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On the performance of static mixers
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Introduction
The performance of various static mixers, the Kenics mixer, the Ross Low-Pressure Drop (LPD) and Low-Low-Pressure Drop (LLPD) mixer, the standard Sulzer SMX mixer, and the recently developed new designs of the SMX in our group, known as SMX(n) [1] (see Fig 1), is compared using both energy consumption, measured in terms of the dimensionless pressure drop, and compactness, measured as the dimensionless length, as criteria [2].

Qualitative comparison
Figure 2 reveals qualitative profiles for different designs.

Quantitative comparison
Figure 3 (a) and (b) show a quantitative comparison using energy consumption (measured in terms of dimensionless pressure drop) and compactness (measured in terms of dimensionless length).

Conclusions
1. The Kenics is the most energy efficient motionless mixer, shortly followed by the LPD and the simplest versions of the new design series, the SMX(n) \((n, N_p, N_x) = (1, 1, 3)\).
2. The SMX(n) \((n, N_p, N_x) = (4, 7, 12)\) is the most compact mixer, shortly followed by the \((3, 5, 9)\) versions.

References: