

# ISO 15746-1:2015-04 (E)

## Automation systems and integration - Integration of advanced process control and optimization capabilities for manufacturing systems - Part 1: Framework and functional model

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>3</b>	<b>Abbreviated terms .....</b>	<b>3</b>
<b>4</b>	<b>Concepts and capabilities .....</b>	<b>3</b>
4.1	Background concepts .....	3
4.2	Capabilities of the APC-O system .....	4
<b>5</b>	<b>Functional architecture of the APC-O system .....</b>	<b>4</b>
<b>6</b>	<b>Capabilities of modules within the APC-O system .....</b>	<b>6</b>
6.1	Soft sensor module .....	6
6.2	APC module .....	6
6.3	Optimization module .....	6
6.4	Performance assessment module .....	6
<b>7</b>	<b>Structure and lifecycle phases of APC-O modules .....</b>	<b>7</b>
7.1	Generic structure of APC-O modules .....	7
7.2	Life cycle phases of the soft sensor module .....	8
7.3	Life cycle phases of the APC module .....	11
7.4	Life cycle phases of the optimization module .....	13
7.5	Life cycle phases of the performance assessment module .....	15
<b>Annex A (informative) Typical example of APC-O system integration .....</b>		<b>17</b>
<b>Annex B (informative) PLS technique .....</b>		<b>19</b>
<b>Annex C (informative) Predictive control and steady state optimization .....</b>		<b>20</b>
<b>Annex D (informative) PID performance assessment .....</b>		<b>21</b>
<b>Bibliography .....</b>		<b>22</b>