Supplementary Material

Expert-based modular simulator for municipal waste processing technology design

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Table S1. Applied separation ratios (r_e) of sorting machines for different waste components according by Exp.1

	Pre-shredder	**Magnetic separator**	**Eddy-current separator**	**Drum screen**	**Air separator**	**PET optic (NIR)**	**LDPE optic (NIR)**
PET (c_1)	[1.00,1.00]	[0.98,0.99]	[0.98,0.99]	[0.99,1.00]	[0.98,0.99]	[0.05,0.06]	[0.97,0.98]
LDPE (c_2)	[1.00,1.00]	[0.94,0.95]	[0.97,0.98]	[0.99,1.00]	[0.04,0.05]	[0.91,0.93]	[0.10,0.15]
HDPE (c_3)	[1.00,1.00]	[0.99,1.00]	[0.98,0.99]	[0.99,1.00]	[0.98,0.99]	[0.94,0.95]	[0.97,0.98]
Hazardous (c_4)	[1.00,1.00]	[0.98,0.99]	[0.98,0.99]	[0.95,0.98]	[0.98,0.99]	[0.93,0.95]	[0.93,0.95]
Iron (c_5)	[1.00,1.00]	[0.05,0.08]	[0.99,1.00]	[0.98,0.99]	[0.98,0.99]	[0.98,0.99]	[0.98,0.99]
Aluminium (c_6)	[1.00,1.00]	[0.99,1.00]	[0.02,0.03]	[0.98,0.99]	[0.01,0.02]	[0.98,0.99]	[0.98,0.99]
RDF (c_7)	[1.00,1.00]	[0.94,0.95]	[0.98,0.99]	[0.60,0.70]	[0.01,0.02]	[0.90,0.95]	[0.90,0.95]
Cardboard (c_8)	[1.00,1.00]	[0.98,0.99]	[0.98,0.99]	[0.98,0.99]	[0.05,0.10]	[0.92,0.95]	[0.92,0.95]
Paper (c_9)	[1.00,1.00]	[0.98,0.99]	[0.97,0.98]	[0.85,0.90]	[0.05,0.10]	[0.92,0.95]	[0.90,0.92]

Table S2. The minimum and maximum yield (%) values given by the experts for the given components in the given streams, which were the basis of the validation

[min($Yield_c$),max($Yield_c$)] (%)	**Exp.1**	**Exp.2**	**Exp.3**
PET in PET-rich stream (x_{11})	[83,90]	[80,85]	[80,83]
LDPE in LDPE-rich stream (x_{12})	[85,90]	[80,85]	[83,85]
Iron in Iron-rich stream (x_7)	[82,85]	[85,90]	[85,88]
Aluminium in Aluminium-rich stream (x_8)	[90,92]	[85,90]	[90,93]

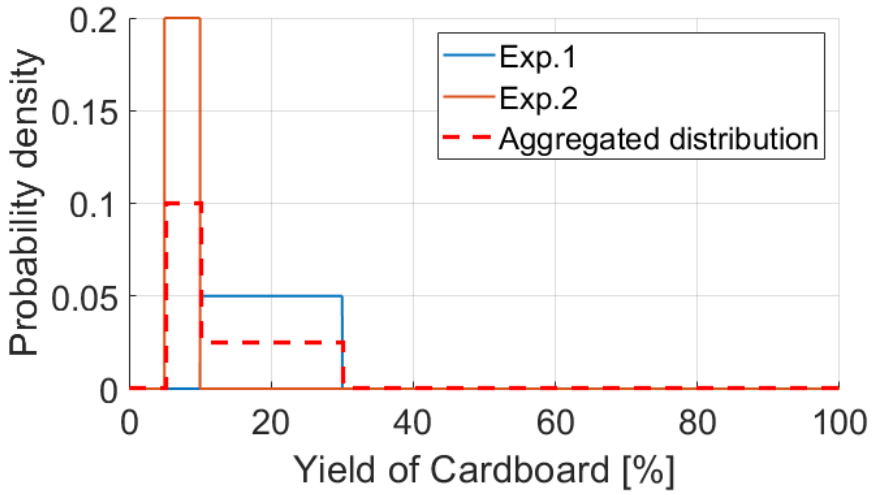

Figure S1. Expert-based and aggregated distributions for units, an example for air separator

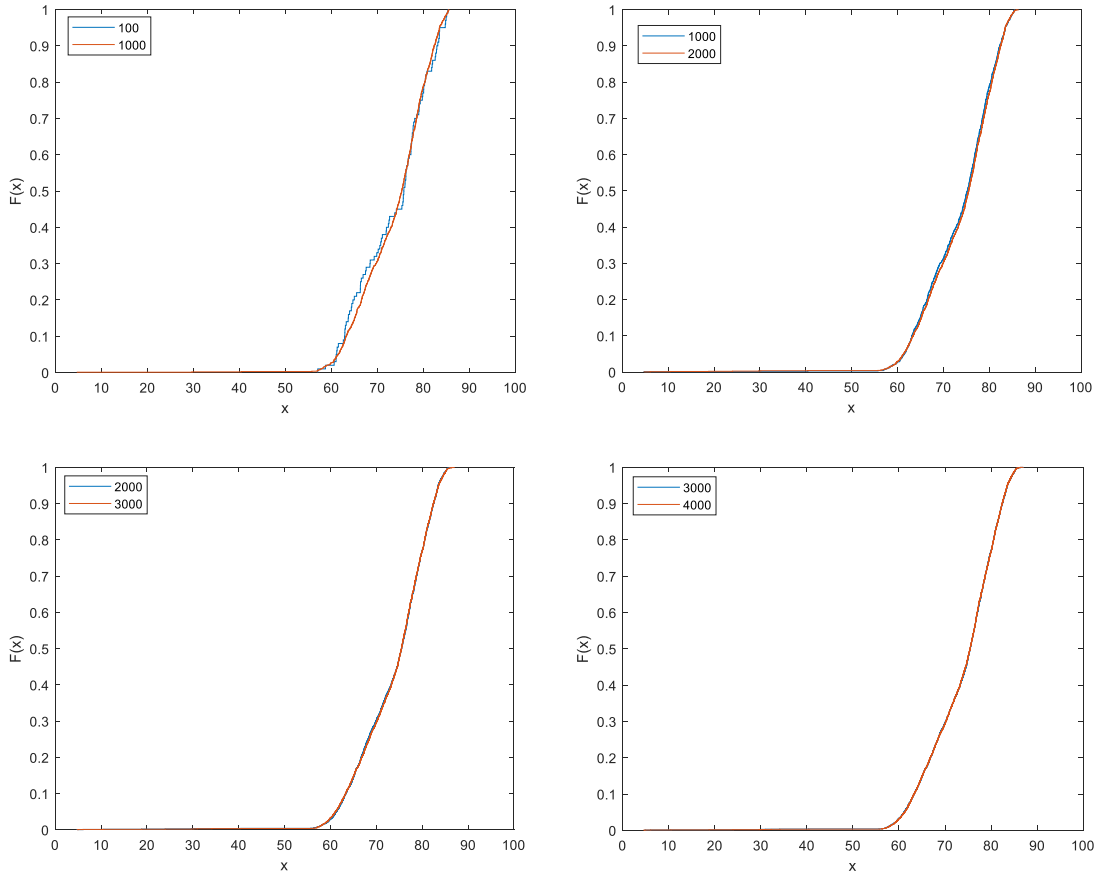

Figure S2. Determination of the minimum number of MC simulations based on two-sample K-S test