Special Session
IMPROVING UPSTREAM PRODUCTIVITY THROUGH THE INTEGRATION OF INDUSTRY REVOLUTION 4.0 & SOCIETY 5.0

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THE FACTS

✓ Oil price is expected to be USD65-75 / barrel range
✓ World is showing sign of recession
✓ Far right group seek to be a dominant force globally
THE EFFECTS

✓ Productivity will be key factor in decision making
✓ Technology driven regime is preferred
✓ IR 4.0 and Society 5.0 will play an important role
INTEGRATION OF INDUSTRY 4.0

- Simulation
- System Integration
- Internet of Things
- Autonomous robots
- Cloud computing
- Cybersecurity
- Big data
- Augmented reality
- Additive manufacturing
SOCIETY 5.0

• A human-centered society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space

• Science and Technology Basic Plan
CRITICAL SCM AUDIT POINT

Supply chain management

1. Raw materials
2. Supplier
3. Manufacturing
4. Distribution
5. Retail location
6. Customer
THE INNOVATIVE WAY

a) RFID technology
   • Raw materials
   • Supplier
   • Manufacturing

RFID enabled system

b) Drones and smart robotics
   • Video on drones
   • Video on robotics
   • Video on Sophia
THE INNOVATIVE WAY

b) Drones and smart robotics

*Drone Pod*
THE INNOVATIVE WAY

Waterproof Drone
THE INNOVATIVE WAY

*Shelf-Climbing Robots*
THE INNOVATIVE WAY

Sophia the robot’s interview
THE INNOVATIVE WAY

Mixed Reality
Japan’s strategy: ‘Society 5.0’

Abenomics ‘Growth Strategy 2017’ aims to accelerate ‘4th Industrial Revolution’ and materialize ‘Society 5.0’

‘Society 5.0’ or hyper-smart society is the society where technology solves social challenges and corresponds to various requirement thereby providing comfort living for everyone.
Predictive Maintenance

BIG DATA from Disparate Sources

- Integrates/complements equipment condition monitoring data in combination with process performance & seasonal/environmental conditions
- Builds a prediction model based on historical & live operational data gathered
- Produces and estimated Time-to-Failure for each piece of equipment
- Machine Learning is a type of Artificial Intelligence (AI) that is able to automatically learns the characteristics of a company’s plant & becomes more accurate the longer it runs
PRODUCING ASSETS

Predictive Maintenance

Daily Maintenance

Turnaround
VROC

Fully automated Predictive Analytics solution that provides you with a holistic view of your asset, enabling you to reduce the number of condition software and human level intervention.

Traditional Predictive Analytics

- Does not provide a holistic view to determine overall health of the asset.
- Multiple condition monitoring software required for each equipment (typically from OEM providers).
- CM software only provides TRENDS for specific equipment.
- Human intervention required to calculate Time To Failure for each equipment.
  - TTF provided at a given point in time (snapshot).

VROC Predictive Analytics

- VROC providing a single, fully automated Predictive Analytics software for all types of equipment.
- Key benefits:
  - Reduced operating cost - software license, IT infrastructure and maintenance, equipment spares and manpower;
  - Reduce reliance on OEM;
  - Reduce risk and uncertainty: TTF provided at real-time;
  - Increase prediction integrity and reliability.
CONCLUSIONS

• Digitalization
• Automation

IR 3.0

IR 4.0
• System integration
• Simulation

• Human-centred society

SOCIETY 5.0