

# ISO/TR 16494-2:2019-03 (E)

## Heat recovery ventilators and energy recovery ventilators - Method of test for performance - Part 2: Assessment of measurement uncertainty of performance parameters

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Symbols .....	2
5	Explanatory notes useful in laboratory application .....	3
5.1	Uncertainty .....	3
5.2	Confidence level .....	4
5.3	Evaluation of uncertainties .....	4
5.4	Steps in evaluation of uncertainty in measurements .....	4
5.5	Uncertainty of measurements .....	4
5.5.1	Uncertainty of individual measurements .....	4
5.5.2	Uncertainty of a mean value from several measurements .....	6
5.5.3	Uncertainty of a value obtained by using a smoothing curve .....	7
6	Evaluation of uncertainty .....	7
6.1	Airflow performance .....	7
6.1.1	Air volume flow rate .....	7
6.1.2	Air mass flow rate .....	8
6.1.3	Static pressure differential .....	8
6.2	Unit exhaust air transfer ratio .....	9
6.2.1	Measured parameters affecting test results .....	9
6.2.2	UEATR measurement .....	9
6.2.3	Uncertainty calculation -- General case .....	9
6.3	Net supply airflow .....	9
6.3.1	Net supply airflow ducted units .....	9
6.3.2	Net supply airflow unducted ventilators .....	10
6.4	Gross effectiveness .....	11
6.4.1	Measured parameters affecting the measurement .....	11
6.4.2	Gross effectiveness measurement .....	11
6.4.3	Uncertainty calculation -- General case .....	12
6.5	Coefficient of energy .....	12
6.5.1	Coefficient of energy: Ducted ventilators .....	12
6.5.2	Coefficient of energy -- Unducted ventilators .....	14
6.6	Effective work (EW) .....	16
6.6.1	Measured parameters affecting the measurement .....	16
6.6.2	Effective work: Ducted or unducted ventilators .....	16
6.6.3	Uncertainty calculation -- General case .....	16
6.6.4	Uncertainty calculation -- Specific case .....	16
Annex A (informative)	Uncertainty budget sheets .....	17

<b>Annex B (informative) Determination of indirect contribution to uncertainty, <math>U(CI)</math> .....</b>	<b>42</b>
<b>Bibliography .....</b>	<b>43</b>