

## ◦ Poyntingvector 1 Feld

$$\cdot \vec{S} = \vec{E} \times \vec{H} = \frac{1}{2} \cdot (\underline{E} \cdot e^{j\omega t} + \underline{E}^* \cdot e^{-j\omega t}) \times \frac{1}{2} \cdot (\underline{H} \cdot e^{j\omega t} + \underline{H}^* \cdot e^{-j\omega t})$$

$$\begin{aligned} \cdot \vec{E} \perp \vec{H} \rightarrow |\vec{S}| &= \frac{1}{4} \cdot (\underline{E} \cdot e^{j\omega t} + \underline{E}^* \cdot e^{-j\omega t}) \cdot (\underline{H} \cdot e^{j\omega t} + \underline{H}^* \cdot e^{-j\omega t}) \\ &= \frac{1}{4} \underline{E} \underline{H} e^{j2\omega t} + \frac{1}{4} \underline{E} \underline{H}^* + \frac{1}{4} \underline{E}^* \underline{H} + \frac{1}{4} \underline{E}^* \underline{H}^* e^{-j2\omega t} \\ &= \frac{1}{4} \cdot [\underline{E} \underline{H}^* + (\underline{E} \underline{H}^*)^*] + \frac{1}{4} \cdot [\underline{E} \underline{H} e^{j2\omega t} + (\underline{E} \underline{H} e^{j2\omega t})^*] \\ &= \frac{1}{2} \operatorname{Re}\{\underline{E} \underline{H}^*\} + \frac{1}{4} \cdot \operatorname{Re}\{\underline{E} \underline{H} e^{j2\omega t}\} \end{aligned}$$

↳ Erlaubt  $\operatorname{Re}\{\vec{S}_z\}$  in Task 3