FROM VIRTUAL TESTING OF ENGINES TO VIRTUAL PRODUCT DEVELOPMENT

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Develops, manufactures and markets world-leading engines and complete power systems for boats and industrial applications.

Premium brand with global presence and sales in more than 130 countries.
Our Vision:
To become the world leader in sustainable power solutions. Economic. Social. Environmental.
BUSINESS SEGMENTS

50% INDUSTRIAL

50% MARINE
VIRTUAL ENGINE TESTING
Business Case

Increase Efficiencies
20% of testing and verification

Increase Quality
Diagnostics and software check

Fulfill Emission Regulations
Powertrain rough optimization
Successful Virtual Testing

System
Low maintenance and customer friendly

Model
Quality controlled, short lead time

Working Process
Logical, well designed and buy-in from the company
Model Quality Control

“All the models are wrong, some are useful!” — George Box

Volvo Penta, New Technology Development
Virtual Testing Portfolio

Diagnostics

Back2back testing

Non-standard conditions

Training & Learning
Performance

![Graph showing testing time vs. date]

- **Project Target**
- **Actual Testing**

Virtual Test Cell at Volvo Penta
VIRTUAL PRODUCT DEVELOPMENT
Business Focus

- Overlapping physical development domain
- Improved efficiency is the main goal

- Extending physical development domain
- Improved performance and quality is the main goal
A Concept for Virtual Product Development

- Concept Development
- Design
- Testing
- Certification
- Sales and aftermarket

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Solution Level

- Different solutions for different organizations:
  - MiL, SiL or HiL
  - Realtime capabilities
  - System or Component level

- Different Modeling fidelity for different purposes
Model Lake

- The models connected together
  - mostly system level
  - mostly data based

- Model evolution from a stage to the next

- Defining extra quality gates

- Providing full picture when connecting to end user data
Interface

- A user friendly software or a manual selection at the beginning

- Limitations and use case knowledge included in the selection methods