



The Steeple Awards recognise member companies or individuals for their contribution to the steel industry over a one-year period.

This year's winners were announced at the 6th Steeple Awards ceremony at the 49th worldsteel conference in Chicago on 12 October 2015. The trophies, known as Steeles, were awarded in seven categories. The nominated projects are detailed in this document.

The selection process for nominations varies between awards. In most cases nominations are requested via the appropriate membership committee and the worldsteel extranet. Entries are then judged by selected expert panels using agreed performance criteria. Journalist of the year and Industry communicator of the year are selected by direct vote.

1. Steel industry website of the year

- **TMK (www.tmk-group.com)**
- Severstal (www.severstal.com/eng)
- Tata Steel Europe (www.tatasteeleurope.com)
- ThyssenKruppSteel Europe (www.thyssenkrupp-steel-europe.com/en)
- voestalpine (www.voestalpine.com/group/en)

2. Innovation of the year

- **POSCO for lean duplex stainless steel with super ductility using a strip-casting process**
- ArcelorMittal for hot-stamped laser-welded blank door rings
- Erdemir for a new approach to the risk of premature wear of copper staves in blast furnaces
- voestalpine for optimisation of the burden charging & distribution equipment in blast furnaces

3. Excellence in sustainability

- **ArcelorMittal for their 10 sustainable development outcomes**
- China Steel Corporation for the development of an industrial park using by-product fuel gases
- Tata Steel Europe for the certification of 19 construction products for responsible sourcing

4. Excellence in Life Cycle Assessment

- **Tata Steel Europe for the use of LCA to demonstrate the impact of the reuse of steel in a world class circular economy building in Holland**
- ArcelorMittal for the use of sustainable charcoal to replace coke in blast furnaces in Brazil
- JSW Steel for using slag to reduce greenhouse gas emissions in cement manufacture
- ThyssenKrupp Steel Europe for their InCar@plus 'Solutions for automotive efficiency' project

5. Excellence in education and training

- **Tata Steel Europe for developing a blended learning course for young people transitioning to management: Steelie Award winner**
- ArcelorMittal for its corporate Learning Week programme
- Baosteel for training workers using advanced computer-based process simulations
- Nucor for partnering in development of an online game to enhance business acumen in the steel industry
- Tenaris for delivering the massive open online course 'Introduction to Steel'

6. Journalist of the year

- **Joseph Innace (Platts)**
- Maytaal Angel (Thomson Reuters)
- Vera Blei (SteelFirst)
- Sonja Elmquist (Bloomberg)
- Wenyan Lu (China Metallurgical News)

7. Industry communicator of the year

- **John Ferriola (Nucor)**
- Wolfgang Eder (voestalpine)
- Sajjan Jindal (JSW)
- Hans Jürgen Kerkhoff (German Steel Federation)
- Liu Zhenjiang (China Iron and Steel Association)

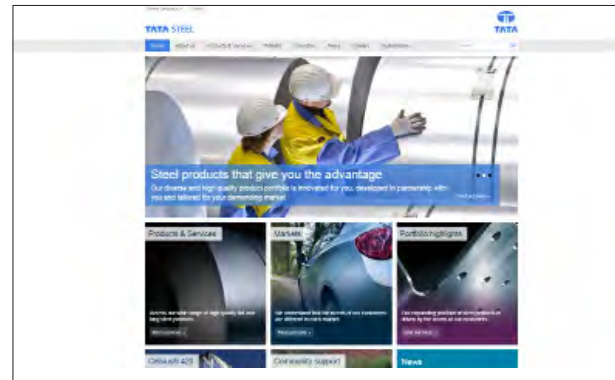
The 2015 Steelie Award Winners are highlighted in blue

INDUSTRY WEBSITE OF THE YEAR

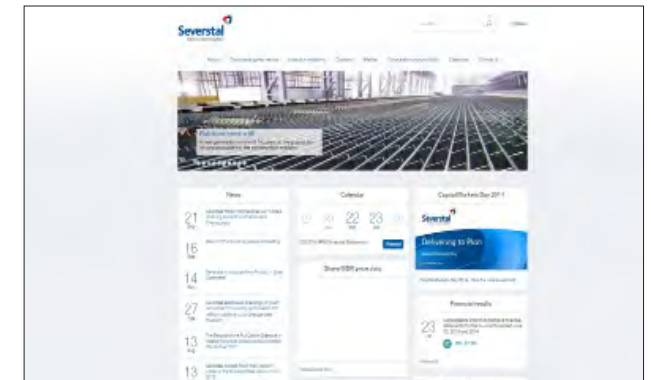
Nominations and winners



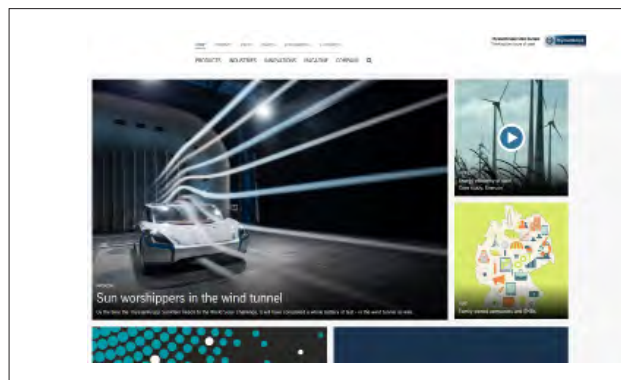
WINNER : TMK
www.tmk-group.com



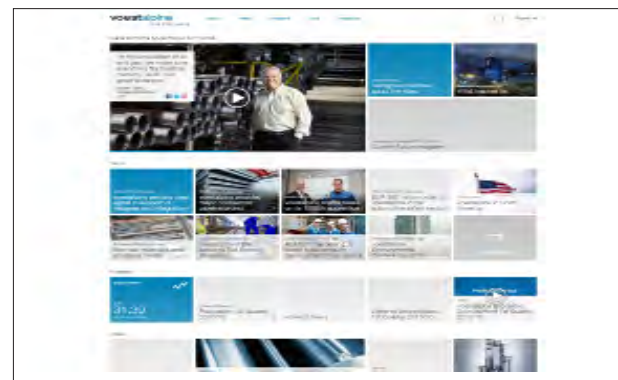
NOMINATED: Tata Steel Europe
www.tatasteeleurope.com



NOMINATED: Severstal
www.severstal.com/eng



NOMINATED: ThyssenKruppSteel Europe
www.thyssenkrupp-steel-europe.com/en



NOMINATED: voestalpine
www.voestalpine.com/group/en

POSCO for lean duplex stainless steel with super ductility using a strip-casting process



The Super Ductile Lean Duplex Steel (PosSD) developed by POSCO is an innovative alloy design aimed at overcoming the limitations of formability while at the same time reducing the cost of alloying elements by using less expensive materials. In addition, PosSD utilises a unique strip casting technology to reduce pin hole casting problems that occur due to the solubility limitation of nitrogen.

By using technologies known as TRIP phenomena (Transformation Induced Plasticity) and strip casting process, PosSD boasts many valuable features:

- High strength, improved elongation and corrosion resistance
- Extensive application opportunities: kitchen utensils, sinks, welded pipes and tubes, railroad car roofs, etc.
- Fully commercialised using strip casting technology
- 50% cost reduction through savings made on alloying elements by bypassing the continuous casting and hot rolling processes
- Environment friendly strip casting process which bypasses continuous casting, slab reheating, and hot rolling processes, inducing savings on energy consumption
- Savings on raw material cost of around 50% by minimising the addition of Nickel (Ni) and Molybdenum (Mo)
- Shorter lead time by about 3-4 days through bypassing the processes of continuous casting to hot rolling.





ArcelorMittal for hot-stamped laser-welded blank door rings

ArcelorMittal's Hot Stamped Laser Welded Blank Door Ring concept allows a car door part weight reduction of up to 20% while at the same time providing superior results in crash performances.

Several innovations made this breakthrough possible, including:

- New process to ensure strong weld of the aluminum coated sheet
- Design optimisation of the part and of its stamping process.

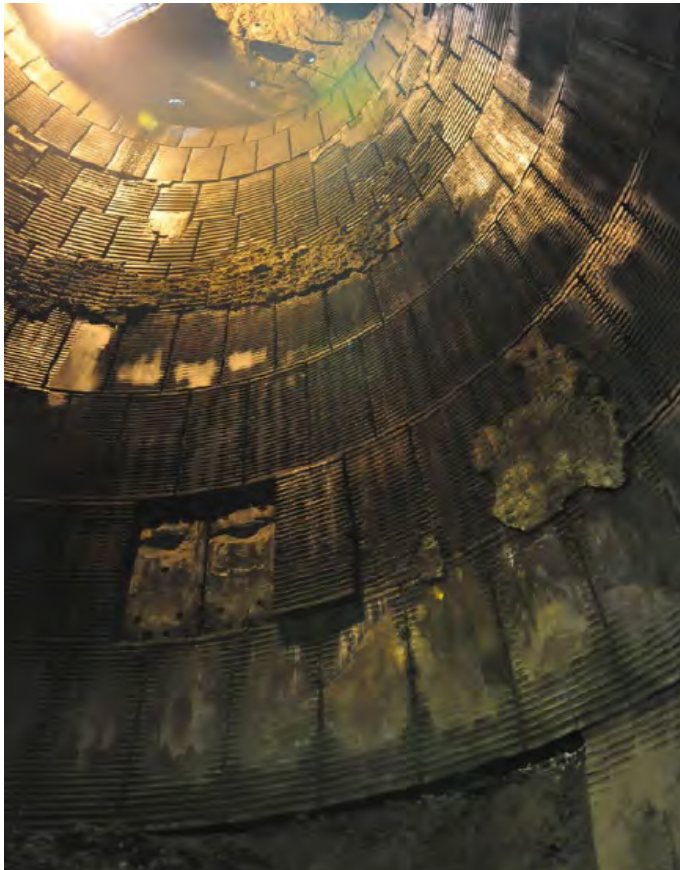
This achievement was made possible thanks to close collaboration between ArcelorMittal R&D, ArcelorMittal Tailored Blanks Operations in Europe and North America, Magna (for Hot Stamping) and Honda, as original equipment manufacturer (OEM).

The concept aims to provide significant benefits to the OEMs, including:

- Up to 20% weight reduction of the part concerned, i.e. around 6 kg per vehicle. Its first implementation on the Honda Acura MDX led to a 3 kg saving, contributing to improved fuel economy
- Increased safety and improved crash test results: 5 star-rating achieved, best in class for small offset crash test.



Erdemir for a new approach to the risk of premature wear of copper staves in blast furnaces



Premature wear of staves in the bosh area is the main reason for blast furnace re-lines, which cause production loss and increased operation costs. A new approach has been developed and reported to determine the risk of premature failure of copper staves using blast furnace geometric parameters and operation parameters, which is referred to as M_ESMER_BWF (BWF stands for the “Bosh Wear Factor”).

The formula was applied to data on 34 blast furnaces collected through the 2013-2014 worldsteel project “Premature Wear of Copper Staves in Blast Furnaces” and gave a statistically significant correlation between design values and actual wear.

The proposed design approach claims economic and environmental benefits including:

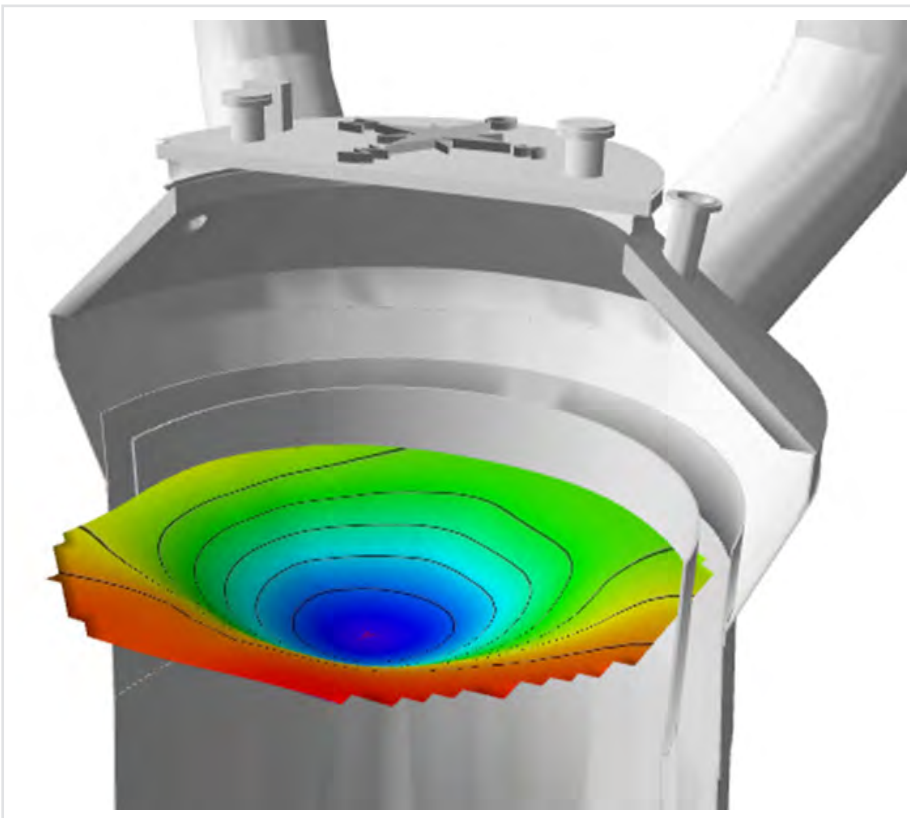
- Delaying blast furnace re-lines by at least 10 years and prolonging the lifetime by preventing premature wear of copper staves
- Preventing blast furnace productivity decrease due to the premature wear of copper staves
- Reduction in water consumption of blast furnace cooling system due to higher accretion formation capability and efficient cooling
- Savings on fuel consumption due to higher accretion formation capability
- Reduction in emissions intensity per tonne of pig iron produced to air due to savings on fuel consumption related with higher accretion capability.

voestalpine for optimisation of the burden charging and distribution equipment in blast furnaces

The aim of the project was to lower the specific reducing agent rate in the ironmaking blast furnace by optimising the burden distribution and burden charging equipment. This was achieved by developing and installing two highly sophisticated measurement devices and subsequent optimisation measures of the overall charging process.

The first device is a novel 3-D burden surface imaging radar, which enables gauging of the burden topography in real-time with an update period of about 1 sec. Unlike conventional systems, the radar gauges the full 3-D topography without any moving parts by the use of a multi-dimensional antenna array with about 1,100 antennas and advanced beamforming algorithms.

The other system utilises acoustic signals and tomographic algorithms to measure two dimensional temperature distribution of the blast furnace top gas. In contrast to the existing equipment, an active loudspeaker based system has been developed. It is capable of simultaneously emitting tailor-made orthogonal signals through the individual loudspeakers, resulting in a significantly reduced measurement time of a few seconds per distribution and enhanced accuracy.





The 10 sustainable development outcomes are represented by a series of rich, engaging illustrations depicting both the steel value chain and the use of steel use in everyday life.

ArcelorMittal for their 10 sustainable development outcomes

In 2015, ArcelorMittal launched 10 sustainable development (SD) outcomes outlining its contribution to a sustainable future. Country-based SD committees are tasked with assessing their operations against each outcome, enabling the company to share challenges and successes and plan for improvement.

ArcelorMittal plans to update stakeholders on its progress towards the 10 outcomes through future sustainability reporting, both at corporate level and through its web of local reports in each major country of operation.

Progress towards the outcomes will be reported from 2016 onwards.

10 sustainable development outcomes:

1. Safe healthy quality working lives for our people
2. Products that accelerate more sustainable lifestyles
3. Products that create sustainable infrastructure
4. Efficient use of resources and high recycling rates
5. Trusted user of air, land and water
6. Responsible energy user that helps create a lower carbon future
7. Supply chains that our customers trust
8. Active and welcomed member of the community
9. Pipeline of talented scientists and engineers for tomorrow
10. Our contribution to society measured, shared and valued

The rationale that lies behind each sustainable development outcome is outlined in ArcelorMittal's sustainability pages [online](#).

Tata Steel Europe for the certification of 19 construction products for responsible sourcing

Over the last 10 years, Tata Steel has taken an active role in the development of BES6001, an internationally recognised voluntary framework standard for responsible sourcing of construction products. Certification provides independent third party verification of a supplier's organisational and supply chain governance as well demonstrating that they produce products in a sustainable manner.

Tata Steel recognised this as an opportunity to differentiate its products as well as gain external recognition for the good business practices and processes it already had in place.

To date, Tata Steel has 19 product groups produced at 9 manufacturing sites certified by BSI to a 'Very Good' level; making it the largest company with the most diverse range of construction products to achieve certification to BES6001.

Developing the evidence portfolio for certification required a 6 month commitment involving nearly 50 people from all levels across the majority of functions and operational units.

Tata Steel is now able to speak knowledgably and with confidence to the construction sector, as well as other markets sectors, about responsible sourcing and the role of steel in this. This has led to numerous business opportunities which would not have materialised without having this certification.



China Steel Corporation (CSC) for the development of an industrial park using by-product fuel gases

An industrial park in Kaohsiung City hosts CSC and various factories. CSC has been promoting the District Energy Integration Plan since 1992, through which CSC's by-product fuel gases and steam are sold to neighbouring factories, and CSC purchases industrial gases and waste fuel from them. This increases energy efficiency and reduces resource consumption and pollutant emissions in the region.

The Plan assists in promoting sustainable development through reducing both production costs and greenhouse gas emissions. It stimulates economic development as well as green competitiveness. In terms of social benefits, the initiative has led to the creation of jobs and the reduction of safety hazards through eliminating the need for boilers or other potentially dangerous equipment.

Steam by-products, for example, are used for heating the water in CSC's Group Employee Dormitory and the swimming pool, which is also open to the local community at a moderate fee.



In the forefront: CSC and District Energy Integration Plan employees. In the background: Pipeline through which by-products are delivered.

EXCELLENCE IN LIFE CYCLE ASSESSMENT

Winner

Tata Steel Europe for the use of LCA to demonstrate the impact of the reuse of steel in a world class circular economy building in Holland



Global competition for resources, increasing population and global economic growth cause an increasing pressure on raw materials and ecosystems. This requires a major shift in the design of buildings and choice of materials in order to move to a circular economy.

Tata Steel and the Dutch Steel promotion Institute Bouwen met Staal have adopted new building practices to enable high steel re-use rates. These developments were used in the construction of the new 31,000 m² Fokker 7/8 Distribution Centre at the International Schiphol Airport, Amsterdam.

Practices include:

- Demountable connections for beams, columns (no on-site welding, adapted anchor bolts) and cladding (no shot connections)
- Shear stability provided by horizontal steel trusses instead of flooring
- Design using modular/standard beam and column dimensions, lengths, sizes.
- Development of a “Building Material Passport” with all steel specifications for future reference and re-use.



A level of re-use of 20 - 40% gives an 18 - 36% improvement in the environmental footprint of steel, leveraging the position of steel in material decision making. The project demonstrates the importance of collaboration of LCA experts, marketing and commercial teams, together with customers.

EXCELLENCE IN LIFE CYCLE ASSESSMENT

Nominated project

ArcelorMittal for the use of sustainable charcoal to replace coke in blast furnaces in Brazil



Greenhouse gas emissions play an important role in steel-making business strategy. The use of sustainable charcoal from planted forests as “biomass” to replace coke in blast furnaces in addition to steel scrap use for steel production is one option for tackling this problem.

ArcelorMittal Long Carbon Brazil has been using this route for charcoal production in dedicated forests as well as steel production in Juiz de Fora unit. Currently 1 million tonnes of steel per year is produced in this route (40% of charcoal pig iron and 60% scrap), consuming 0.35 million tonnes of charcoal per year. This avoids the emission of 0.6 million tonnes of CO₂e per year in a sustainable way.

Since the beginning of this project in 2007, 3.6 Mt of CO₂e emissions have been avoided. This is equivalent to between 5 and 10% of annual Brazilian steel sector emissions.





**Blast furnace slag
fine powder [Input]**



*50-55% slag blended
in cement making*



**Blast furnace slag
cement [Output]**

JSW Steel for using slag to reduce greenhouse gas emissions in cement manufacture

JSW Steel produces approximately 4 million tonnes of slag per year from the blast furnaces in its integrated iron and steel plant at Vijayanagar Works. This blast furnace slag can be used as a by-product and JSW Steel have therefore set up a cement manufacturing facility to utilise this slag.

Production of slag-based cement creates a value-added product from material that would otherwise have been destined for disposal in a landfill. Not only does the making of slag-based cement reduce the burden on landfills, it also reduces the greenhouse gas emissions while making cement. Overall, from a life cycle approach, every tonne of Portland cement replaced with slag-based cement results in the elimination of one tonne of greenhouse gases. Therefore, JSW Steel has the potential to reduce their emissions by 4 million tonnes at the Vijayanagar Works.

The company has set up manufacturing units to produce two commercial products using the BF slag: Portland Slag Cement [PSC] and Ground Granulated Blast Furnace Slag Cement [GGBSC].

EXCELLENCE IN LIFE CYCLE ASSESSMENT

Nominated project

ThyssenKrupp Steel Europe for their InCar@plus 'Solutions for automotive efficiency' project

InCar@plus is currently the world's largest manufacturer-independent project by an automotive supplier. In more than 30 projects and in over 40 individual solutions, ThyssenKrupp Steel Europe engineers have developed new products in areas of car body, powertrain, chassis and steering.

The focus of InCar@plus is on environmentally friendly solutions related to energy efficiency, electric mobility and lightweight design. These criteria used in these solutions include lightweighting, cost efficiency, sustainability and functionality. For at least one of these criteria, each of our InCar@plus solutions will be better than the current state of technology.

Based on a life cycle approach (from production to recycling as well as multiple environmental impacts) from the very beginning of the project, solutions are developed for automotive efficiency, to enable sustainable mobility and avoid unintended consequences. The project helps to create new development projects and strengthens customer relationships as well as fostering the collaboration and technical exchange among the business areas of ThyssenKrupp.



InCar@plus: "Solutions for automotive efficiency"

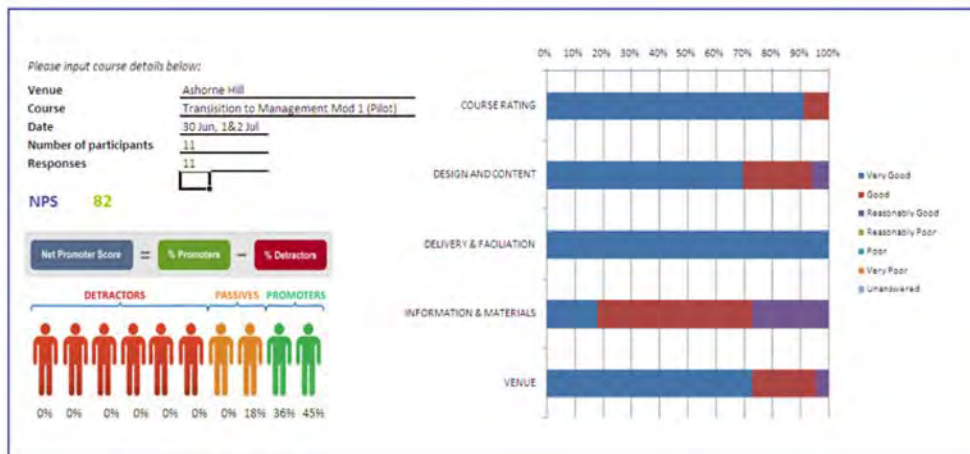
Tata Steel Europe for developing a blended learning course for young people transitioning to management

Working in collaboration with steeluniversity and CrossKnowledge, Tata Steel Europe successfully introduced a highly cost effective blended learning approach to leadership training.

The principle design concept separates generic knowledge (which is provided by eLearning on a phased basis over the duration of the programme) from valuable face to face learning focused on building tangible skills underpinned by that knowledge.

Between 4 and 6 hours of eLearning were used in preparation for each face to face module, mixing interactive content and short videos to maintain engagement. Use of metrics reported frequently and openly with participants and their managers during run-up to the face-to-face modules drove participant engagement enabling 100% completion of pre-learning elements.

Direct contact time was reduced from 7 to 5 days offering significant financial benefit.



EXCELLENCE IN EDUCATION AND TRAINING

Nominated project

ArcelorMittal for its corporate Learning Week programme

ArcelorMittal's Learning Week is a learning and communication event dedicated to participating in as well as informing about Learning & Development initiatives across all levels and geographies of ArcelorMittal. The event acts to reinforce the importance of learning for the employee and the organisation.

More than 43,000 people participated in activities organised at the global and local level over more than 130 sites worldwide from 8-12 June under the motto "Learning, our key to success".



EXCELLENCE IN EDUCATION AND TRAINING

Nominated project

Baosteel for training workers using advanced computer-based process simulations

Baosteel developed a simulation platform based on the company's actual production processes and facilities to deliver operator training.

The training platform has played an important role in the skill training both for the reserve force technicians and on-the-job employees.



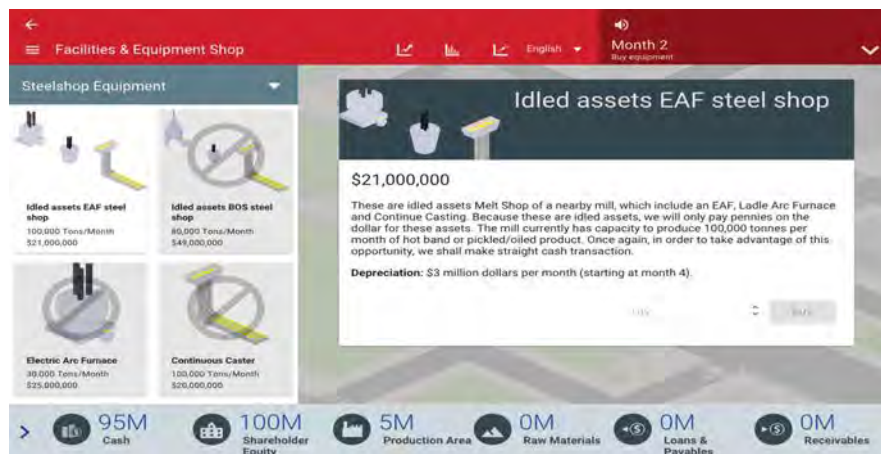
EXCELLENCE IN EDUCATION AND TRAINING

Nominated project

Nucor for partnering in development of an online game to enhance business acumen in the steel industry

Nucor collaborated in the conversion of its business training board game “Dollars & Tons” to an online version. The online game, called steelBusiness, will be delivered by steeluniversity and is available to all worldsteel Members.

The game supports leadership development and increasing the business acumen of people throughout the company. Users run a steel company, making decisions on production and selling into the market while learning how their decisions affect the company’s financial performance.



EXCELLENCE IN EDUCATION AND TRAINING

Nominated project

Tenaris for delivering the massive open online course 'Introduction to Steel'

Tenaris created and delivered the massive open online course 'Introduction to Steel'. The course was delivered on the edX platform with both live and self-paced elements. The course attracted 7,599 participants, achieved a 29% completion rate, and uses innovative training technologies such as micro-learning to create a dynamic learning experience. The course is now available at edx.org.



JOURNALIST OF THE YEAR

Nominated journalists



- Maytaal Angel (Thomson Reuters)
 - Vera Blei (SteelFirst)
 - Sonja Elmquist (Bloomberg)
 - Joseph Innace (Platts)
 - Wenyan Lu (China Metallurgical News)
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- **Winner Journalist of the year 2015:**
Joseph Innace (Platts)

INDUSTRY COMMUNICATOR OF THE YEAR

Nominated CEOs and winner



Wolfgang Eder
voestalpine



John Ferriola
Nucor Corporation



Sajjan Jindal
JSW



Hans Jürgen Kerkhoff
German Steel Federation



Liu Zhenjiang
China Iron and Steel
Association



**Winner Industry
communicator of the year:**
John Ferriola
Nucor Corporation

worldsteel
ASSOCIATION