



Lean Sensei Self-Assessment Supplement – Key Metrics (Example)

Thank you for sharing your Lean Sensei Self-Assessment Score and providing evidence (proofs) to support your score. This template is intended to further supplement that information and give us factual support for the results being accomplished. The requested metrics focus on several sections of the Award Criteria they include traditional metrics tracked by most organizations relative to safety, quality, cost, delivery and profitability.

Key metrics provided can be based on the plant as a profit center or a budget center. Within most of the key metrics segments, specific result measures (or theoretically similar measures) are required.

You are free to use something other than our suggested metrics. However, you must let us know why the alternatives you provide are appropriate. **Your business results (for the applicant's site) must outline three to five years of results detailing the trends toward improvement**, and include an explanation of any significant changes in the trends. *In some sections below we have included **optional metrics**. They are an experiment to learn if we should be gathering this type of information in the future. You are not required to submit the 'optional' information.*

Management System

The aim for Management Systems is alignment: developing employees, driving collaboration across different cross functional areas of responsibilities and more effectively serving customers. Optional metric information: Provide up to two metrics you use to understand how well your management system is aligned to cost effectively serve customers. Examples might include:

- **Optional** metric: How do you measure productivity improvement? What are your trends? If provided please also share any formula used and the number of employees included as an input to your calculation.

Plant Key Metrics are identified and tracked in the Plant Key Metrics Summary spreadsheet. The summary shows the target goal as well as the minimum and maximum for each of the goals.



											Projection Data	
Metrics	2015 Data	2016 Min	2016 Target	Measure	YTD	Jul	Aug	Sep	Oct	Nov	End of Cur. Qtr	Next Qtr
Quality & EHS												
8D Customer Responsiveness (closure)	100%	90%	95%	plan	90%	95%	95%	95%	95%	95%	95%	95%
				actual	100%	100%	100%	100%	100%	100%	100%	100%
Customer Complaints YTD	35	38	30	plan	NA	21	23	25	27	29	30	7
				actual	NA	21	22	25	26	27	30	7
Major Complaints YTD	22	23	20	plan	NA	10	11	13	15	17	20	5
				actual	NA	2	2	2	2	2	2	1
Supplier Quality Incidents (YTD)	55	53.75	43	plan	43	4	4	3	3	3	7	10
				actual	31	4	4	3	3	3	3	10
First Pass Yield (X44 Sensor + Ceramic + M-fuse)	98.3%	98.3%	98.5%	plan	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
				actual	98.5%	98.9%	98.8%	98.9%	98.8%	98.8%	98.5%	98.5%
Number of Maverick lots	105	102	87	plan	87	7	7	7	8	8	24	20

- **Optional** metric: How do you measure the results of your improvement practices?
How do you know you are getting better at getting better?

The goals and projects are cascaded down from the X-matrix system and the Plant Key Metrics. For example, if there is a cost savings goal for the plant, it is broken down to individual departments. The department will then cascade it down to their individual groups. For example, if the plant has a cost savings goal of \$500K, \$300K may be assigned to the EBU line. The EBU line may then break the \$300K down to each area and maybe the 3AB area is responsible for \$100K. Supervisors and Engineers may then have projects entered in their LPMP to achieve that goal. All goals are able to be traced back to the original deployment of the corporate strategy. We have met our targets for each of the last five year.

We are also tracking the number of employee ideas that get implemented. This has also been increasing.

2011 1,300 implementations
 2012 2,530 implementations
 2013 5,403 implementations
 2014 4,221 implementations (Plant was impacted by a hurricane and we spent several months just getting back up to speed)
 2015 10,231 implementations

Human & Organizational Development

The aim is to create a work environment where people can do their best work and develop their talents and capabilities.

- **Required** metric: Report three to five years evidence of employee engagement, including a clear description of how you measure it

There is a lean participation goal (figure 24) for the plant which includes both lean training hours and lean project participation. The percentage of requirement for each group had been increasing year over year until 2015. In 2016, we added the shared service associates to the participation goal. We kept the managers at 100% but due to the large number of professionals we dropped the requirement to 68% in order to set a more realistic goal for professionals. 100% of managers need to have a minimum of 40 hours or more of lean participation, 68% of professionals need a minimum of 40 hours and 70% of the direct and indirect labor need 12 hours or more. The hours are based on a rolling 12 months so that only the hours during the most recent 12 months are counted.

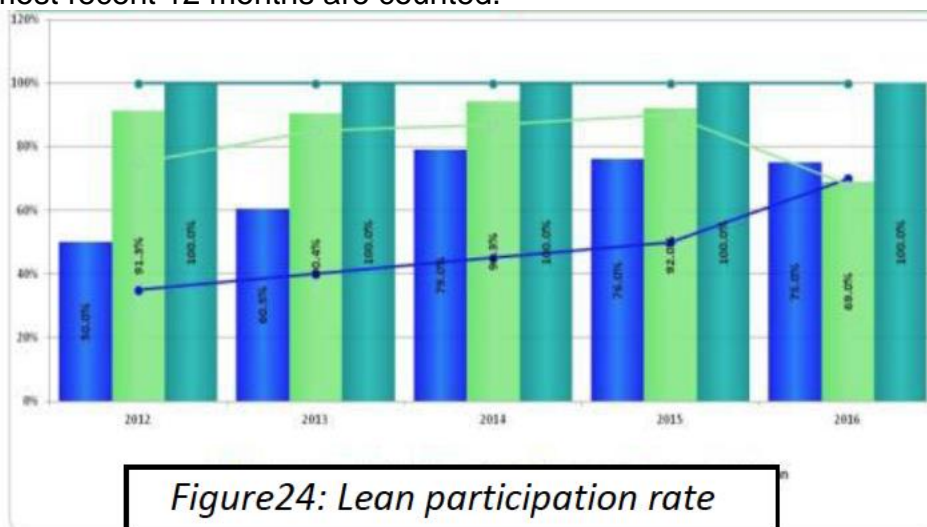
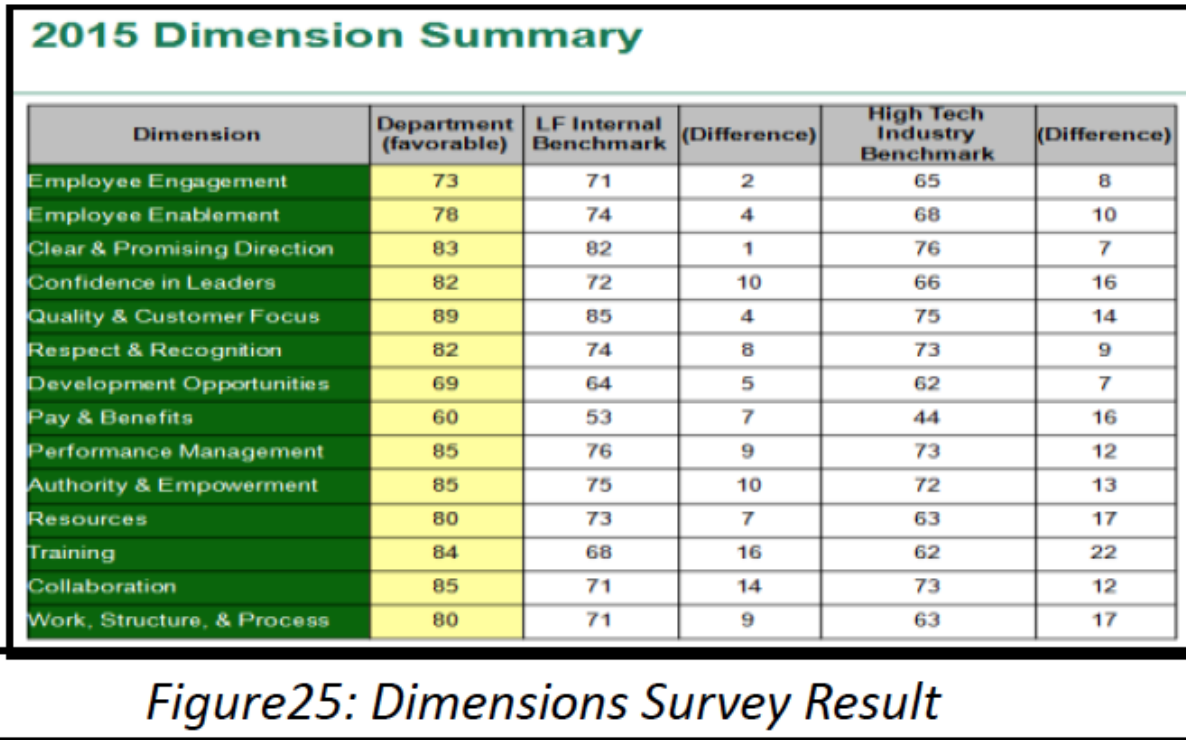


Figure24: Lean participation rate

Figure25: Dimensions Survey Result 11

To better understand employees' engagement, Fantastic Electronics HR developed an employee engagement survey that was used in all plants beginning in 2009. In 2015, Corporate began to use a new engagement survey for all locations so our system was replaced. The survey asks questions in 14 different dimensions (figure 25) such as people engagement, people enablement, respect & recognition, training and so on. Based on the results of the survey, FE leadership developed plans to work on areas that show weaknesses. The action plan includes training, change environment, creating career development plan and so on. Over the last three years of the survey, Fantastic Electronics shows the following trends: (Photo 1.30 Assessment Score Card) In addition

to the metrics from the 20 Steps survey, measurement of the associate engagement and morale through participation in the Wellness program, a participatory program with incentives for completing goals and personal objectives, such as receiving a discount on their medical premiums.



2014		2013		2011		2010	
Average Score	Percent Agree	Average Score	Percent Agree	Average Score	Percent Agree	Average Score	Percent Agree
3.37	47%	3.28	42%	3.42	47%	3.38	45%
3.53	50%	3.45	49%	—	—	—	—

Figure 38: Engagement survey result from 2010 to 2014

- **Optional** metric: What are your employee turnover statistics for the past three to five years? If you have seasonal employees you may just share the turnover statistic for your permanent employee workforce.

Turnover has been sporadic

2011 5% 2014 20% (partly due to major storm and flooding)

2012 9% 2015 6%

2013 8%

Safety and Environmental Health

The aim is to have a safe work environment where everyone safely goes home at the end of the work day. There is also an aim to reduce your impact on the environment.

- **Required** metric: Report your safety record for the past three to five years.

FE has put a lot of effort in to build a good safety environment for our associates and to make safety part of their DNA. FE continually does regular equipment risk assessments, adds poke yoke design when possible and encourage associates to speak out and report all injuries, even the small injuries that would of gone unreported in the past.

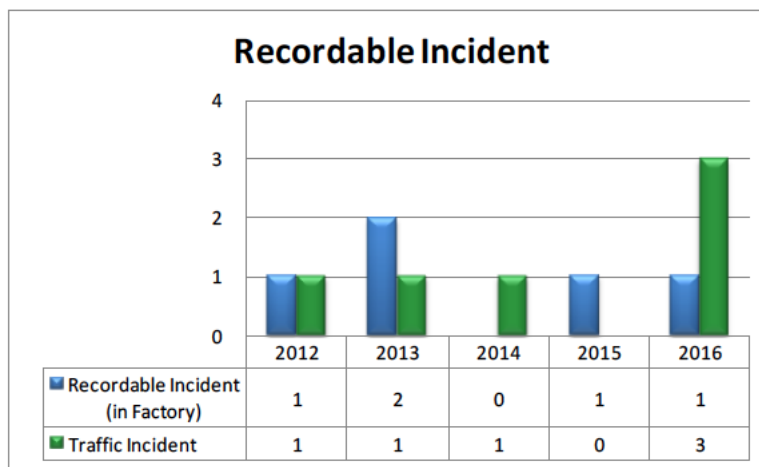


Figure 54: Recordable Incident

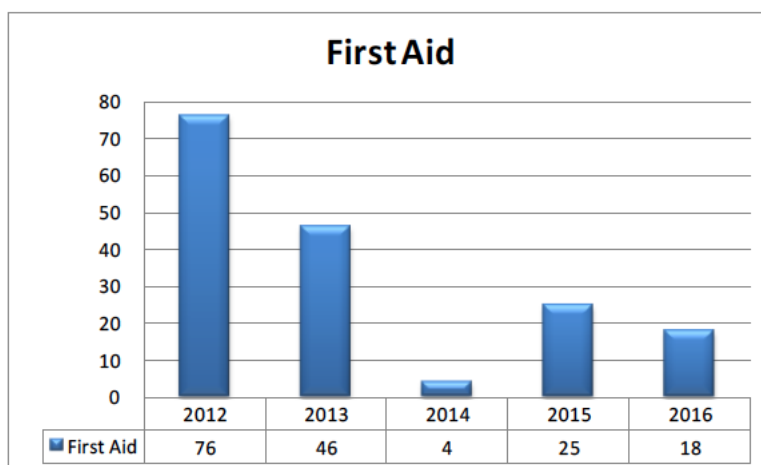
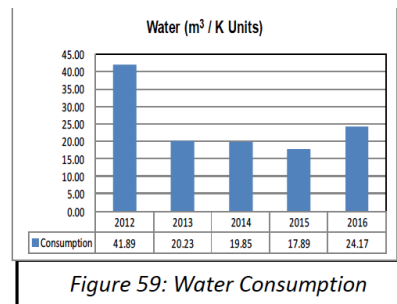
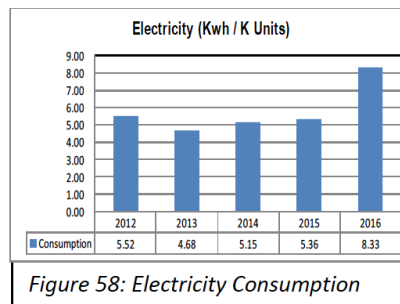
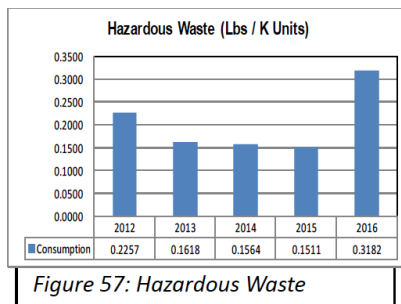


Figure 55: First Aid

- **Required** metric: Report your energy efficiency record for the past three to five years.



- **Optional** – Are there any other key metrics being used to show how you have reduced your environmental footprint? None at this time

Business Results

Quality

The aim is to provide the customer with zero defective products. The following standard measures are to be reported:

- **Required** metric: Scrap and/or yield rates (planned versus unplanned) for the last three to five years.

FE does not differentiate between planned and unplanned scrap. All metrics are tracked based on overall scrap. The numbers used for the scrap dollar percentage (figure 157) are the material dollars scraped divided by the black flush of the material dollar value of the devices produced. The improvement goals for the material scrap value vary between 10% ~20% year over year based on the previous year's value. A challenge to improving our scrap numbers is the rising proportion of new products and/or new process launching in FE. There are times we will release a product to market even though our internal scrap is not optimized.

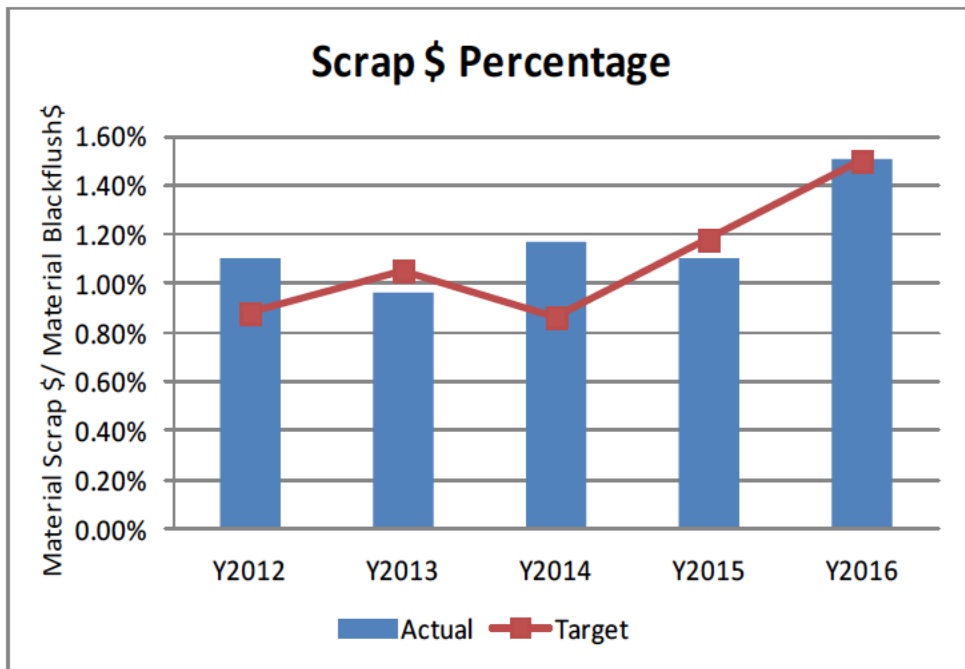
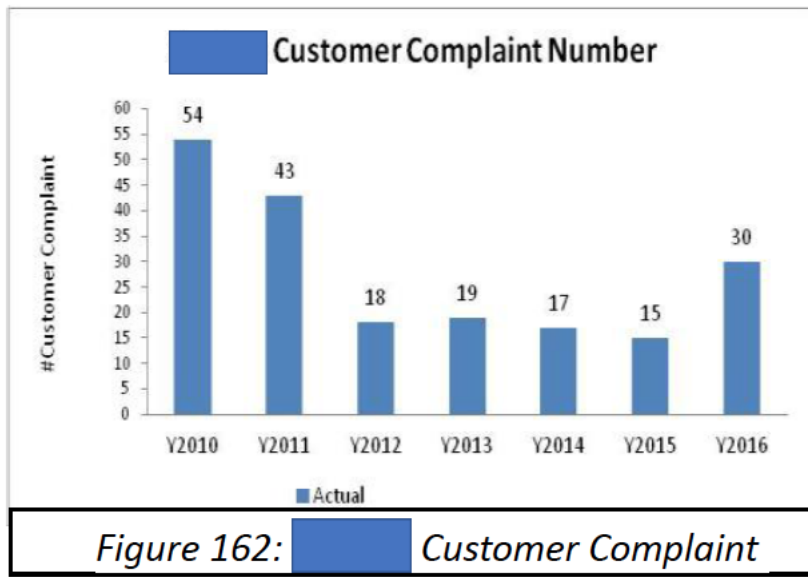


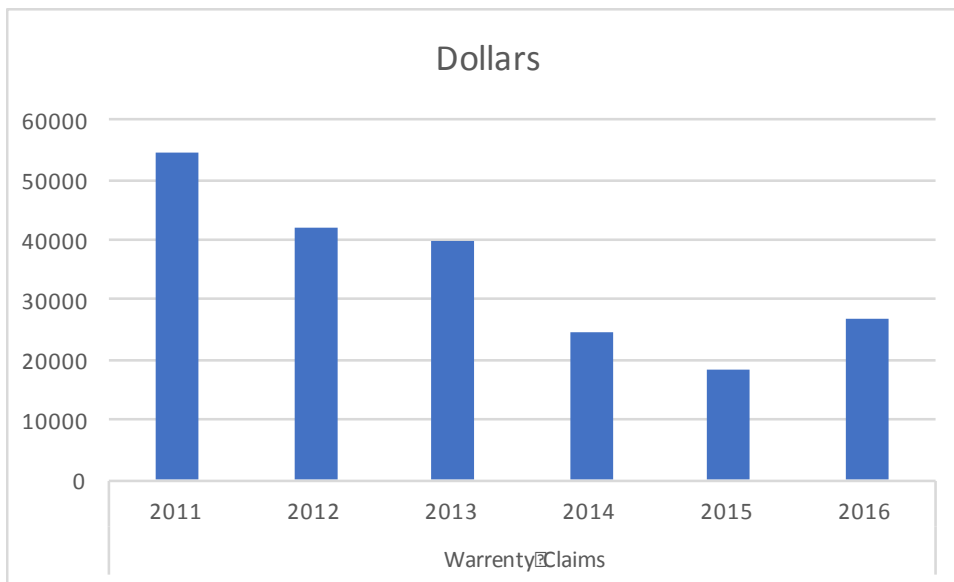
Figure 157: Scrap \$ percentage

- **Required** metric: Customer rejects annually (ppm) or appropriate industry measurement for the last three to five years.

FE tracks customer complaint (figure 162) as part of both the True North Metrics and the traditional plant metrics. The customer complaint target reduction goal rule is 15% to 25% year over year. From 2010 to 2015, customer complaints had a significant improvement from 81 complaints in 2010 to 18 in 2015. In 2016, the number increased due to the Automotive Sensor Products integrated into FE plant. Reducing the customer complaints for the automotive sensors is a major focus area. Through 6 sigma projects and Kaizen blitzes there has been an improvement in open fuse and body damage. Customer rejects have been reduced to 0.027ppm from 0.04 ppm based on the 550 million pieces product shipping volume in 2016. Since 2010, we have focused on our zero PPM strategy. Even though we introduced more and more new products we have still shown improvement for most years.



- Required metric: Warranty claims for the last three to five years.



- **Optional** metric: Other appropriate quality- related measures that support the achievement of your Policy Deployment Plan

Cost

The aim is to reduce cost and improve plant productivity. The two following required measures are to be reported (with other measurements included if desired):

- **Required** metric: Value added per associate or employee (sales minus purchased materials divided by total headcount) for the last three to five years.

There has been an overall up trend in Value Added per Associate (figure 164) since 2012. When you compare 2016 with 2012 the value added figure has more than doubled. Lean became a main focus in 2011 and since that time we have introduced many lean tools and improvement projects in productivity, automation, standard work, etc.

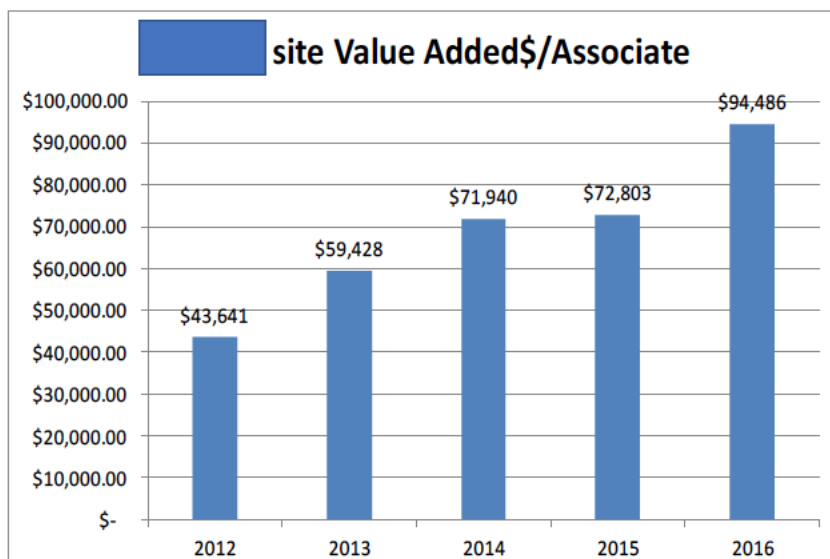


Figure 164: site value added \$ per associate

- **Required** metric: Inventory turns—raw, work-in-process and finished as appropriate, for the last three to five years.

FE uses inventory days (figure 165), instead of inventory turns as a measure of inventory effectiveness. From 2012 – 2015 inventory days have had a slight overall downward trend.



Figure 165: inventory days

- **Optional** metric: Other appropriate cost- related measures that would support the achievement of your Policy Deployment Plan

One way the plant measures productivity improvements is unit/hour. (Good units produced divided by direct and indirect labor hours worked). This metric has shown continuous improvement over the last several years.

Delivery

The aim is to provide the customer the product on time and in the quantity desired. The following two required measures are to be reported (with other measurements included if desired):

- **Required** metric: Percent on-time and complete shipments for the last three to five years.

Any uncompleted order is not counted on time. The chart (figure 169) shows the percent of completed orders that were on time to the customer.

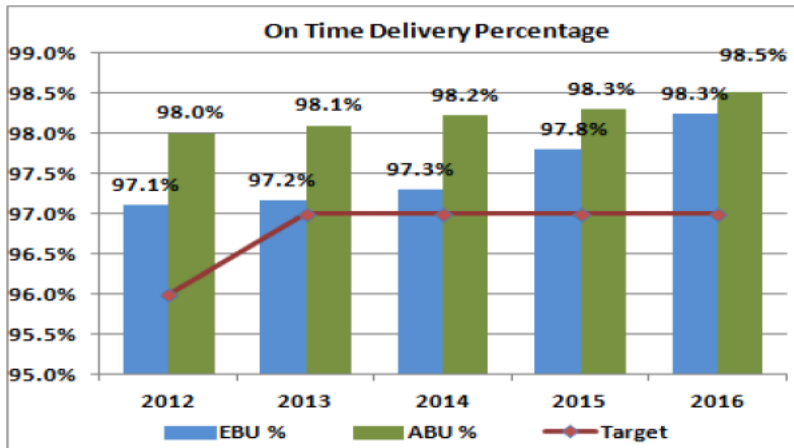


Figure 169: On time delivery percentage

- **Required** metric: Premium freight costs, including incoming raw material or finished goods shipment for the last three to five years. (premium freight is abnormal freight to meet customer demand)

The premium freight cost chart (figure 170) does not show a good trend. In 2015 the premium freight cost shows an increase in cost that was due to the west coast port strike that caused congestion in the first half of 2015. We chose to make air shipments to customers in Asia and Europe instead of the normal sea shipments, raising our costs, but ensuring our customers received their orders on time.

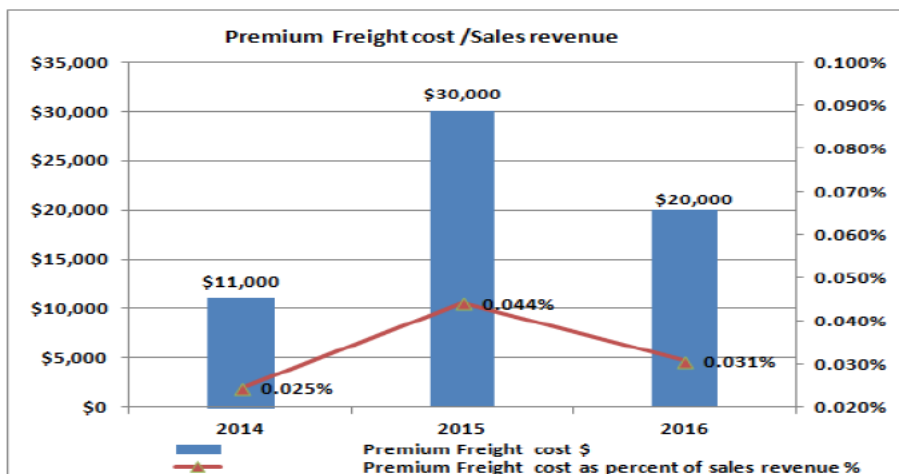


Figure 170: Premium cost/Sales revenue

- **Optional** metric: Other appropriate delivery- related measures that would support the achievement of your Policy Deployment Plan

FE uses many other delivery related measure to support the achievement of the policy deployment. One of those measures is schedule adherence. Both line fill (total # of material line items in the master plan that were completed) and line scheduled (total # of material line items in the master plan that the master scheduler released) are tracked.

Profitability

The aim is to detail financial achievement to ensure the ongoing operation of the plant. The following two required measures are to be reported (with other measurements included if desired):

- **Required** metric: Earnings before interest and taxes (EBIT) profitability or other appropriate measure to document plant profitability for the last three to five years

The chart (figure 175) shows earnings before interest and taxes (EBIT) profitability for FE Plant. In 2016, the Automotive Sensor Products (ASP) was transferred to FE.

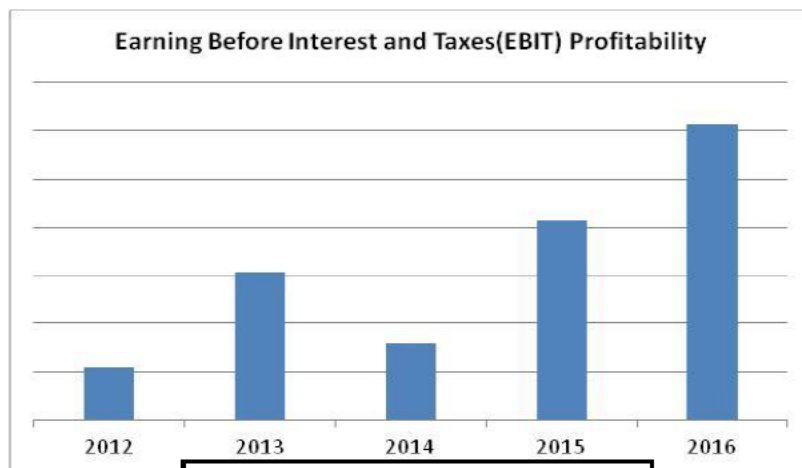
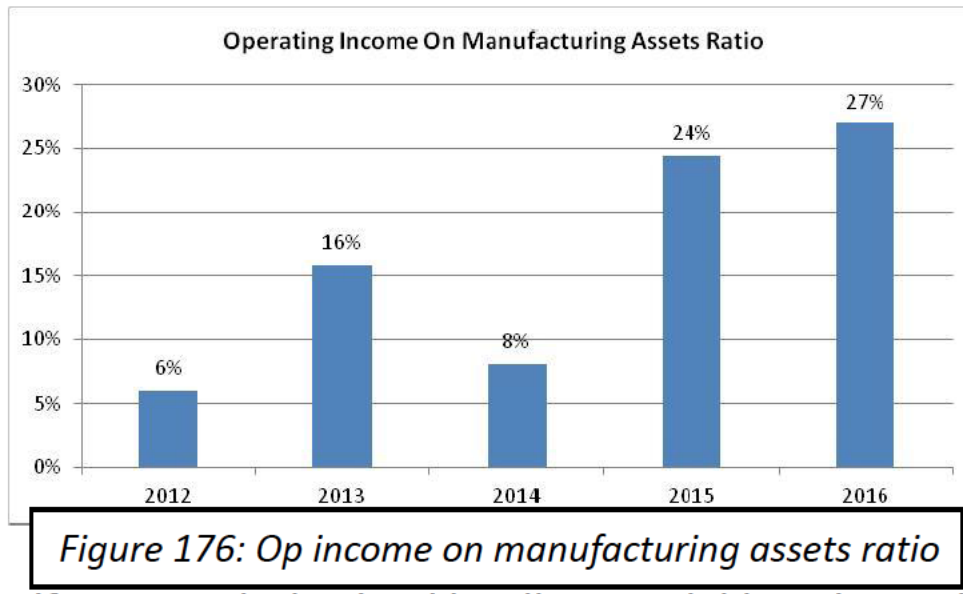


Figure 175: EBIT

- **Required** metric: Operating income on manufacturing assets ratio for the last three to five years.

For this metric (figure 176), there has been a positive trend in the past three years. In 2014 we acquired the Douglas Sensor business. Douglas had 3 manufacturing sites worldwide with one of the sites in our home town.



- **Optional** metric: Other appropriate profitability-related measures that would support the achievement of your Policy Deployment Plan

FE plant's actual Gross Profit (GP) % is another measure that shows the overall achievement of profitability. The 2016 GP% is 2 times the ratio from 2012.