Wind Turbine Workshop

SANDIA National Laboratories

An Integrated Approach to Successful Blade Development

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SP Systems

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Gurit Group of Companies

SP®

CORE-CELL®

STESALIT

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IMS

Gurit SUPREM

SP Group Global Focus

- Headquarters in UK Sales office in North America and Australia
- Manufacturing plants in Spain, UK and NA
- 460 employees worldwide
- Group Turnover 2002 £51 million

SP Systems

SP Technologies

- Total design, product and process solutions for blade manufacture and development.

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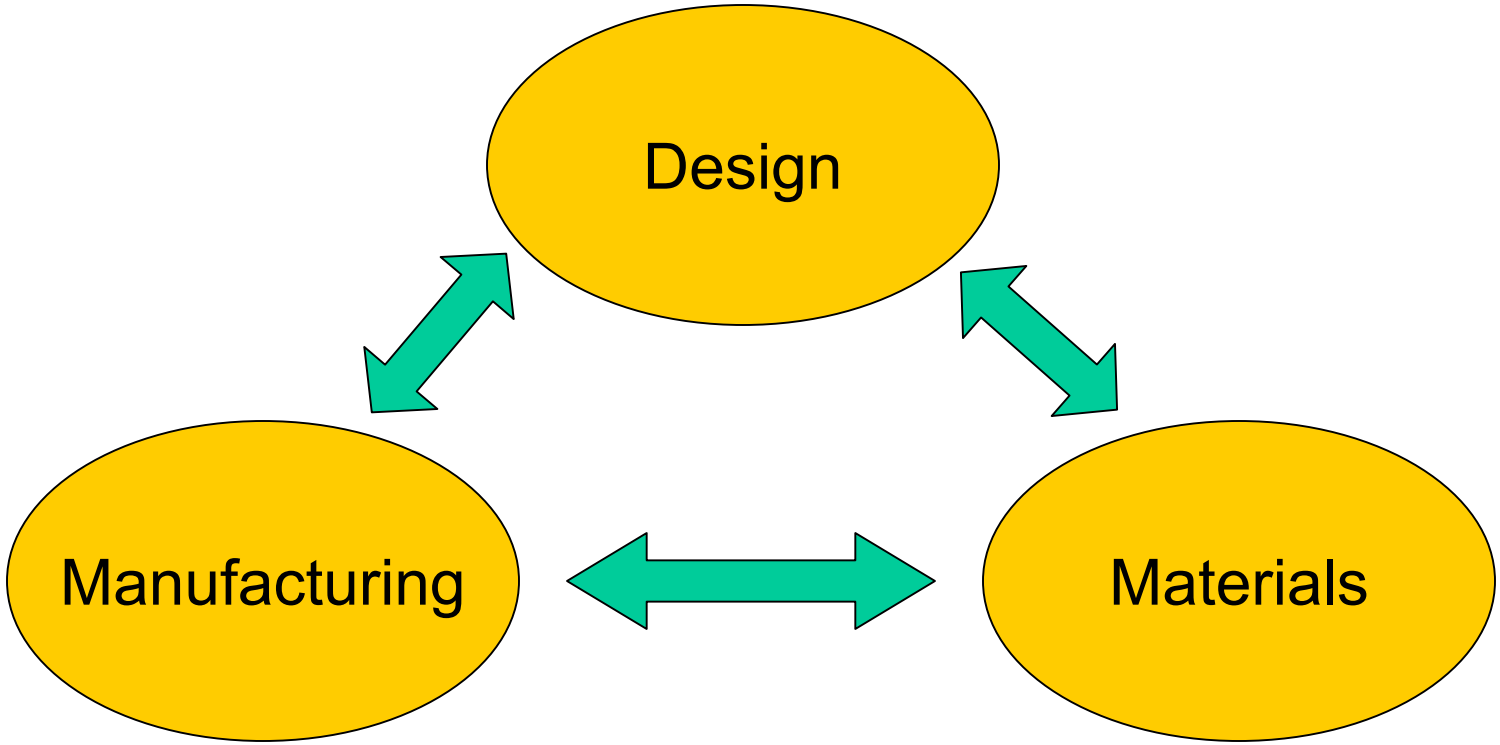
Blade Development Program

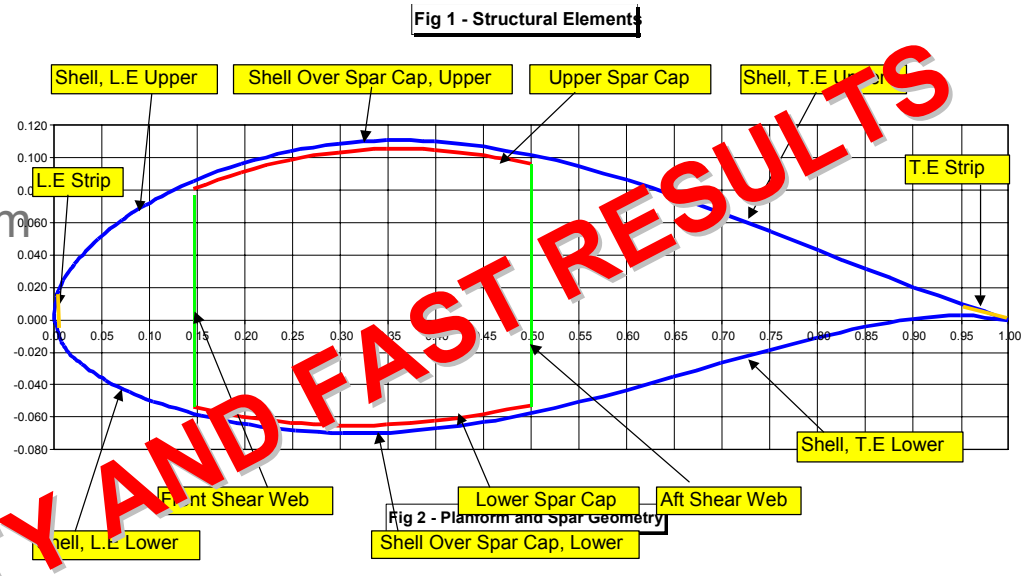


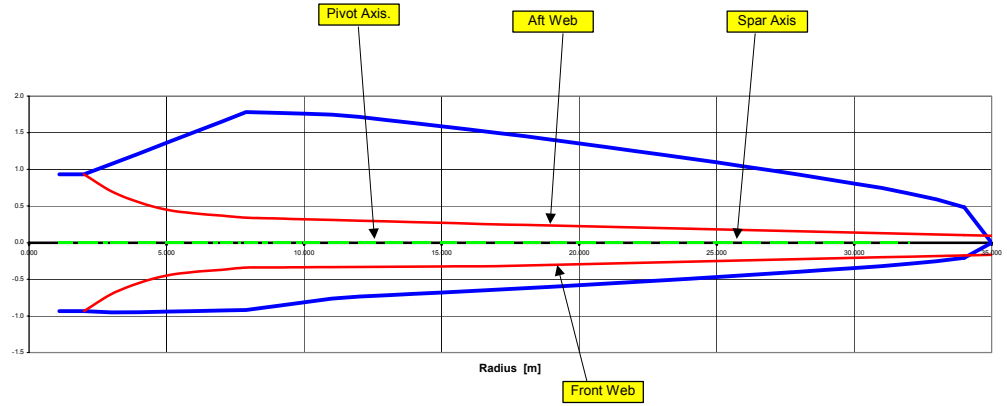
Success through optimization of design, materials and efficient robust manufacturing methods.

Design, Materials & Manufacturing

- **Blade Design Tool –**
- **Input**
  - Geometry
    - Sections and plan-form
  - Loadcases
    - (Flex 5, Bladed)
    - Ultimate Flapwise/ Edgewise
    - Max. Deflection
    - Fatigue (equivalent damage)
  - Materials
    - "What-if?" scenarios
- **Quick design iterations**

HIGH FLEXIBILITY AND FAST RESULTS





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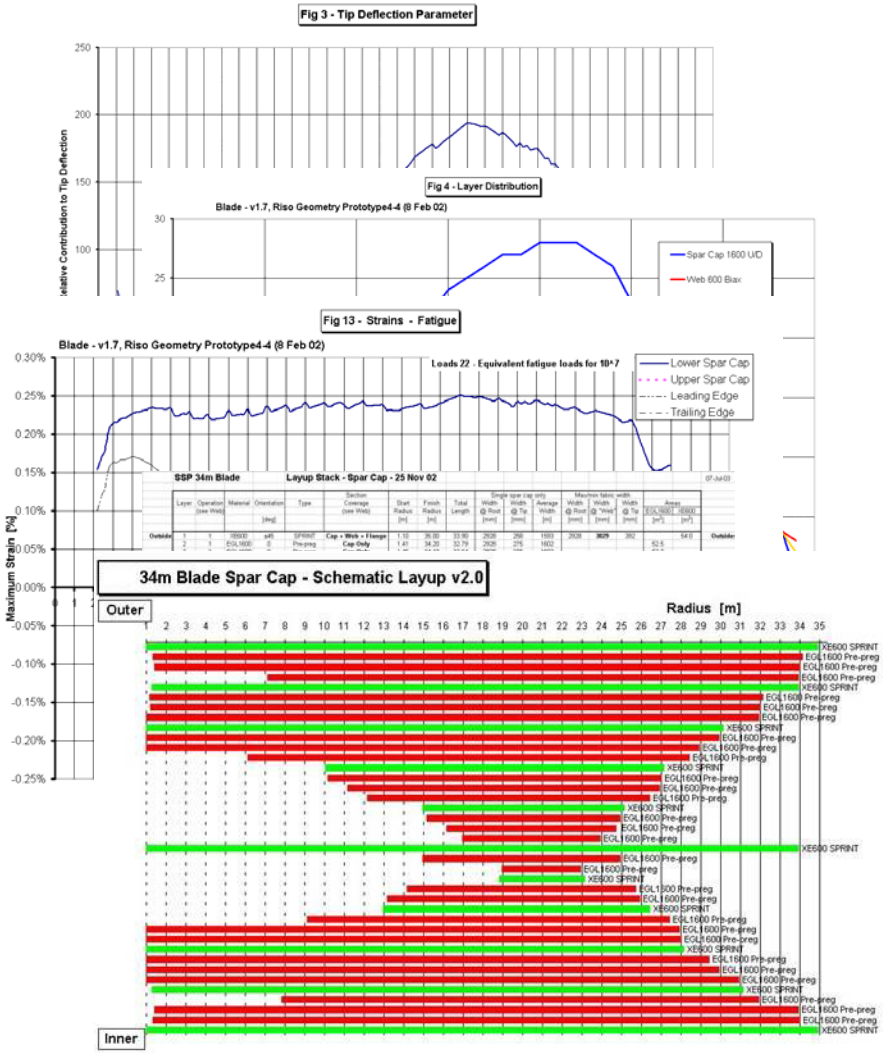
Design, Materials & Manufacturing

- **Blade Design Tool – Output**
  - Summary Data
    - Blade Mass & Breakdown
    - Material Quantities (Price)
    - Layer distribution
    - Tip Deflection
    - Flapwise Frequency
    - Rotational Inertia
  - Written reports
  - Lay up schedules
    - Tabular & Graphical



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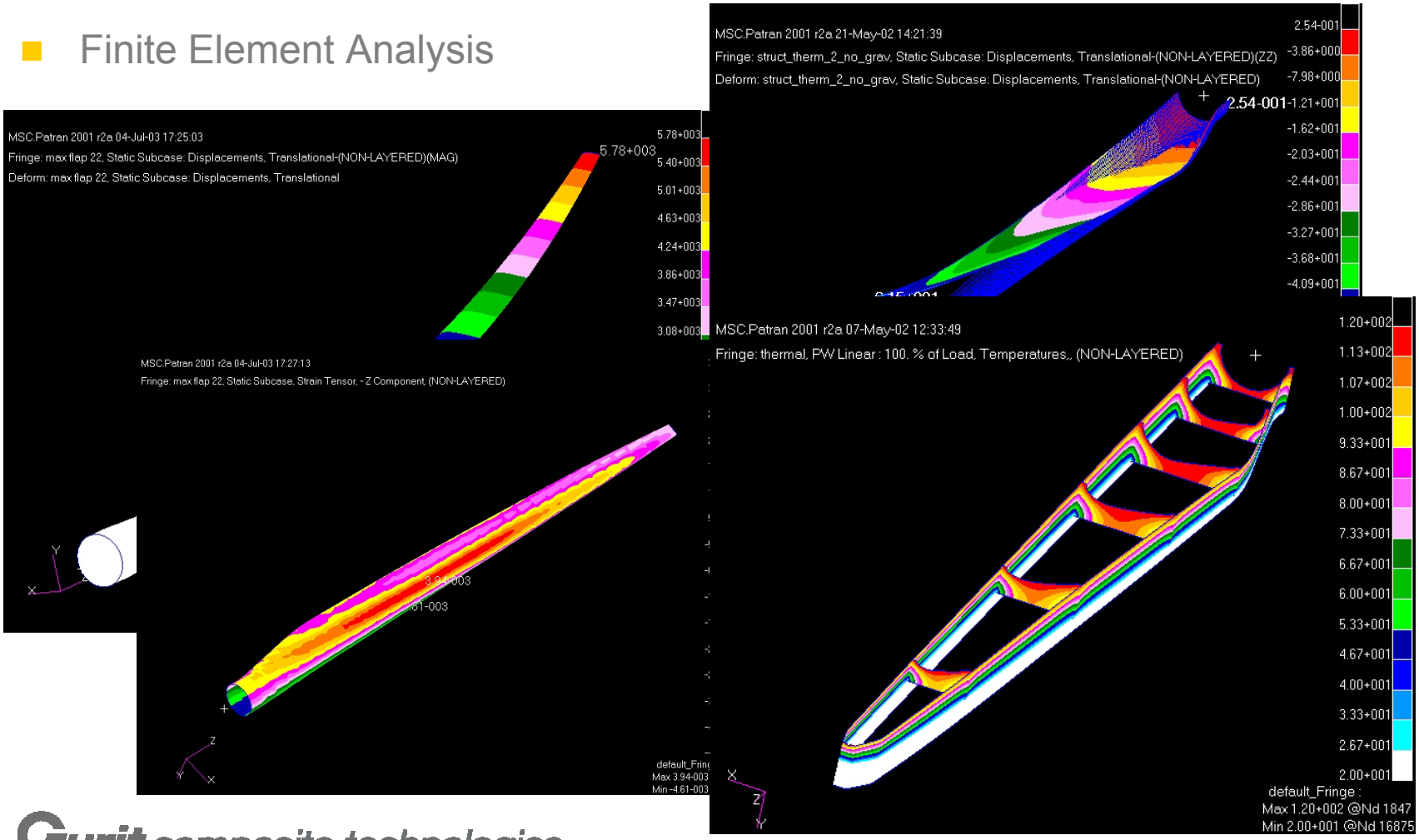
Design, Materials & Manufacturing

- Finite Element Analysis



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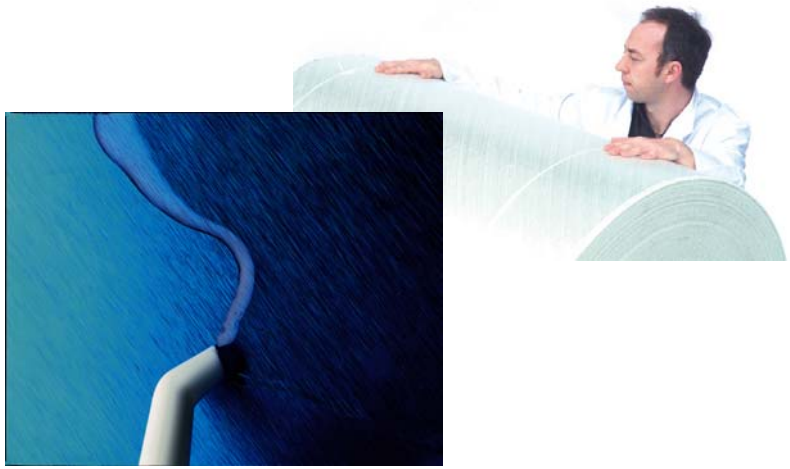
Design, Materials & Manufacturing

- Formulated resin products
  - Laminating
  - Coatings
  - Adhesives
- Reinforcements
- Prepregs
- SPRINT®
- Core Materials



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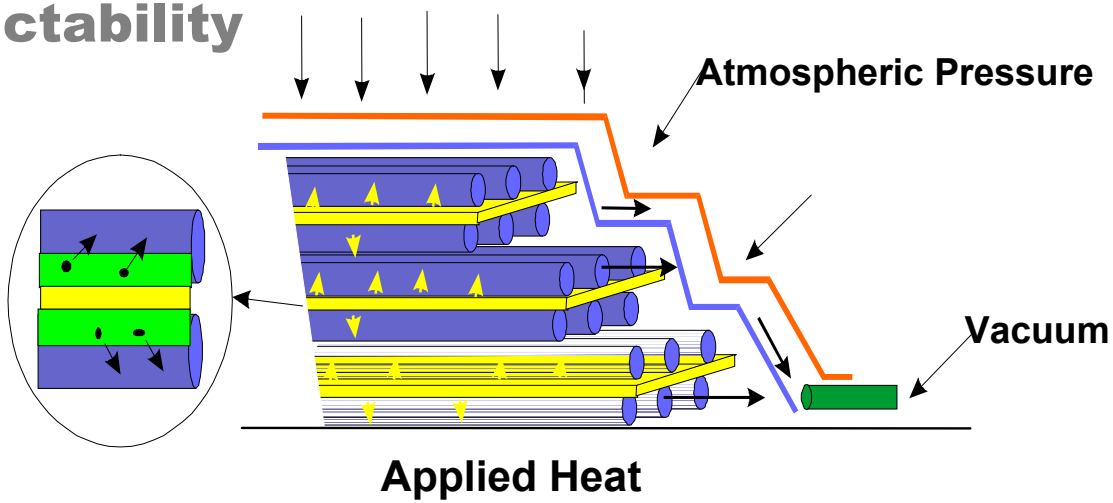
Design, Materials & Manufacturing

Simplicity & Predictability

Prepreg

Infusion



Laminate "Quality"

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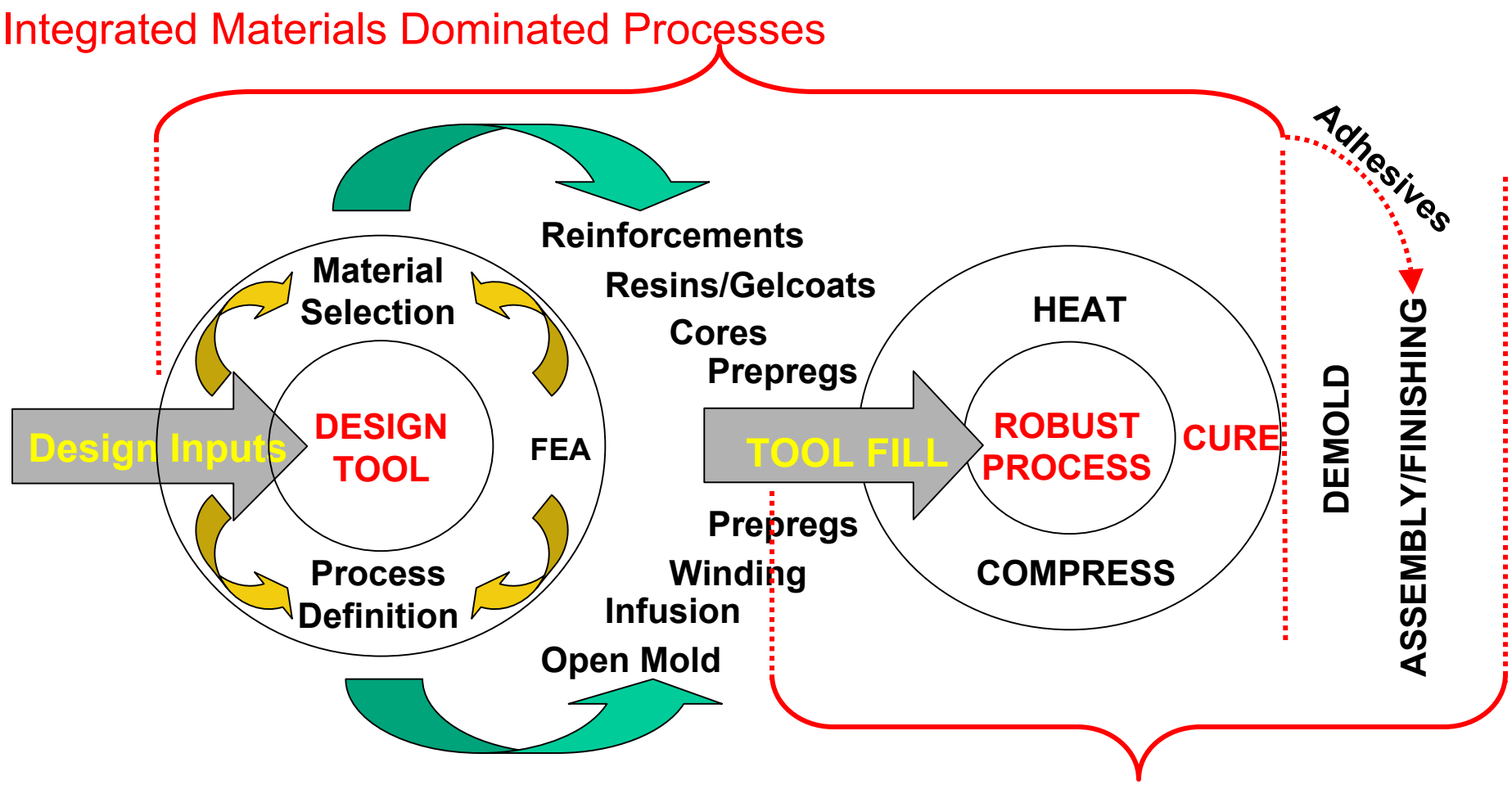
SPRINT®
SP RESIN INFUSION TECHNOLOGY

Manufacturing Influence