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Calculating alternative values from Cx and tanDelta

1. Definitions

   Basis : parallel equivalent diagram (R in parallel with C_X)

   $$\tan Delta = \frac{I_R}{I_C}$$

   $\omega = 2 * \pi * f$ (omega = 2 * Pi * frequency)

2. Calculating currents :

   real part (current through resistor) :

   $$I_{\mathrm{Re}} = U_{Test} * \omega * \tan Delta * C_X$$

   imaginary part (current through C_X) :

   $$I_{\mathrm{Im}} = U_{Test} * \omega * C_X$$

   absolute current (whole current through test object) :

   $$I_{Abs} = \sqrt{I_{\mathrm{Im}}^2 + I_{\mathrm{Re}}^2}$$

3. Calculating Powers

$S = U_{Test} * I_{Abs}$	[VA]	(apparent power)
$P = U_{Test} * I_{\mathrm{Re}}$	[W]	(active power)
$Q = U_{Test} * I_{\mathrm{Im}}$	[var]	(reactive power)
$P_{10} = \frac{P_{meas}}{U_{Test}^2} * (10kV)^2$	[W]	Active power related to 10 kV)