

ISO 11011:2013-09 (E)

Compressed air - Energy efficiency - Assessment

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 3.1 | General | 2 |
| 3.2 | Flow | 3 |
| 3.3 | Pressure | 4 |
| 3.4 | Storage | 5 |
| 3.5 | Volume | 5 |
| 4 | Roles and responsibilities | 6 |
| 4.1 | Identification of assessment team members | 6 |
| 4.2 | Site management support | 7 |
| 4.3 | Communications | 7 |
| 4.4 | Access to equipment, resources, and information | 7 |
| 4.5 | Assessment objectives and scope | 7 |
| 4.6 | Identification of other assessment team members | 7 |
| 4.7 | Objective check | 7 |
| 5 | Assessment methodology | 8 |
| 5.1 | General | 8 |
| 5.2 | Systems engineering methods | 8 |
| 5.3 | Systems engineering process | 8 |
| 5.4 | System assessment process | 9 |
| 6 | Parameters and their determination | 10 |
| 6.1 | General | 10 |
| 6.2 | Measurement | 10 |
| 6.3 | Pressure | 10 |
| 6.4 | Flow rate | 11 |
| 6.5 | Power | 12 |
| 7 | Initial data collection and evaluation | 13 |
| 7.1 | General | 13 |
| 7.2 | Plant background | 13 |
| 7.3 | Plant function | 13 |
| 7.4 | Compressed air system definition | 13 |
| 7.5 | Inventory of key end-use air demands | 13 |
| 7.6 | Heat recovery | 13 |
| 7.7 | Baseline period and duration of data logging | 14 |
| 7.8 | Energy use | 14 |
| 7.9 | Compressed air system supply efficiency | 14 |
| 7.10 | System volume | 14 |
| 7.11 | Pressure | 15 |
| 7.12 | Flowrate | 15 |
| 7.13 | Critical air demands | 15 |
| 7.14 | Compressed air waste | 15 |

| | | |
|------|---|----|
| 7.15 | Air treatment | 15 |
| 7.16 | Compressor control | 16 |
| 7.17 | Storage | 16 |
| 7.18 | Maintenance | 16 |
| 7.19 | Ambient intake conditions | 16 |
| 8 | Analysis of data from assessment | 16 |
| 8.1 | General | 16 |
| 8.2 | Baseline profiles | 17 |
| 8.3 | System volume | 19 |
| 8.4 | Pressure profile | 19 |
| 8.5 | Perceived high-pressure demand | 21 |
| 8.6 | Demand profile | 22 |
| 8.7 | Critical air demands | 23 |
| 8.8 | Compressed air waste | 24 |
| 8.9 | Optimized air treatment | 25 |
| 8.10 | Reduced system operating pressure | 26 |
| 8.11 | Balance of supply and demand | 27 |
| 8.12 | Maintenance opportunities | 27 |
| 8.13 | Heat recovery opportunities | 28 |
| 9 | Reporting and documentation of assessment findings | 28 |
| 9.1 | Assessment report | 28 |
| 9.2 | Confidentiality | 29 |
| 9.3 | Energy-saving opportunities | 29 |
| 9.4 | Data for third-party review | 29 |
| | Annex A (informative) Introduction to energy assessment | 30 |
| | Annex B (informative) Assessment activities -- General | 32 |
| | Annex C (informative) Assessment activities -- Supply | 37 |
| | Annex D (informative) Assessment activities -- Transmission | 43 |
| | Annex E (informative) Assessment activities -- Demand | 47 |
| | Annex F (informative) Competencies | 50 |
| | Bibliography | 51 |