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Smart Grid Services – Asset Services

# 2014 Workshop on $SF_6$ Emission Reduction Strategies Siemens $SF_6$ Gas Density Monitoring



Answers for infrastructure and cities.

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**The purpose of any Condition Monitoring (CM) system should be to provide information with one aim**

*…Present information to enable prediction of the time to intervene*

*and give guidance on intervention required.*

**Our approach to Condition Monitoring to support in the context of a High Voltage Electrical Network focuses on 5 key areas: -**

- Optimization of Maintenance regime
- Improved Risk Management
- End of Life prediction
- Knowledge transfer
- Enhanced rating

# 2014 Workshop on $SF_6$ Emission Reduction Strategies
# Siemens $SF_6$ GDM System – Industry Challenges

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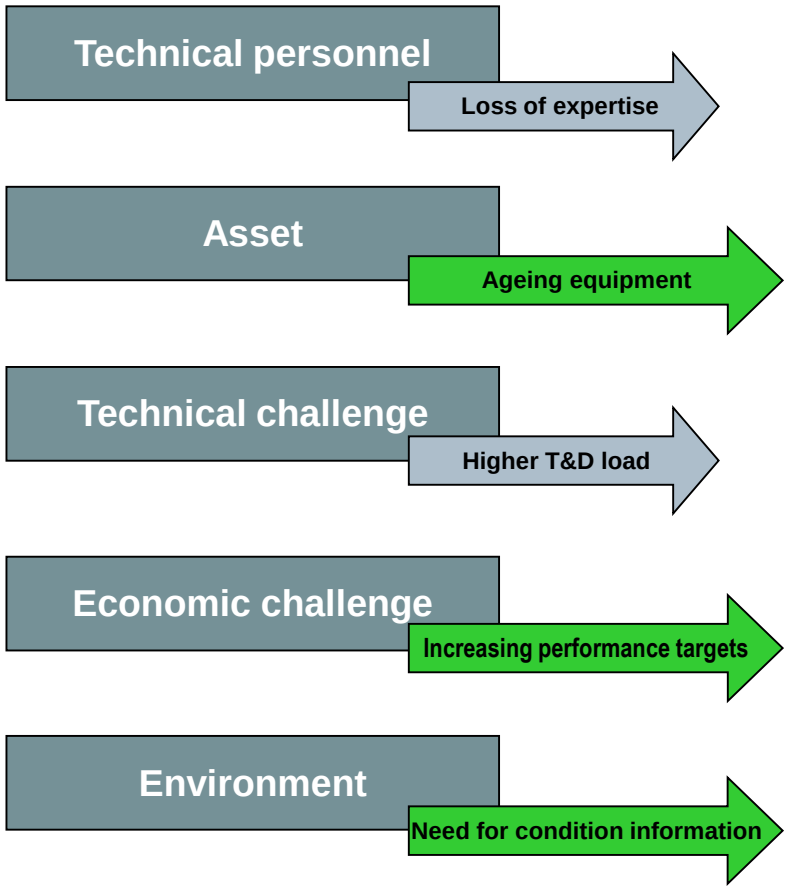
***"We have survived for over forty years without Condition Monitoring,***

***……why do we need it now?"***

- We are facing new challenges and old ones are increasing
- Reaching asset design life
- Environmental impact - us on it..  and it on us
- Moving towards a dynamic network
- Stakeholder expectation - Regulation, Shareholder, Customer,  Increased accountability, etc
- Offshore – conventional routine inspections not viable
- Cost reduction – Capital, operational, resource
- Capture and application of knowledge and experience
- Smaller work force

# 2014 Workshop on $SF_6$ Emission Reduction Strategies
# Siemens $SF_6$ GDM System – Industry Drivers




Recent European legislation has targeted greenhouse gasses such as $SF_6$. Current European directive to reduce emissions to 0.5% per annum.

$SF_6$ Gas Density Monitoring System allows for:

- Proof of performance
- Strict accountability of gas use
- Visibility of primary leaking zones so that they may be targeted
- Planning of maintenance
- Alarm indication before excess gas is lost when first stage alarm is reached
- Quick and easy access to the latest data for all staff.
- Increasing environmental awareness

# 2014 Workshop on $SF_6$ Emission Reduction Strategies
# Siemens $SF_6$ GDM System – Key Lessons Learned

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**Since 2012 Our Vision and main focus areas remain unchanged, however, we have learned a great deal about what our customers need and more importantly what they don't need. Our key learning points are as follows: -**

- $SF_6$ Monitoring is not suitable for every Substation owner
  - Without Policies & Procedures that govern how to use the data, investment is pointless.
  - Confidence is key – A system alarm should not be met with "What's wrong with my $SF_6$ Monitoring system".
- Front-end System simplicity is essential for wide-scale user buy-in.
- A system is only as accurate as the transducer selection (question anything that claims better than 0.5% accuracy).
- Innovative users want more than just $SF_6$ Monitoring – Condition Based Asset Management

# 2014 Workshop on $SF_6$ Emission Reduction Strategies
# Siemens $SF_6$ GDM System – The Goal is Asset Performance Management

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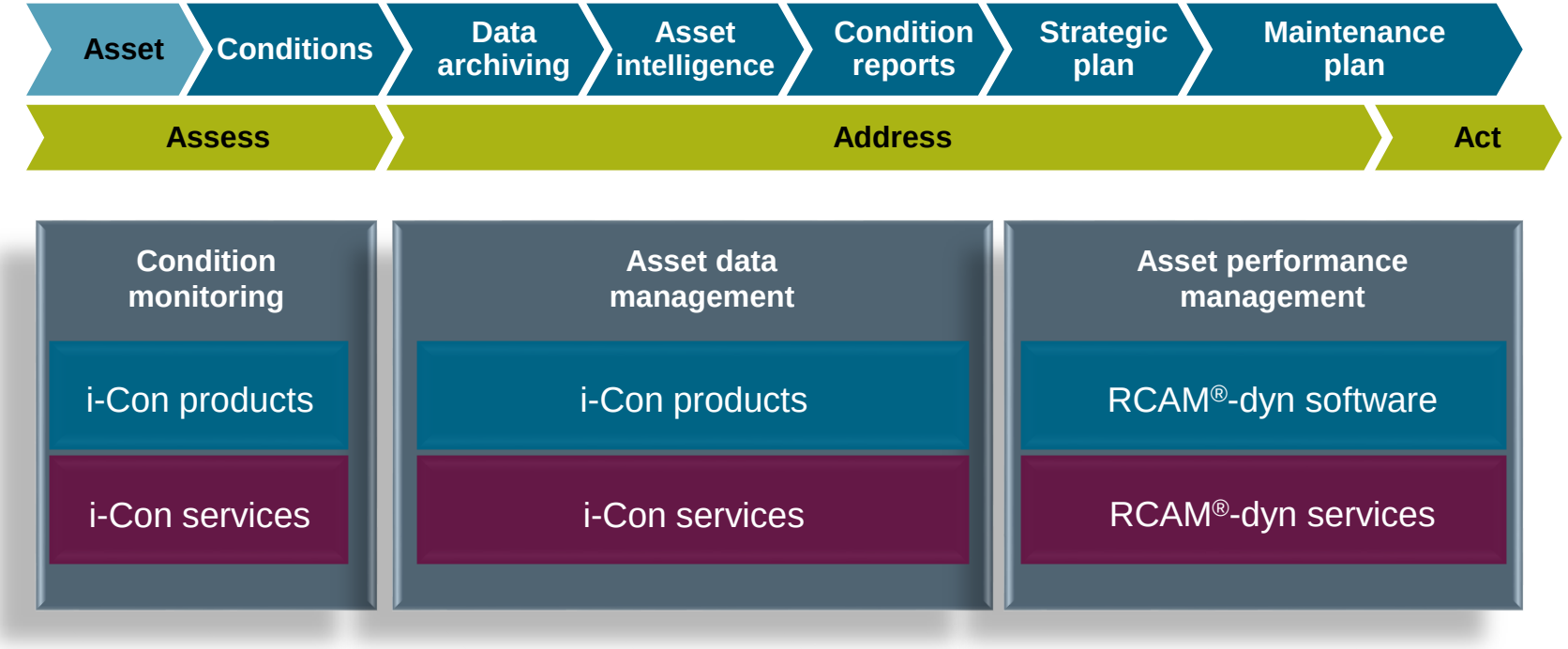


**The goal of condition monitoring is asset performance management !**

- **Condition monitoring**
  Providing peace of mind for *operation* and supply of high quality input for …
- **… Asset data management**
  Providing peace of mind for both *asset management and operation* plus management of all information at one place for …
- **… Asset performance management**
  with most efficient improvements for:
  - maintenance planning
  - asset reliability, risk management
  - asset management (PAS55)
  - CAPEX and OPEX planning

  (capital and operational expenditures)

# 2014 Workshop on $SF_6$ Emission Reduction Strategies
# Siemens $SF_6$ GDM System – Siemens RCAM$^{dyn}$

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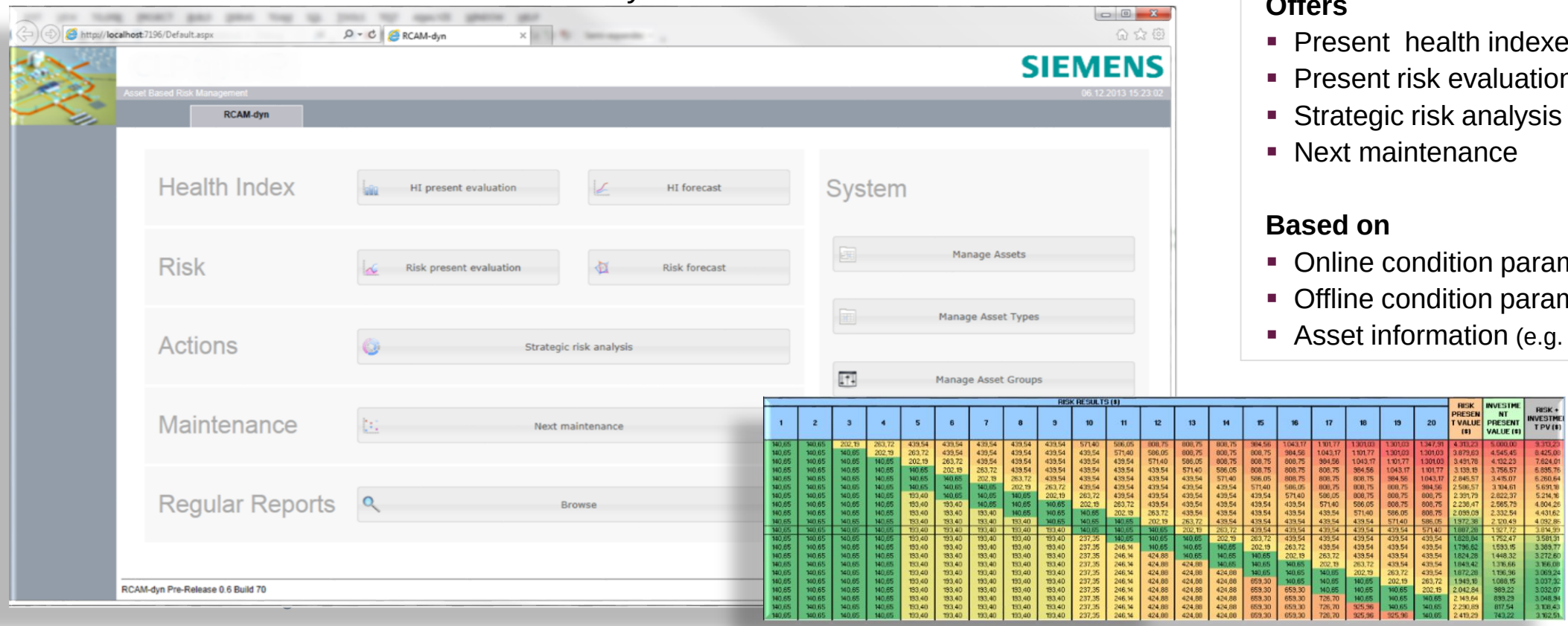
Asset | Conditions | Data archiving | Asset intelligence | Condition reports | Strategic plan | Maintenance plan

Assess | Address | Act

RCAM® - dynamic




## Risk Centered Asset Management

### Offers

- Present health indexes and forecast
- Present risk evaluation and forecast
- Strategic risk analysis
- Next maintenance

### Based on

- Online condition parameters
- Offline condition parameters (measurement)
- Asset information (e.g. SAP stored data)

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# Questions?