Princip virtuálních sil

$$\delta W^*_{int} = \delta W^*_{ext}$$

$$\sum_p \left(\int_0^{L_p} \delta N(x)\epsilon(x)\,dx + \int_0^{L_p} \delta V(x)\gamma(x)\,dx + \int_0^{L_p} \delta M(x)\,\kappa(x)\,dx \right)$$

$$= \delta F_k u_k + \sum_i \delta R_{ix}\tilde{u}_i + \sum_j \delta R_{jz}\tilde{w}_j + \sum_m \delta M_{Rm}\tilde{\varphi}_m$$

$$\epsilon(x) = \frac{N(x)}{EA} + \alpha_T \Delta t_s \qquad \gamma(x) = \frac{V(x)}{GA_s} \qquad \kappa(x) = \frac{M(x)}{EI} + \alpha_T \frac{\Delta t_d - \Delta t_h}{h}$$

Silová metoda

$$\delta_{ij} = \sum_p \int_0^{L_p} \left(\frac{M_i(x)M_j(x)}{EI} + \frac{N_i(x)N_j(x)}{EA} + \frac{V_i(x)V_j(x)}{GA_s} \right) dx$$

$$\delta_{i0} = \sum_p \int_0^{L_p} \left(\frac{M_i(x)M_0(x)}{EI} + \frac{N_i(x)N_0(x)}{EA} + \frac{V_i(x)V_0(x)}{GA_s} \right) dx$$

$$+ \sum_p \int_0^{L_p} \left(M_i(x)\alpha_T \frac{\Delta t_d - \Delta t_h}{h} + N_i(x)\alpha_T \Delta t_s \right) dx$$

$$- \sum_k R_{x,i}\tilde{u} - \sum_l R_{z,i}\tilde{w} - \sum_m M_{R,i}\tilde{\varphi}$$