphi_3 = 206 - 360 \sin 58.1°$$

$\varphi_3 = -58.1°$
$y_F = -100$ mm

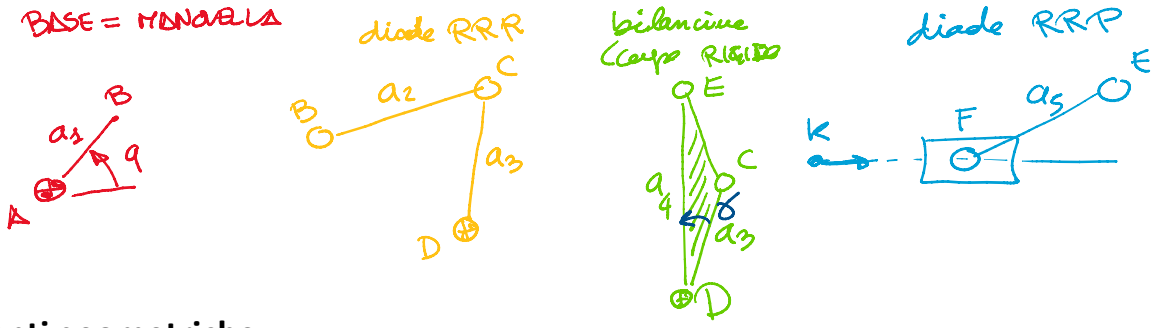
Packaging

12 January 2023 08:20



1) scomporre in diadi
2) evidenziare le costanti geometriche
3) analisi cinematica di posizione

scomposizione in diadi



costanti geometriche

A, D, K punti a telaio

a_1, a_2, a_3, a_4, a_5 lunghezze membri (vedi schizzo)

γ offset angolare bilanciere

analisi cinematica (pseudo-Matlab)

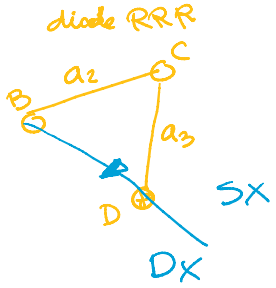
q manovella

$B = A + a_1 e^{iq}$ Manovella

1ª diade (RRR)

C = diadeRRR(B, D, a_2, a_3, "sx")

C = diadeRRR(D, B, a_3, a_2, "dx")

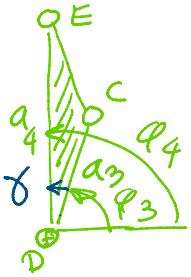


Bilanciere

φ_3 = angle(C − D)

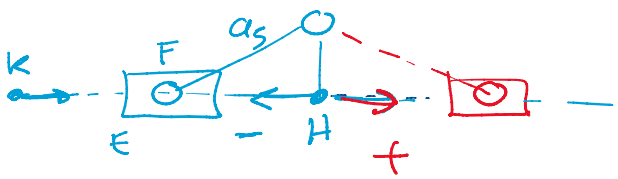
$\varphi_4 = \varphi_3 + \gamma$

$E = D + a_4 e^{i\varphi_4}$



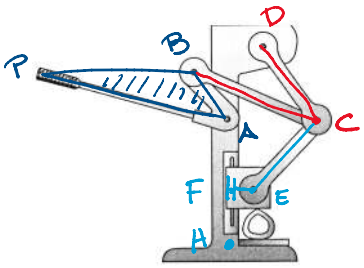
2ª diade (RRP)

F = diadeRRP(E, K, 0, a_5, 0, −1)



pressa manuale

09 January 2023 16:06



1) scomporre in diadi
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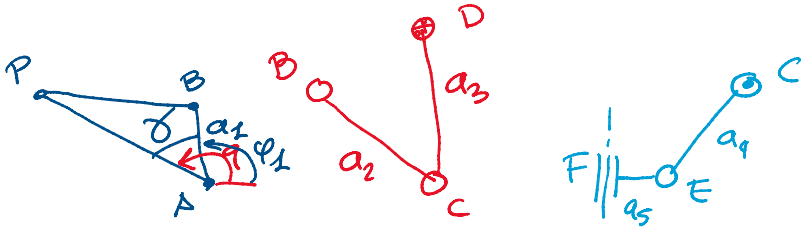
scomposizione in diadi



BASE = MANOVELLA

diade RRR

diade RRP

geometria del meccanismo

A punto a telaio, noto

a_1, a_2, a_3, a_4, a_5 lunghezze rotaie da scrivere

D perno a telaio

H punto passante per l'asse di scorrimento

γ offset angolare leva

analisi cinematica (pseudo-Matlab)

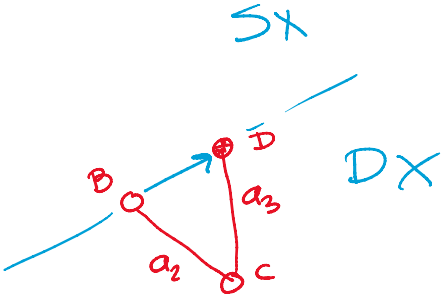
q momento, rotazione manovella assegnata

$\varphi_1 = q - \gamma$ angolo di manovella

$B = A + a_1 * \exp(i * \varphi_1)$

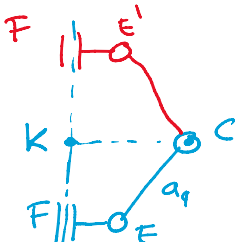
1ª DIADE (RRR)

C = diade RRR (B, D, a_2, a_3, "DX")



2ª DIADE (RRP)

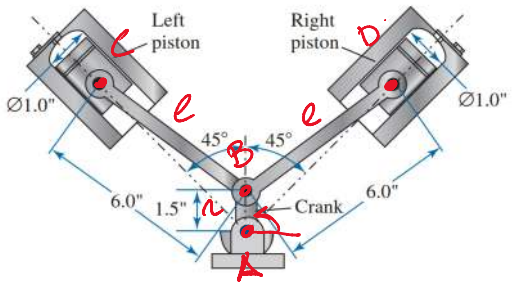
E = diade RRP (C, H, π/2, a_4, a_5, "neg")



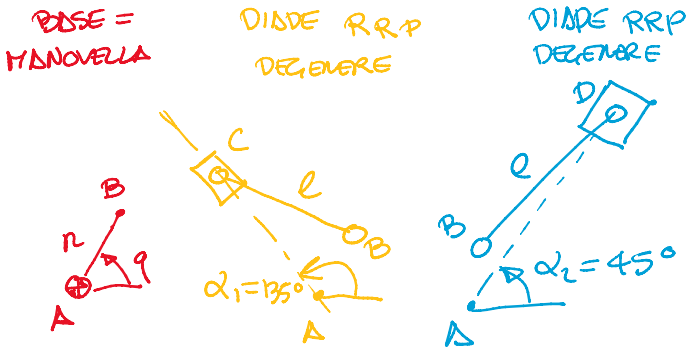
compressore bicilindrico

12 January 2023 08:19

1) scomporre in diadi
2) evidenziare le costanti geometriche
3) analisi cinematica di posizione



scomposizione in diadi



costanti geometriche

A punto manovella a telaio
origine terna assoluta
punto passante per gli assi di scorrimento

r, l lunghezza manovella e della biella

α_1, α_2 inclinazione assi di scorrimento

analisi cinematica (pseudo-Matlab)

q angolo di manovella, noto

$B = A + r * \exp(i * q)$

$B = A + r e^{iq}$ [equivalente]

CILINDRO SX

C = diade RRP (B, A, α_1, l, 0, 1)

CILINDRO DX

D = diade RRP (B, A, α_2, l, 0, 1)