

# a living case study of American industrialization

experience  
THE MARVEL  
OF MODERN  
MANUFACTURING...  
THE FORD ROUGE  
FACTORY TOUR.

We're all familiar with the story of America's Industrial Revolution.

Almost overnight, the country morphed from a fledgling nation built around agriculture to one that was defined by its cities, its machines and its manufacturing.

"But that's not really a complete picture," says Marc Greuther, The Henry Ford's chief curator. "We call it a revolution. But for those living in the midst of that time of remarkable change, it was more of an evolution – it didn't just change all of a sudden."

Greuther isn't being nitpicky about words. The distinction, he says, is an important, if subtle, one. And it's one that students who participate in field trips at The Henry Ford are sure to grasp. "In many ways, the concept should be completely recognizable to today's young people," says Greuther. "That's because the rapidly changing technological climate that we're living in is very similar to what it must have felt like to people

living through what we insist on calling the Industrial Revolution."

Then, as now, the changes that were taking root were created using traditional materials and traditional skills.

Greuther points to the Newcomen steam engine, sitting in the far reaches of Henry Ford Museum's massive main floor. Dark and forbidding, the engine was inefficient and used copious amounts of fuel. But it achieved something no machine had ever done when it was built in the mid-1700s – it harnessed the power of steam.

"It almost singlehandedly changed the rules of manufacturing," says Greuther. "But step back from its historical significance for a moment and look at the materials and the craftsmanship that went into making it. There's stonemasonry, carpentry, blacksmithing, casting. Its abilities were completely new. But elements of this machine would have been recognizable to craftspeople from centuries prior."

A modern-day version of the same concept is vividly demonstrated at the *Ford Rouge Factory Tour*. The Rouge is filled with elements that assembly line workers from Henry Ford's 1913 Highland Park, Michigan, factory would recognize immediately: the assembly line, the massive overhead windows, the teamwork necessary to build a vehicle in a short span of time.

But a century's worth of technology has presented us with a completely changed assembly line. Today's Rouge is a complex web of robots, lifts, conveyors, hydraulics, chutes and cranes combined with energy-efficient support systems that created a facility those earlier generations would have found unimaginable.

Today's line is faster, more flexible and – for the people who work there – a far less grueling experience than their predecessors experienced in the early 20th century. "The changes are truly radical," says Greuther, "but because there are so many changes taking place

and because they are happening at such a rapid pace, we don't notice how much they are altering our lives. Think back 75 years. We had ovens and telephones and washing machines back then.

"And while their modern counterparts all do the same basic tasks, they have grown so much more sophisticated ...well, that's why we call it a revolution."

Ryan Spencer, manager of Firestone Farm and former high school teacher, says, "Here at **The Henry Ford**, teachers and students card wool by hand at Daggett Farmhouse and then see a mechanical carding mill in operation at Liberty Craftworks. They can witness the slow and tedious process of maintaining farm crops by hand at Susquehanna Plantation and then watch complex, horse-drawn farm machinery operate in the field at Firestone Farm.

The Industrial Revolution suddenly becomes real and tangible. This is an 'aha' moment that is sure to have a lasting effect." ■



THIS PAGE: Newcomen engine in Henry Ford Museum's Made In America exhibit; OPPOSITE: Assembly line at Ford Rouge Factory Tour.



Visit [thehenryford.org/education/resourcebank.aspx](http://thehenryford.org/education/resourcebank.aspx) for curriculum connections.

### on-site programs

#### Test Drive Smart Tools

SELF-GUIDED ACTIVITY

**FREE with Ford Rouge Factory Tour admission**

Handle a "smart tool" that workers use on the factory floor and simulate steering wheel installation on a Ford F-150 pickup. Discover the connections between advanced tooling (process), skilled workers (people) and the end quality of the vehicle (product).

**Location:** Ford Rouge Factory Tour

**Offered:** Daily

**Program Length:** Variable, self-directed

#### Flexing for the Future

SELF-GUIDED ACTIVITY

**FREE with Ford Rouge Factory Tour admission**

During this hands-on activity, students work together to discover the flexibility of the modern moving assembly line.

**Location:** Ford Rouge Factory Tour

**Offered:** Daily

**Program Length:** 10 minutes

### field trip enhancements

Your students will consider the past, present and future as they reflect on the social implications, environmental consequences and economic impact of industrialization while using these themed itineraries at our sites.

#### Industrial Revolution: Impact of Technology and Innovations

SELF-GUIDED ITINERARY FOR GREENFIELD VILLAGE AND HENRY FORD MUSEUM

**Grades 4-6, 7-12**

In this combo field trip, we offer your students a new lens for examining the impact of the industrial era. See the world's oldest surviving steam engine, the shop where the Wright brothers built the world's first airplane, the lab where Thomas Edison created the first practical incandescent light bulb, and even help build a real Model T!

**Location:** Greenfield Village, Henry Ford Museum

**Offered:** Fall and spring  
October 1-30 & Fridays in November 2011;

April 15-June 15, 2012; April 15-June 14, 2013

**Program Length:** 2 ½ hours minimum

**Fees:** FREE with admission. Contact the Call Center for discounted combo site pricing.

### field trip enhancements

#### Industrial Revolution: Past, Present and Future

SELF-GUIDED ITINERARY FOR GREENFIELD VILLAGE AND FORD ROUGE FACTORY TOUR

**Grades 4-6, 7-12**

In this combo field trip, your students will experience the full transition from the small farms and shops of the 18th and 19th centuries to the large industrial complexes of today. Discover how today's Rouge is trying to reverse some of the harmful effects of industrialization using green design principles.

**Location:** Greenfield Village, Ford Rouge Factory Tour

**Offered:** Fall and spring

October 1-30 & Fridays in November 2011;

April 15-June 15, 2012; April 15-June 14, 2013

**Program Length:** 3 ½ hours minimum

(including travel time to the Rouge complex)

**Fees:** FREE with admission. Contact the Call Center for discounted combo site pricing.

#### The Ford Rouge Complex: A Case Study in Industrialization

TEACHER GUIDE FOR FORD ROUGE FACTORY TOUR

This curriculum-aligned tool for teachers to use during and after their visit introduces students to the natural, human and capital resources needed for manufacturing and the changing face of industrialization and entrepreneurs in southeastern Michigan.

#### NEW! The Industrial Revolution in the Women's Sphere

FIELD TRIP HELPER FOR GREENFIELD VILLAGE

**Grades 9-12**

This self-guided exploration tool is designed to help students discover the impact of technological change on women in the 20th century.

### classroom resources

#### America's Industrial Revolution

LESSON PLANS

**Grades K-12**

Over one-hundred ready-to-use lesson plans developed by teachers participating in the National Endowment for the Humanities' Landmarks of American History workshops at **The Henry Ford**. Learn more at [thehenryford.org/education/americasIndustrialRev.aspx](http://thehenryford.org/education/americasIndustrialRev.aspx).

