

NYSERDA's Support for Advanced Composites Manufacturing

Long Island Forum for Technology
Advanced Composites Manufacturing Conference
Thursday November 3rd, 2011



NYSERDA

New York State Energy Research and Development Authority

- A Public Benefit Corp established in 1975 by State Legislature
- Mission: To advance innovative energy solutions in ways that improve NY's economy and environment.
- NYSERDA serves as a catalyst:
 - advancing energy innovation and technology
 - transforming the State's economy
 - empowering people to choose clean and efficient energy
- Forge public/private partnerships with businesses, municipalities, residents, and other energy stakeholders to accomplish this goal.



Sources of Funding for R&D

System Benefits Charge (SBC)

- Investor Owned Utilities participate (National Grid, Consolidated Edison)
- Municipal and Co-op Utilities, NYPA and LIPA do not participate

Regional Greenhouse Gas Initiative (RGGI)

- Quarterly Auction of CO₂ allowances
- Proceeds are administered NYSERDA for Energy Efficiency, Renewable Energy and Carbon Abatement programs

Statutory Funds

- State budget appropriations for clean energy R&D

NYSERDA Support for Advanced Composites

NYSERDA recognizes the benefits of Composite Materials

- Excellent mechanical properties
- Good strength to weight ratio
- Corrosion resistant

NYSERDA has supported advanced composite projects for more than 2 decades

- Over 35 projects
- More than \$9.6 Million in funding

Limitations

- Labor intensive
- Energy intensive
- High material costs

NYSERDA R&D Funding

NYSERDA provides funding to help defray financial risks inherent in developing and implementing innovative new technologies

R&D Programs have 2 levels of funding

- Feasibility Study (\$75,000 to \$100,000)
- Demonstration/Commercialization Projects (up to \$400,000)

50% Cost Share

Contain risks

Builds confidence in outcomes

Case Study #1: Automated Dynamics

High Temperature Thermoplastic Fiber Placement

Existing process uses hot gas torch

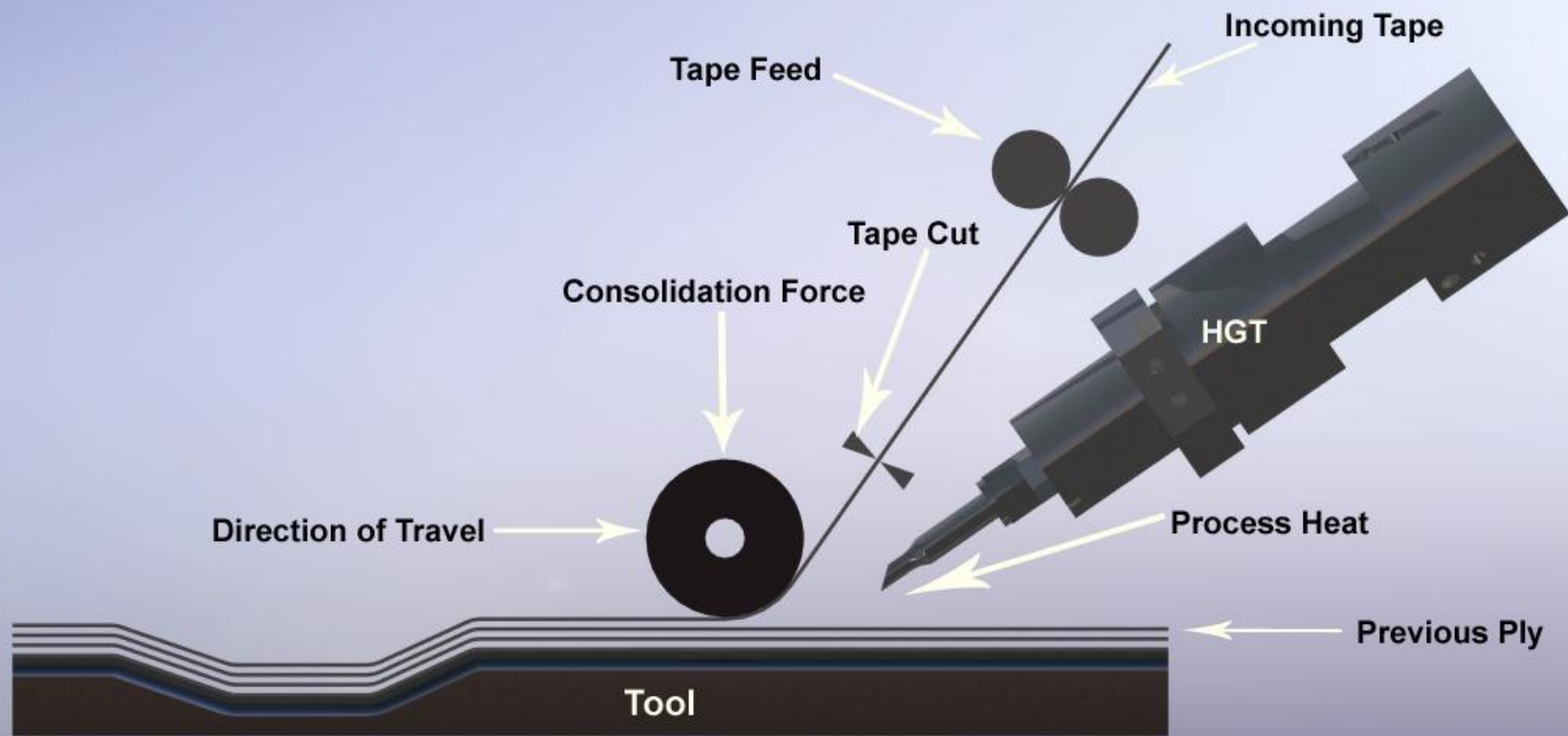
- Inefficient
- Time consuming

2 sequential projects to evaluate laser heating process improvement

- Feasibility Study
- Commercialization Project

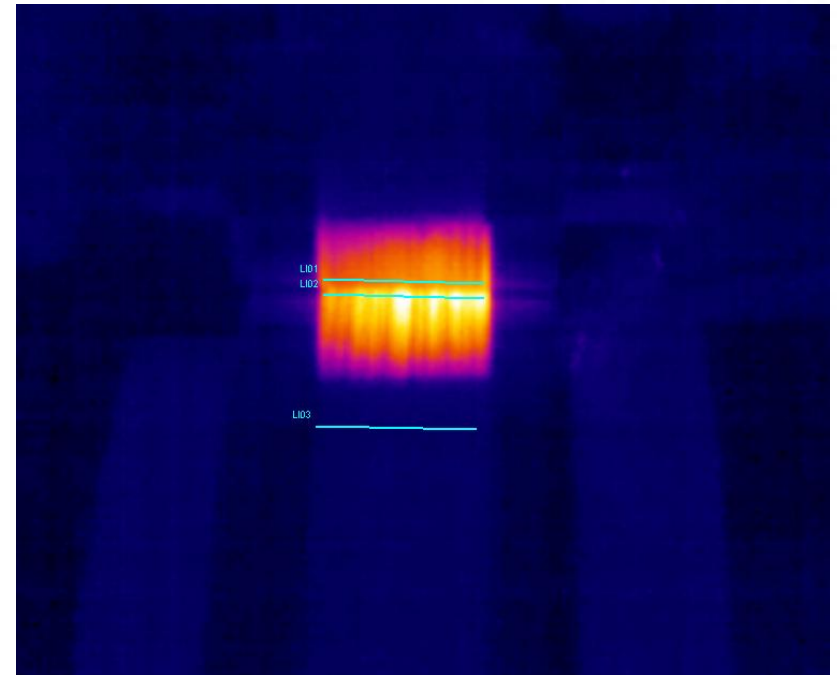
Existing Hot Gas Heating Technology

Tape/ Fiber Placement Process



An AS9100 & ISO 9001 registered company

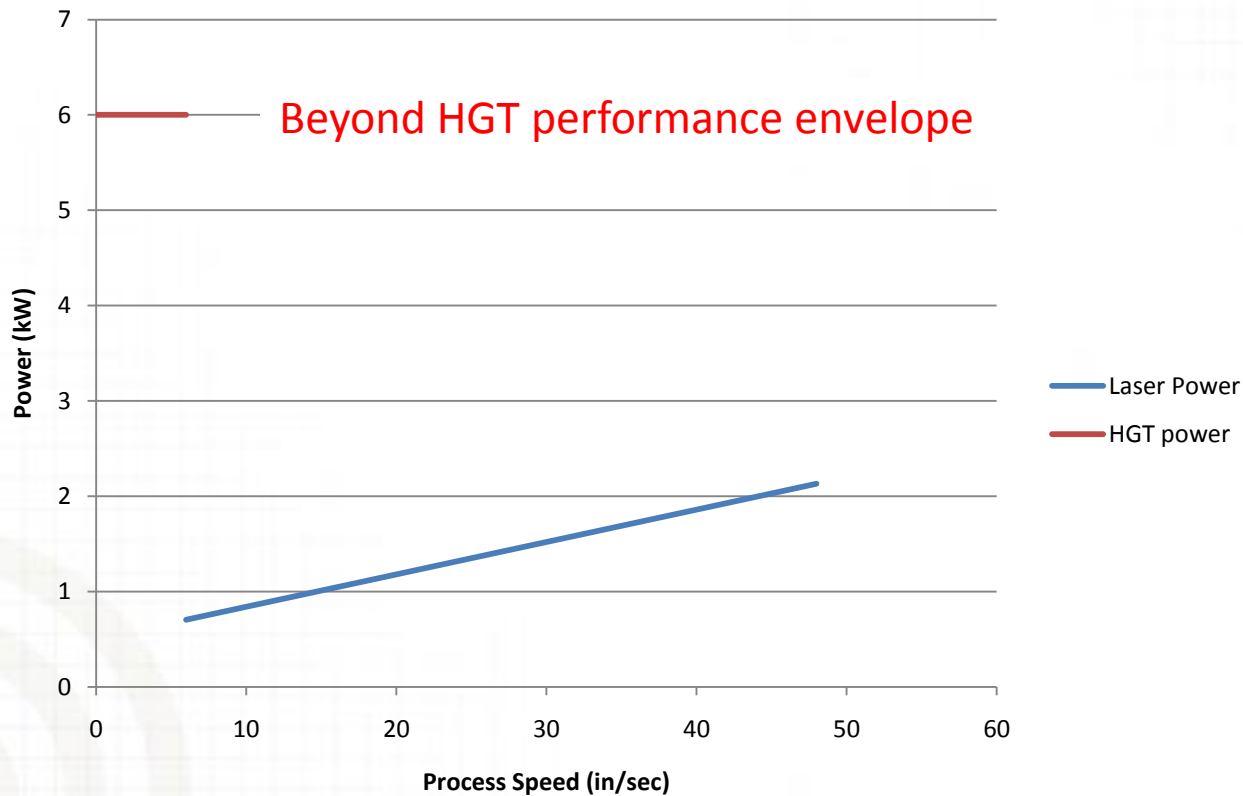
Laser NOL ring fabrication



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Automated Dynamics Proprietary

Laser Energy Savings



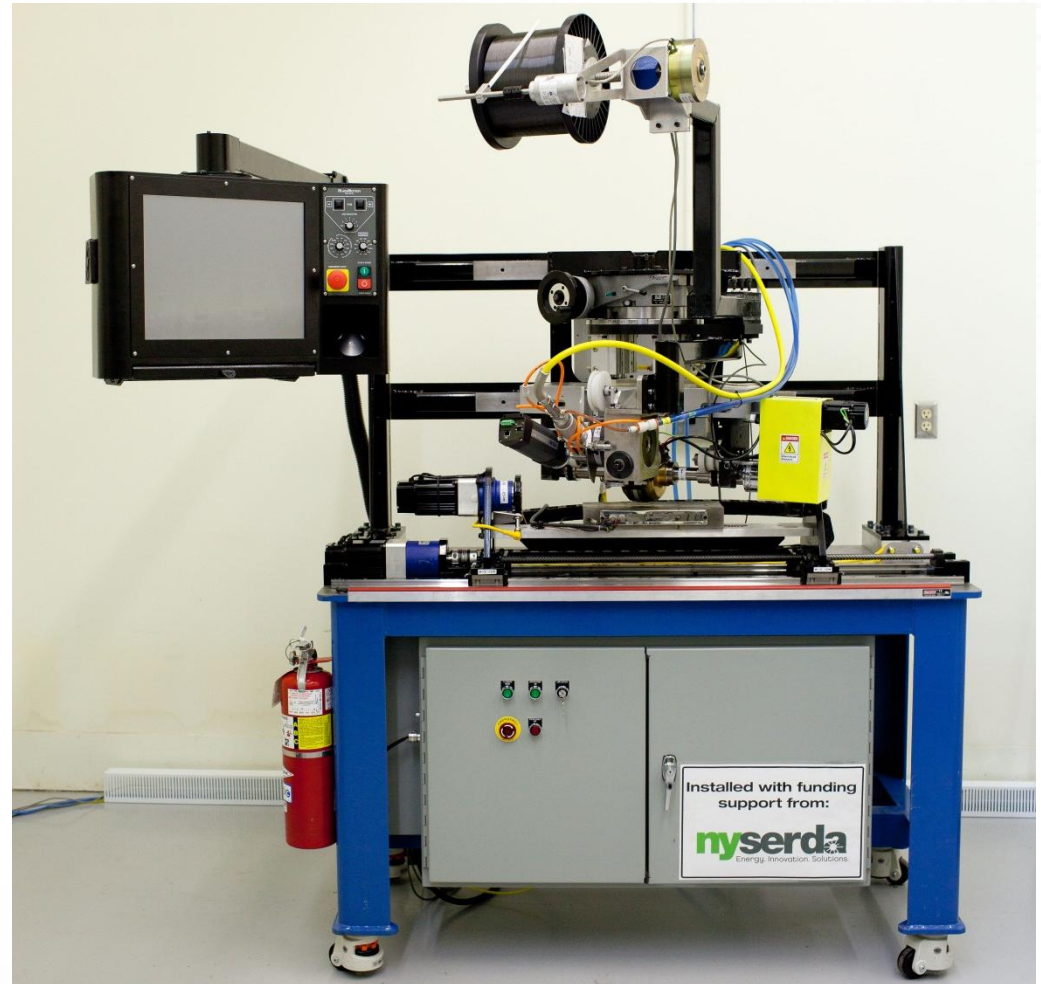
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Laser Processing at Automated Dynamics

- Early results showed improved speed and efficiency over existing technologies
 - 2x improved surface finish
- Further tests have improved bond strength and process speeds
- Future work: systems integration into existing product line, improved bond strength

Research Work Cell

- Developed in part with NYSERDA funding
- Powerful tool for small scale or prototype research efforts
- Sized to manufacture ASTM test coupons
- Accommodates laser processing technology in a laboratory environment



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Automated Dynamics Proprietary

NYSERDA R&D Funding

NYSERDA programs help facilitate academic/industrial partnerships to:

- Integrate science and innovation into manufacturing practices
- Transform applied research into business advantages

Enables industry access to resources and intellectual expertise

Increased funding and recognition for academic programs

Case Study #2: Kintz Plastics Partnership with RPI's CATS

Partnership between:

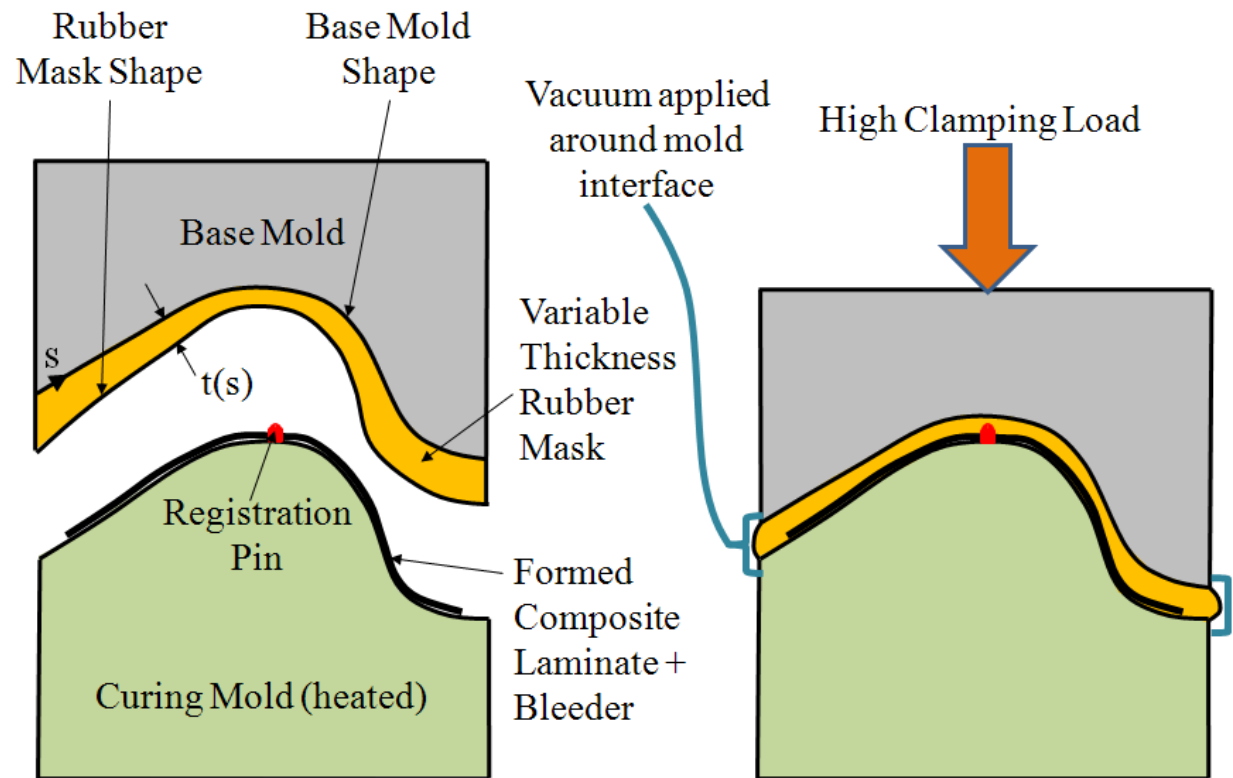
- Kintz Plastics of Howes Cave, NY
- Rensselaer Polytechnic Institute

Multiple projects to increase productivity and energy efficiency of composite manufacturing

- Double Diaphragm Forming of Composite Parts
- Thermal Pressing of Composite Parts

Press Curing with Rubber-coated Tools (PCRT) – patent pending (2009-10)

- Project involved proof-of-concept demonstration of PCRT (a direct replacement for autoclaving) for a realistic 3-D part shape



Case Study #3: X-Ray Cured Carbon Fiber Composites

NYSERDA programs engage the entire value chain to work towards mutually beneficial outcomes

Encourage co-operation vs. competition between industrial partners

Three Long Island Companies:

- Ionicorp
- Nordan Composite Technologies
- IBA Industrial

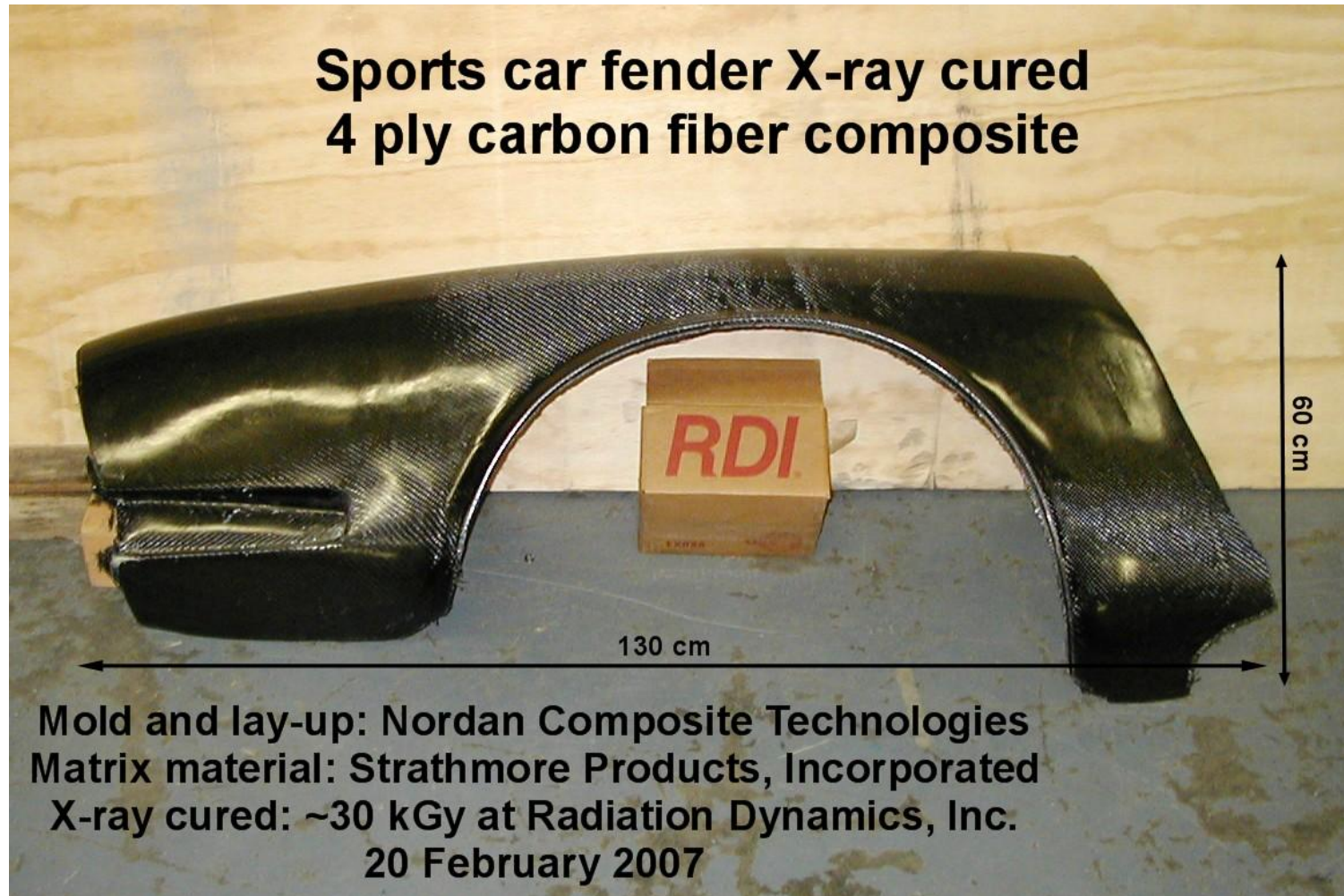
Central NY Coatings Manufacturer

- Strathmore Products

X-ray Curing in the Mold



X-ray Cured Sports Car Fender



X-ray Cured Motorcycle Fender

**Motorcycle fender X-ray cured
4 ply carbon fiber composite**



**Mold and lay-up: Nordan Composite Technologies
Matrix material: Strathmore Products, Incorporated
X-ray cured: ~30 kGy at Radiation Dynamics, Inc.
21 February 2007**

Innovation in the Manufacturing of Clean Energy Technologies

To research, develop, demonstrate or commercialize innovative technologies that provide an energy benefit to a Clean Energy Technology manufacturing process.

50% cost share up to \$400k

Two due dates in 2012, PON 2414

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