CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC12345 ~ Zydeco Chemicals Expansion

Date: Sep 10, 2014

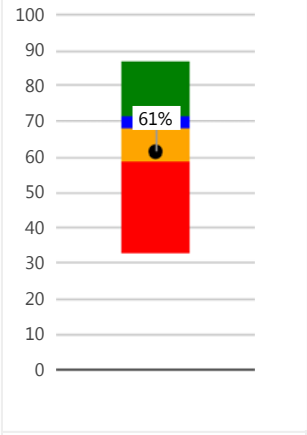
## Project General Information

| | |
|---|---|
| Company: | CII Engineering & Construction. Co. |
| Project: | Zydeco Chemicals Expansion |
| ID: | TENC12345 |
| Location: | New Orleans, Louisiana, United States |
| Project Type: | Chemical Manufacturing |
| Capacity: | 100,000.00 short tons per day |

| Total Project Cost | |
|---|---|
| Local (2011): | USD 275,000,000 |
| Chicago (2013): | USD 289,382,845 |
| Midpoint of Phase: | Dec 17, 2011 |
| Forecasted Phase Duration: | 65.00 wks |
| Actual Phase Duration: | 91.29 wks |

## Input Measures

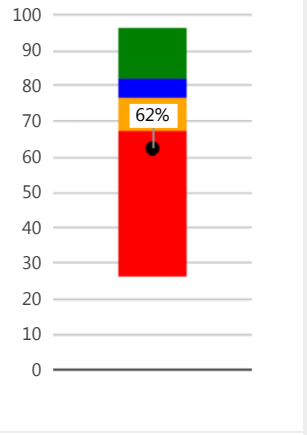
### Planning




**Score: 61%** **N: 45**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 33% | 59% | 68% | 72% | 86% |

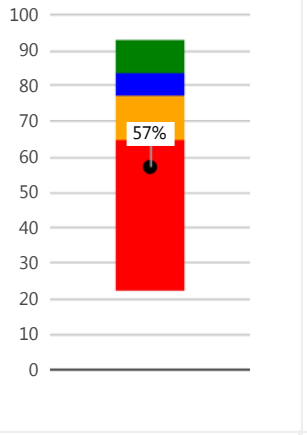
### Organizing




**Score: 62%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 26% | 67% | 77% | 82% | 96% |

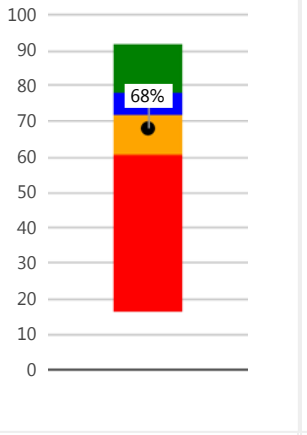
### Leading




**Score: 57%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 23% | 65% | 78% | 84% | 93% |

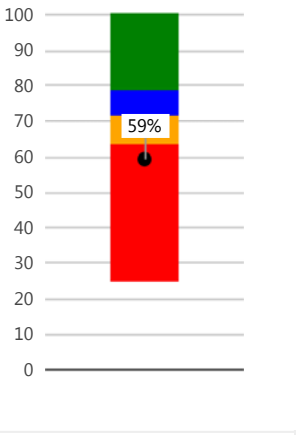
### Controlling




**Score: 68%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 17% | 61% | 72% | 78% | 91% |

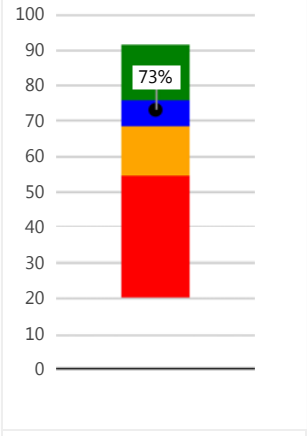
### Design Efficiency




**Score: 59%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 25% | 64% | 72% | 79% | 100% |

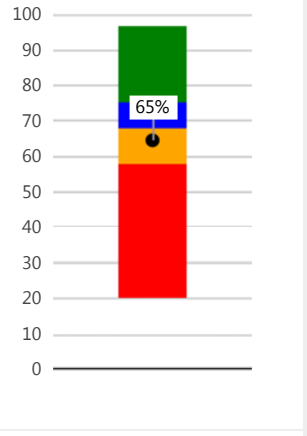
### Human Resources




**Score: 73%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 20% | 55% | 69% | 76% | 91% |

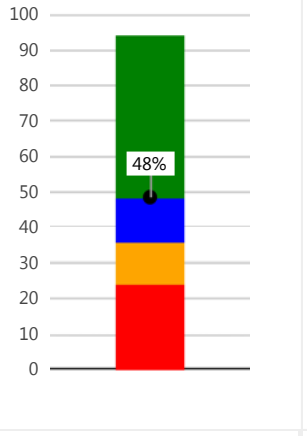
### Quality




**Score: 65%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 20% | 58% | 68% | 75% | 97% |

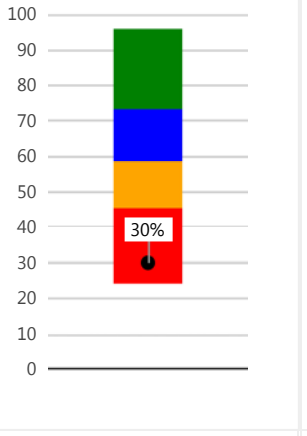
### Sustainability




**Score: 48%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0% | 24% | 36% | 48% | 94% |

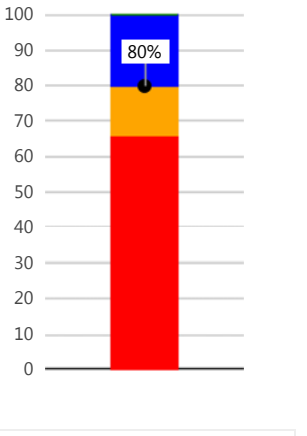
### Supply Chain




**Score: 30%** **N: 46**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 25% | 46% | 59% | 74% | 96% |

### Safety




**Score: 80%** **N: 46**

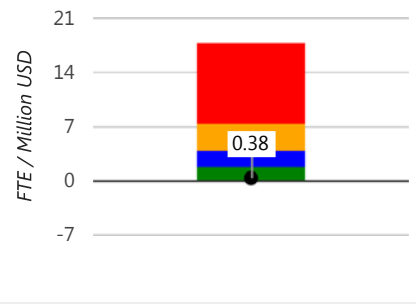
| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0% | 66% | 80% | 100% | 100% |

CII 10-10

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential)
Date: Sep 10, 2014

## Output Measures

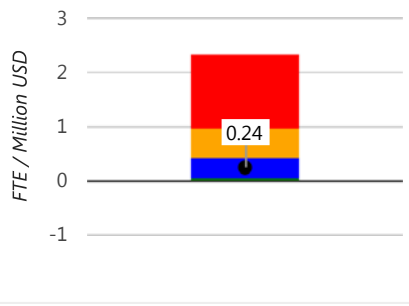
### Engineering Team Size / Engineering Phase Cost




**Score: 0.38** **N: 38**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0.2 | 1.9 | 3.9 | 7.5 | 17.6 |

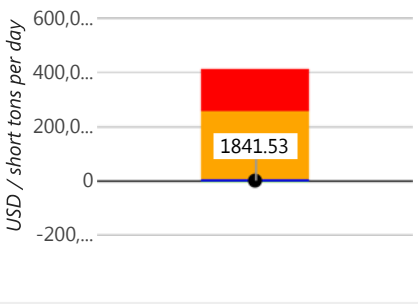
### Engineering Team Size / Total Project Cost




**Score: 0.24** **N: 9**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0.0 | 0.1 | 0.4 | 1.0 | 2.3 |

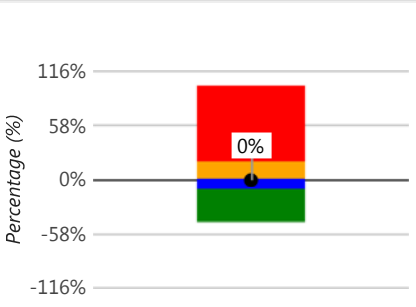
### Engineering Cost Efficiency




**Score: 1,841.53** **N: 8**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 211.8 | 2,699.9 | 10,483.2 | 261,955.8 | 410,577.6 |

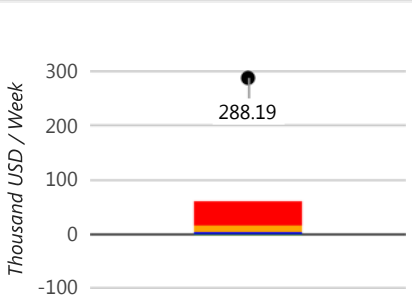
### Engineering Cost Growth




**Score: 0.00** **N: 40**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| -43.9 | -8.8 | 2.8 | 21.2 | 100.0 |

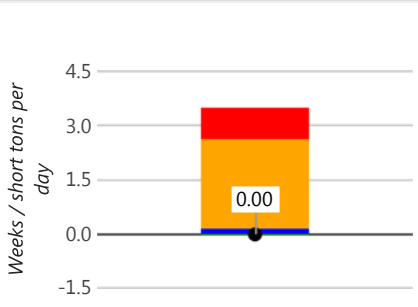
### Engineering Phase Burn Rate




**Score: 288.19** **N: 36**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0.8 | 2.2 | 6.2 | 18.4 | 58.2 |

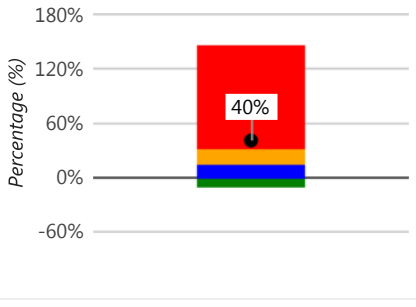
### Engineering Schedule Efficiency




**Score: 0.00** **N: 8**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0.0 | 0.1 | 0.2 | 2.7 | 3.5 |

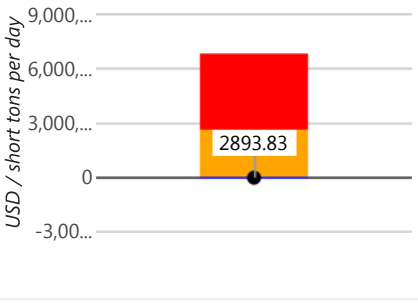
### Engineering Schedule Growth




**Score: 40.40** **N: 37**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| -9.7 | 0.0 | 15.3 | 32.0 | 145.0 |

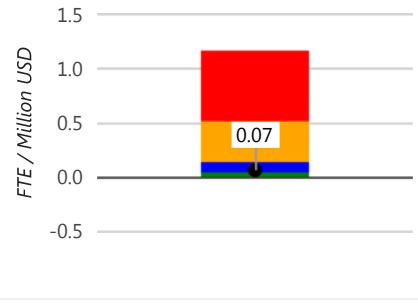
### Forecasted Project Cost Efficiency




**Score: 2,893.83** **N: 9**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 1,213.2 | 4,304.1 | 102,600.0 | 2,667,767.3 | 6,798,777.6 |

### Project Management Team Size / Total Project Cost




**Score: 0.07** **N: 9**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| 0.0 | 0.1 | 0.2 | 0.5 | 1.2 |

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential) Date: Sep 10, 2014

Output Measures

## Forecasted Project Schedule Efficiency

C

**Score: 0.00** **N: N/A**

| Min | 1Q | 2Q | 3Q | Max |
|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A |

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential)
Date: Sep 10, 2014

## Input Measures Comparison Criteria

| Measure | Industry Group | Phase | Project Type | Respondent |
|---|---|---|---|---|
| Planning | Industrial | Engineering | All | Contractor |
| Organizing | Industrial | Engineering | All | Contractor |
| Leading | Industrial | Engineering | All | Contractor |
| Controlling | Industrial | Engineering | All | Contractor |
| Design Efficiency | Industrial | Engineering | All | Contractor |
| Human Resources | Industrial | Engineering | All | Contractor |
| Quality | Industrial | Engineering | All | Contractor |
| Sustainability | Industrial | Engineering | All | Contractor |
| Supply Chain | Industrial | Engineering | All | Contractor |
| Safety | Industrial | Engineering | All | Contractor |

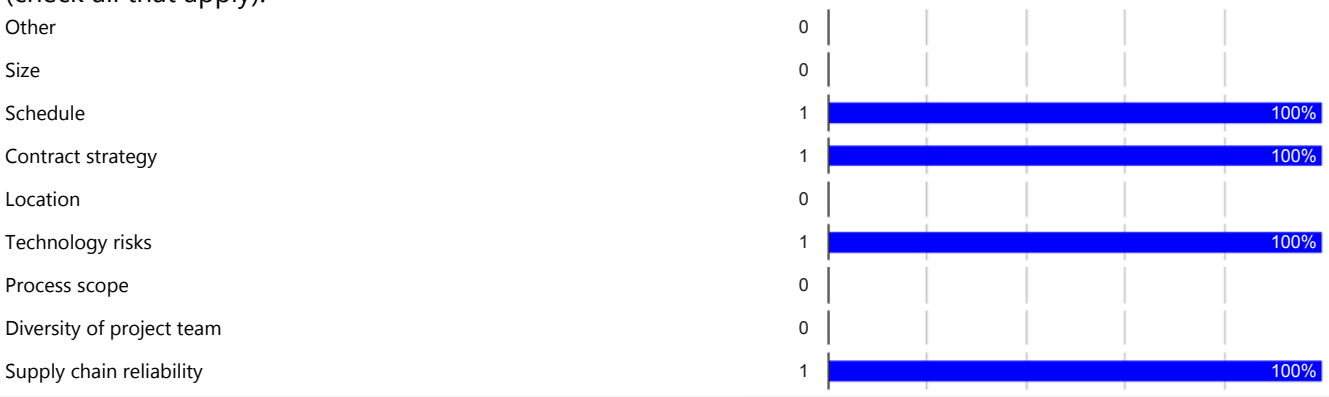
## Output Measures Comparison Criteria

| Measure | Industry Group | Phase | Project Type | Respondent | Capacity | Complexity |
|---|---|---|---|---|---|---|
| Engineering Team Size / Engineering Phase Cost | Industrial | Engineering | All | Contractor | N/A | N/A |
| Engineering Team Size / Total Project Cost *Adjusted for Complexity | Industrial | Engineering | All | All | N/A | High |
| Engineering Cost Efficiency | Industrial | Engineering | Chemical Manufacturing | All | short tons per day | N/A |
| Engineering Cost Growth | Industrial | Engineering | All | Contractor | N/A | N/A |
| Engineering Phase Burn Rate | Industrial | Engineering | All | Contractor | N/A | N/A |
| Engineering Schedule Efficiency | Industrial | Engineering | Chemical Manufacturing | All | short tons per day | N/A |
| Engineering Schedule Growth | Industrial | Engineering | All | Contractor | N/A | N/A |
| Forecasted Project Cost Efficiency | Industrial | Engineering | Chemical Manufacturing | All | short tons per day | N/A |
| Project Management Team Size / Total Project Cost *Adjusted for Complexity | Industrial | Engineering | All | All | N/A | High |
| Forecasted Project Schedule Efficiency | Not available | | | | | |

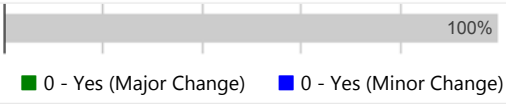
CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential)
Date: Sep 10, 2014

Individual Input Measures - 1 Surveys

3 The complexity of this project was very high based on its (check all that apply):



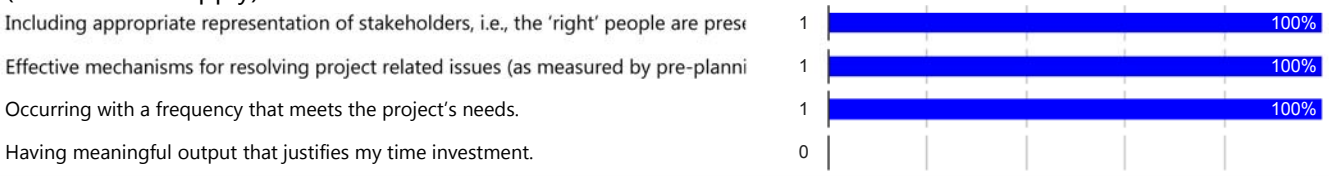

4 Did the project objectives change during Engineering?



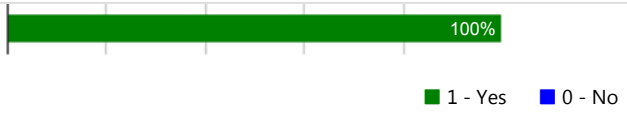
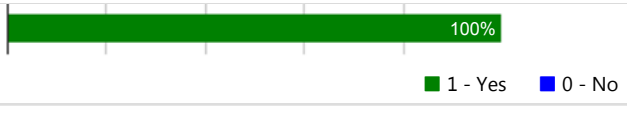

5 This project used the following Engineering, standards and specifications. (Please check all that apply)


6 This project experienced a high number of (please check all that apply):


7 Please characterize how project meetings were conducted (check all that apply).




8 Which of the following statements characterized the decisions made by the manager(s) of this project? (check all that apply).

| | | | |
|---|---|---|---|
| 9 | Was a life cycle cost analysis completed for this project? | 1 |  |
| 9 | Which of the following were considered? | | |
| | Carbon Footprint Measurement | 0 | |
| | Energy Optimization | 0 | |
| | Waste Minimization | 0 | |
| | Sustainability Certification | 0 | |
| 11 | Was the Construction Manager involved during Detailed Engineering? | 1 |  |
| 12 | Were multiple Design offices used on this project? | 1 |  |

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential)
Date: Sep 10, 2014

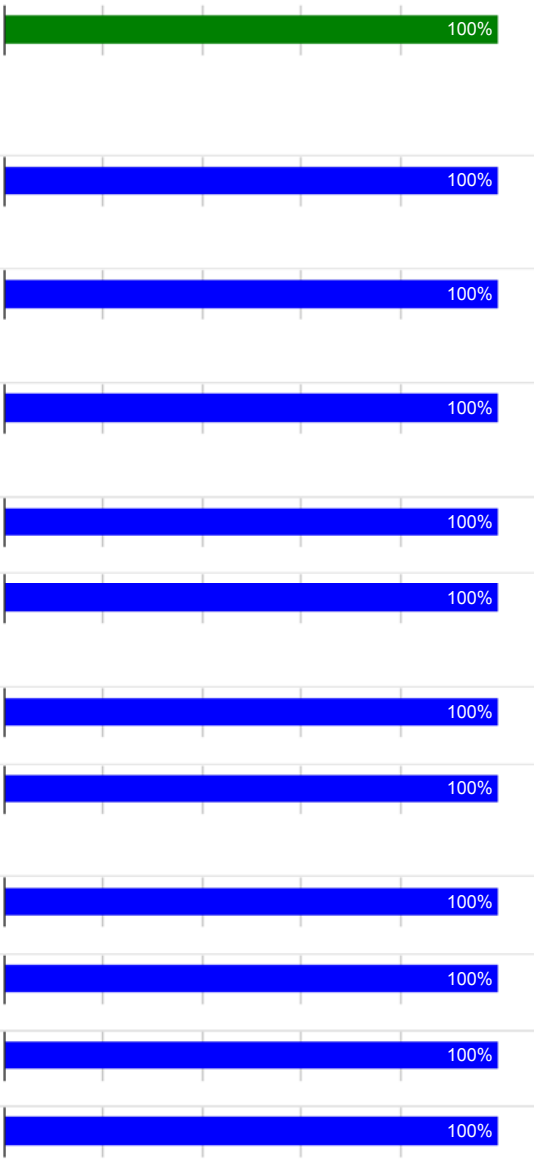
## Individual Input Measures - 1 Surveys

| | | Mean \| SD | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| 16 | The project objective and priorities were clearly defined. | 5.00 \| | 1 | | | | |

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential) Date: Sep 10, 2014

Individual Input Measures - 1 Surveys

| | | Mean \| SD | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| 18 | Comprehensive constructability suggestions (e.g., preassembly, prefabrication, modularization, and offsite fabrication) were evaluated and incorporated into the Engineering of the project. | 5.00 \| | 1 | | | | |
| 14 | The project team members were familiar with the project execution plan (PEP) and they used it to manage their work. | 4.00 \| | | 1 | | | |
| 15 | The Procurement strategy and plan were communicated to the project team during Engineering. | 4.00 \| | | 1 | | | |
| 19 | A formal Startup execution plan including operations and maintenance philosophy was incorporated in Engineering. | 4.00 \| | | 1 | | | |
| 20 | This project incorporated community relations issues in Engineering. | 4.00 \| | | 1 | | | |
| 21 | Project management team members were clear about their roles and how to work with others on the project. | 4.00 \| | | 1 | | | |
| 22 | Project team members had the authority necessary to do their jobs. | 4.00 \| | | 1 | | | |
| 23 | The project team including project manager(s) had skills and experiences with similar projects / processes. | 4.00 \| | | 1 | | | |
| 24 | People on this project worked effectively as a team. | 4.00 \| | | 1 | | | |
| 25 | The project experienced a minimum number of project management team personnel changes. | 4.00 \| | | 1 | | | |
| 28 | Key project team members understood the owner's goals and objectives of this project. | 4.00 \| | | 1 | | | |
| 30 | Project leaders recognized and rewarded outstanding personnel and results. | 4.00 \| | | 1 | | | |



CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential) Date: Sep 10, 2014

Individual Input Measures - 1 Surveys

| | | Mean \| SD | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| 32 | Resources were allocated according to project priorities. | 4.00 \| | 1 | 100% | | | |
| 34 | Project team members had the information they needed to do their jobs effectively. | 4.00 \| | 1 | 100% | | | |
| 35 | Plan and progress including changes were communicated clearly and frequently amongst project stakeholders. | 4.00 \| | 1 | 100% | | | |
| 37 | The project's Startup objectives were appropriately communicated to the relevant project team members. | 4.00 \| | 1 | 100% | | | |
| 39 | The number and quality of Engineering personnel was sufficient. | 4.00 \| | 1 | 100% | | | |
| 41 | Regulatory requirements (e.g., permitting and environmental issues) were properly managed and Engineering is in compliance. | 4.00 \| | 1 | 100% | | | |
| 43 | The Engineering deliverables were complete and accurate (possessing a minimal amount of errors and omissions). | 4.00 \| | 1 | 100% | | | |
| 45 | A dedicated process was used to proactively manage change on this project. | 4.00 \| | 1 | 100% | | | |
| 46 | A formal project Quality Management System was used for the Engineering of this project. | 4.00 \| | 1 | 100% | | | |
| 49 | The customer was satisfied with the Engineering phase deliverables. | 4.00 \| | 1 | 100% | | | |
| 29 | All of the necessary, relevant project team members were involved in an effective risk identification and management process for Engineering. | 2.00 \| | 1 | | 100% | | |
| 38 | The project's work processes and systems (e.g., document management, project controls, business and financial systems) supported project success. | 2.00 \| | 1 | | 100% | | |

CII 10-10 Performance Assessment Report
Industrial Projects - Engineering Phase
TENC00098 ~ Chemical Project (Confidential)
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## Individual Input Measures - 1 Surveys

| | | Mean \| SD | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| 40 | When issues arose, there were effective mechanisms to ensure they were resolved. | 2.00 \| | 1 | | 100% | | |
| 42 | Engineering deliverables were released in a timely manner as a result of a good Engineering work sequence on this project. | 2.00 \| | 1 | | 100% | | |
| 44 | The project control system was effective in monitoring project progress in terms of cost, schedule, and scope. | 2.00 \| | 1 | | 100% | | |
| 47 | An interim product database and/or standardized Designs were used extensively in Engineering of this project. | 2.00 \| | 1 | | 100% | | |
| 48 | The project team members attended sufficient professional training directly related to their work in Engineering. | 2.00 \| | 1 | | 100% | | |
| 26 | The key stakeholders (owner, design, vendors and suppliers) were fully aligned during Engineering. | 1.00 \| | 1 | | | 100% | |
| 27 | The interfaces between project stakeholders were well managed. | 1.00 \| | 1 | | | 100% | |
| 31 | Leadership effectively communicated business objectives, priorities, and project goals. | 1.00 \| | 1 | | | 100% | |
| 33 | Project leaders were open to hearing "bad news", and they wanted input from project team members. | 1.00 \| | 1 | | | 100% | |
| 50 | The cost of quality was determined during the Engineering phase of this project. | 1.00 \| | 1 | | | 100% | |
| 13 | The owner level of involvement was appropriate. | 0.00 \| | 1 | | | | 100% |
| 17 | The equipment Procurement and vendor schedules were not a significant challenge during Engineering. | 0.00 \| | 1 | | | | 100% |

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Industrial Projects - Engineering Phase
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## Individual Input Measures - 1 Surveys

| | | Mean \| SD | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|---|
| 36 | A high degree of trust, respect and transparency existed amongst companies working on this project. | 0.00 \| | 1 | | | | 100% |