

**TESTING EXPO 2005**

**Onboard calculation in  
measurement systems**



..... Integrated measurement & control .....

# Online Calculation

## 'Online'

What is online?

Why should it be online?

What can 'online' do?

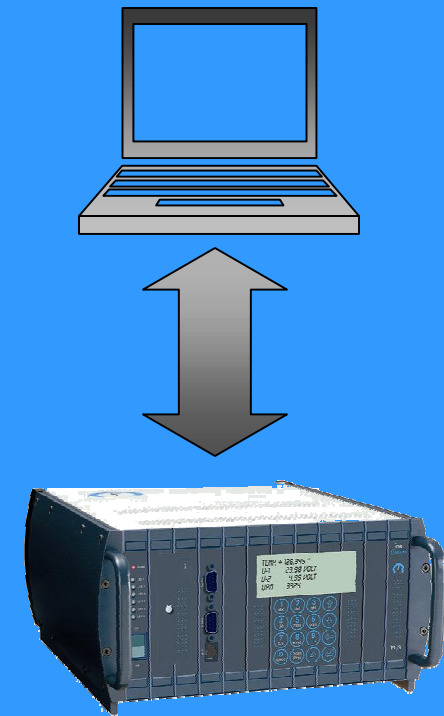
How are online calculations set up?



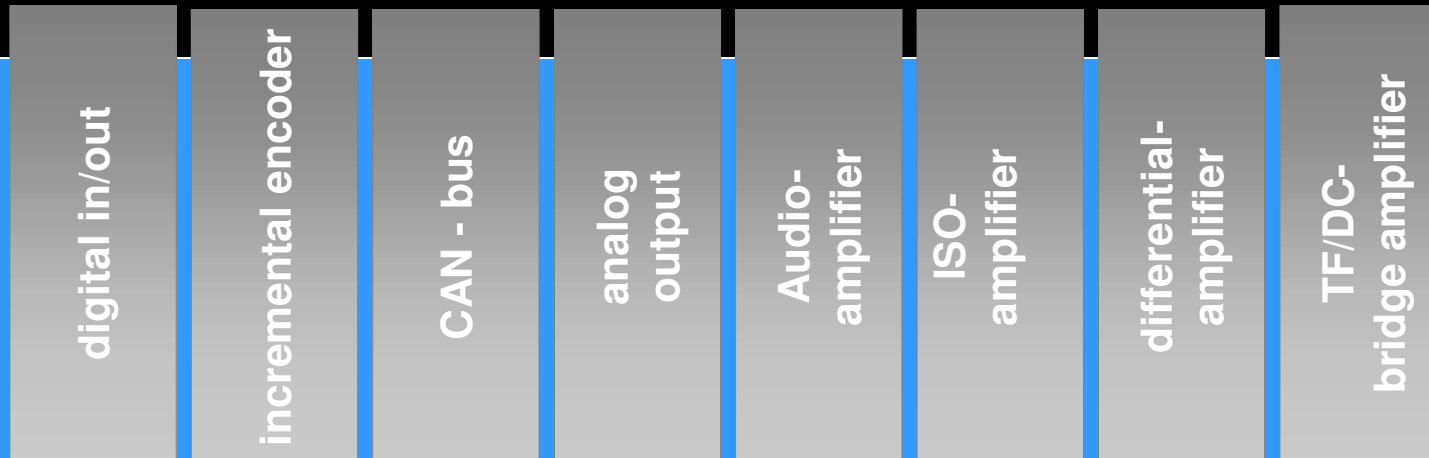
# Online Calculation

‘Online’  
Computer  
vs.

Integrated Measurement System

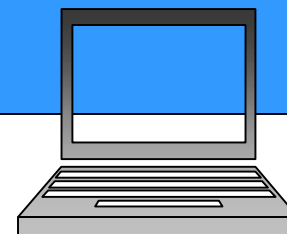


# Online Calculation



**Online FAMOS**

integration, differentiation, statistics, class counting, comparison, data reduction, HP/LP/BP/BS, FFT, order tracking etc.

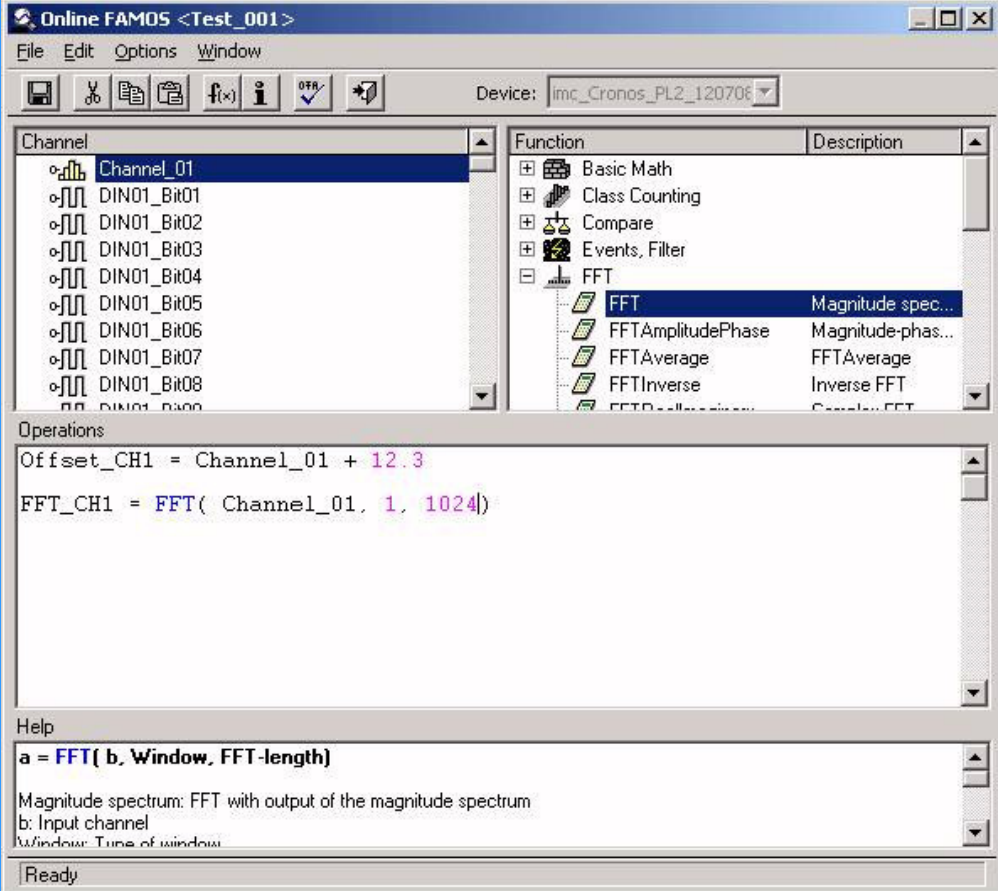


# Online Calculation

## Online FAMOS

The universal tool to make any imc system into your Personal Analyzer

Online FAMOS is a pocket-calculator for online results



The screenshot displays the Online FAMOS software interface. The window title is "Online FAMOS <Test\_001>". The menu bar includes "File", "Edit", "Options", and "Window". The toolbar contains icons for file operations and a dropdown menu for "Device" set to "imc\_Cronos\_PL2\_120706".

The interface is divided into several sections:

- Channel List:** A list of channels including "Channel\_01" and "DIN01\_Bit01" through "DIN01\_Bit08".
- Function List:** A table of functions with their descriptions. The "FFT" function is selected, showing its description as "Magnitude spec...".
- Operations:** A text area containing the following operations:

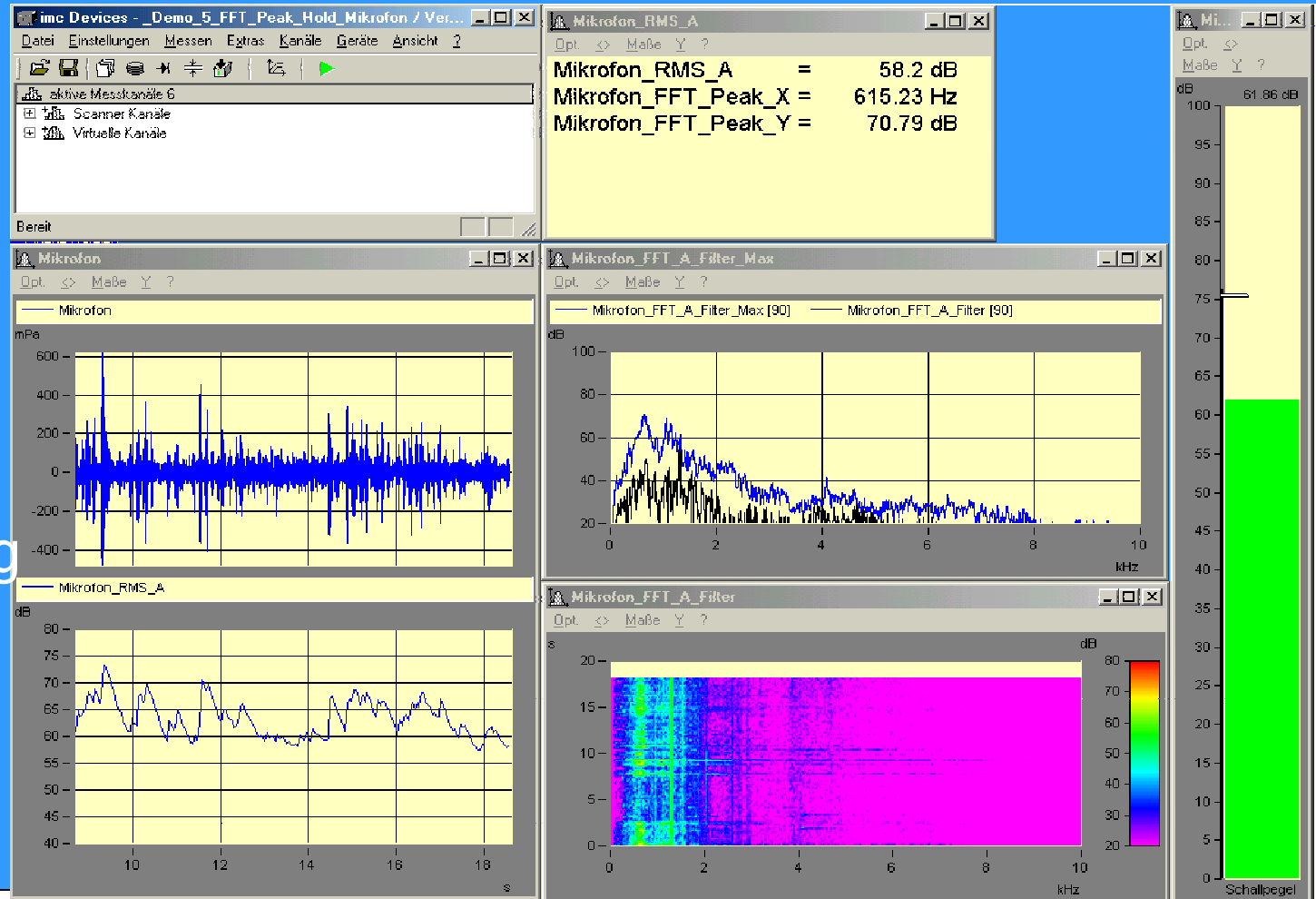
```
Offset_CH1 = Channel_01 + 12.3
FFT_CH1 = FFT( Channel_01, 1, 1024)
```
- Help:** A section providing the syntax for the FFT function: `a = FFT( b, Window, FFT-length)`. It also includes a brief description: "Magnitude spectrum: FFT with output of the magnitude spectrum", and defines the variables: "b: Input channel" and "Window: Time of window".

The status bar at the bottom indicates "Ready".

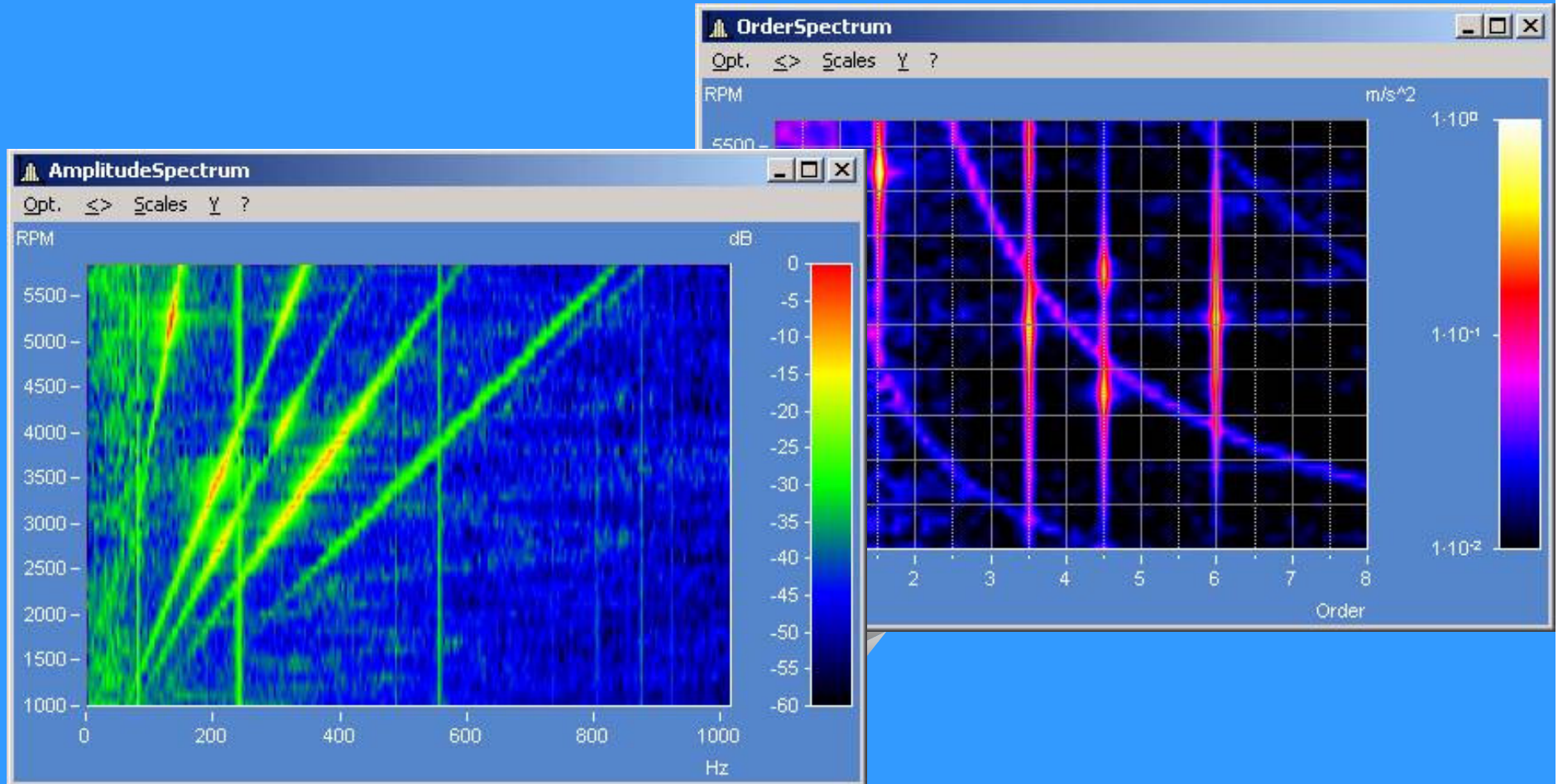


# Online Calculation

Frequency analysis  
FFT & spectral analysis, filtering  
etc.



# Online Calculation



# Online Calculation

Strain gauges  
Rosette calculation

**Rosette1** [X]

Analysis of strain measurements with rosettes

Rosette type: Rectangular rosette (0°/45°/90°)

Selection of channels with measured strains in [ $\mu\text{m}/\text{m}$ ]

Grid A: B1\_234

Grid B: B2\_234

Grid C: B3\_234

Material

Poisson's ratio: 0.30

Modulus of elasticity [GPa]: 210

Calculational results

Principal strain 1: Ep

Principal strain 2: Eq



Principal stress 1: Sig1

Principal stress 2: Sig2

Reference stress (according to Mises): SigV

Principal angle: Phi

Angle rectification below [ $\mu\text{m}/\text{m}$ ]: 5.0

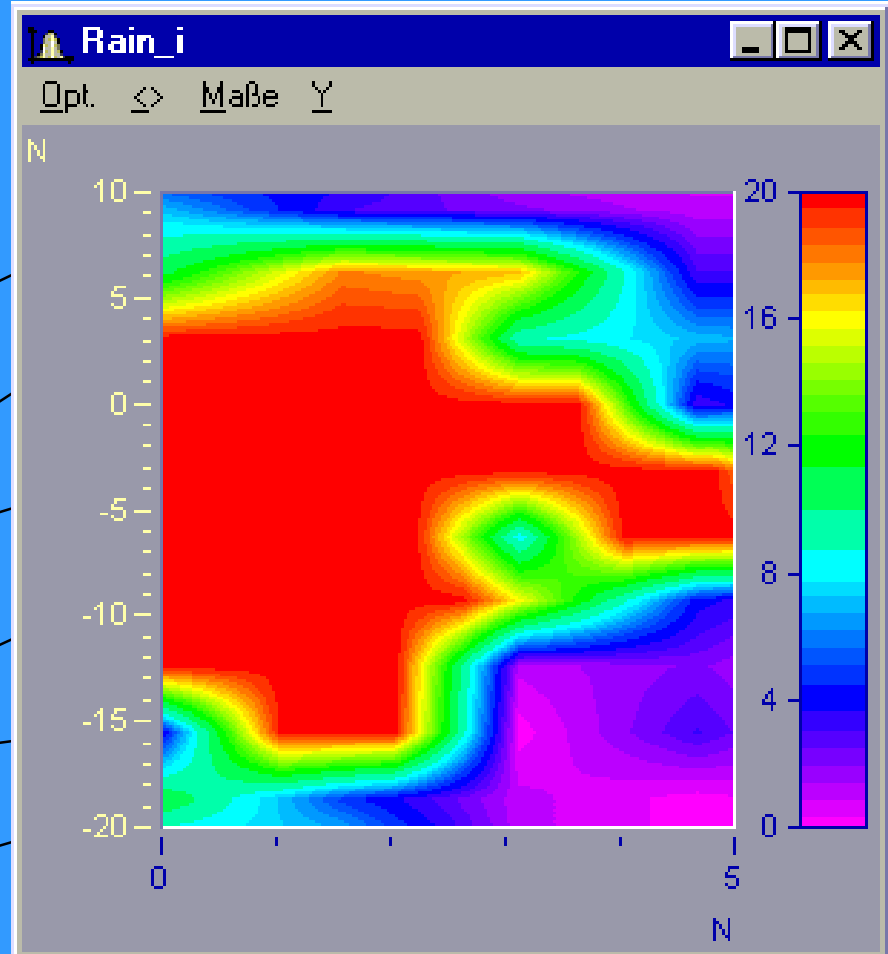
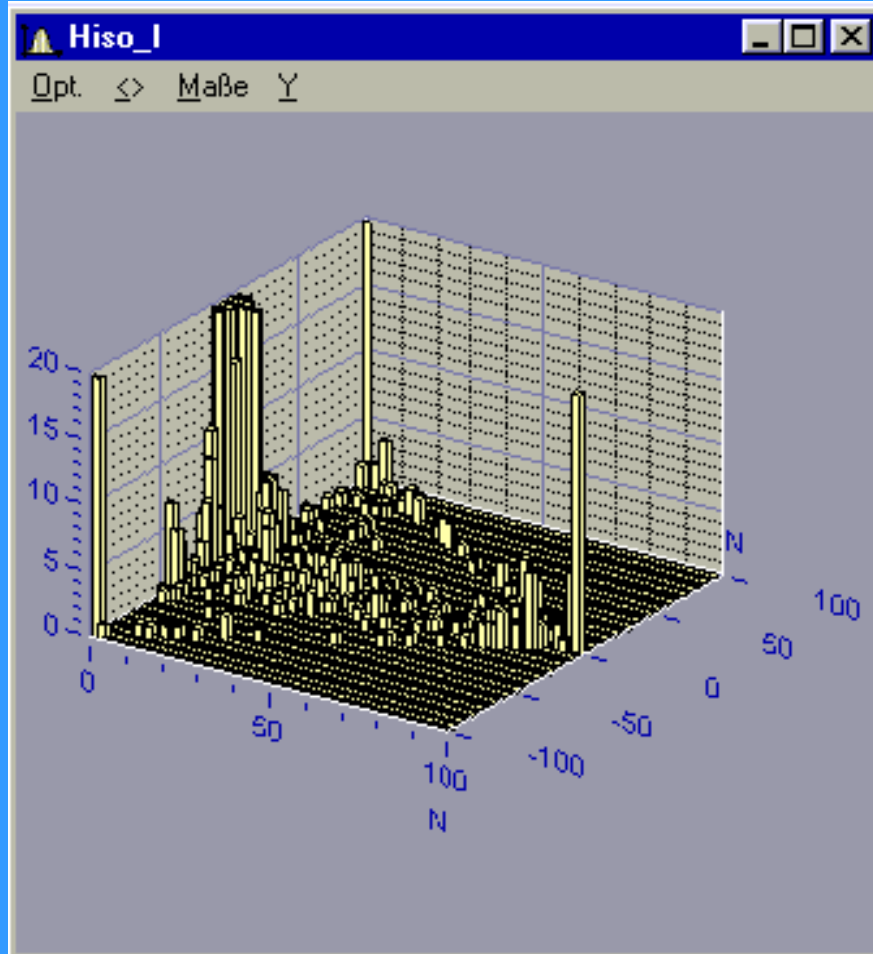
 

Apply Close

Rosette1[Ep, Eq, Sig1, Sig2, SigV, Phi, B1\_234, B2\_234, B3\_234, 1, 0.30, 210, 5.0]



# Online Calculation



# Online Calculation

## Further functions are:

basic math. functions

comparisons

controller

data reduction

digital filter

event logging (log book)

logical analysis

power measurement

scaling

statistics

system information

trigonometric functions



# Online Calculation

## Performance Consideration:

How fast can online be?  
Unlimited power available?

How fast does online need to be?  
What does it cost?



# Online Calculation

**Invitation:  
Practical Demonstrations  
at Hall # 5, Booth # 5422**



# TESTING EXPO 2005

**END**

