Frank-Oseen energy density:

$$e[\vec{p}] = \frac{K_0}{2}\left(\|\mathrm{Rot}\vec{p}\|^2 + \|\mathrm{Div}\vec{p}\|^2\right) \tag{1}$$

with $\|\vec{p}\| = 1$.

$*\vec{p} := \left(*\vec{p}^\flat\right)^\sharp$ is the Hodge dual of $\vec{p}$, i.e. $\vec{p}\perp(*\vec{p})$ and $\|*\vec{p}\| = \|\vec{p}\| = 1$.

$$\vec{q} := \cos\phi\vec{p} + \sin\phi(*\vec{p}) \tag{2}$$

is a length preserving linear combination of the orthonormal system $\{\vec{p}, *\vec{p}\}$, i.e. $\|\vec{q}\| = 1$, with a (space-)constant rotation angle ϕ, i.e. $\mathbf{d}\phi = 0$. Straight forward calculations implies

$$\begin{aligned}
\|\mathrm{Rot}(*\vec{p})\| &= \left\|*\mathbf{d}*\vec{p}^\flat\right\| = \|\mathrm{Div}\vec{p}\| && (3)\\
\|\mathrm{Div}(*\vec{p})\| &= \left\|*\mathbf{d}**\vec{p}^\flat\right\| = \left\|*\mathbf{d}\vec{p}^\flat\right\| = \|\mathrm{Rot}\vec{p}\| && (4)\\
\|\mathrm{Rot}\vec{q}\|^2 &= \left\|*\mathbf{d}\vec{q}^\flat\right\|^2 = \left\|\mathbf{d}\vec{q}^\flat\right\|^2 && (5)\\
&= \cos^2\phi\,\|\mathrm{Rot}\vec{p}\|^2 + \sin^2\phi\,\|\mathrm{Div}\vec{p}\|^2 + 2\cos\phi\sin\phi\left\langle \mathbf{d}\vec{p}^\flat, \mathbf{d}*\vec{p}^\flat\right\rangle && (6)\\
\|\mathrm{Div}\vec{q}\|^2 &= \left\|*\mathbf{d}*\vec{q}^\flat\right\|^2 = \left\|\mathbf{d}*\vec{q}^\flat\right\|^2 && (7)\\
&= \cos^2\phi\,\|\mathrm{Div}\vec{p}\|^2 + \sin^2\phi\,\|\mathrm{Rot}\vec{p}\|^2 - 2\cos\phi\sin\phi\left\langle \mathbf{d}\vec{p}^\flat, \mathbf{d}*\vec{p}^\flat\right\rangle && (8)
\end{aligned}$$

Finally we get

$$e[\vec{q}] = \frac{K_0}{2}\left(\|\mathrm{Rot}\vec{q}\|^2 + \|\mathrm{Div}\vec{q}\|^2\right) = \frac{K_0}{2}\left(\|\mathrm{Rot}\vec{p}\|^2 + \|\mathrm{Div}\vec{p}\|^2\right) = e[\vec{p}] \tag{9}$$