



Role of Digitization to make Chemical Industry '*Aatma Nirbhar*'

23rd October 2020

Emerson Automation Solutions, India

Emerson at a Glance



Global Footprint

FOUNDED
1890
HEADQUARTERS IN
ST. LOUIS, MO
USA

RECOGNITION

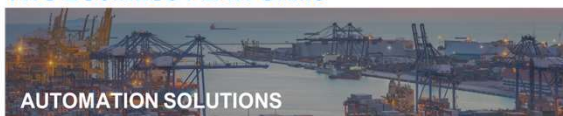
#178 2019
FORTUNE 500
AMERICA'S LARGEST
CORPORATIONS
BY REVENUE

Top 50 Employers
WOMEN ENGINEERS MAGAZINE

America's Best Employers
FORBES MAGAZINE

World's Most Admired Companies
FORTUNE MAGAZINE

TWO BUSINESS PLATFORMS



WORLDWIDE **88,000**
EMPLOYEES | **200**
MANUFACTURING
LOCATIONS

INNOVATION

EMERSON EMPLOYEES HELD

20K ACTIVE PATENTS WORLDWIDE IN 2020

\$18.4
BILLION
IN GLOBAL SALES
FISCAL YEAR 2019

63
YEARS

CONSECUTIVE
YEARS OF
INCREASED DIVIDENDS

NYSE:
EMR



India Presence

GLOBAL ENGINEERING CENTERS

Seven Engg Centers with
3000+ engineers,
Serving Multiple Industries
– Design, Development,
and Commissioning

MANUFACTURING PRESENCE

10 Manufacturing Plants in
India with 1800 Employees
Catering to Wide Ranging
Industry Segments

NEW INVESTMENTS

Chakan to be an Integrated
Manufacturing Hub to
serve customers in India,
Middle East, and Africa

ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007

Certifications
for
Manufacturing Facilities

Wide and Strong Presence in India; 7300+ Employees

SAFETY

Zero injuries. Zero incidents.

- Employees removed from hazardous activities
- Constant monitoring of worker and plant health
- Threat prevention and response – cyber, physical – is automated, part of culture

RELIABILITY

No unplanned downtime

- Analytics predict health of all equipment
- No reactive repair: pre-failure corrective action by automated closed-loop systems
- 'Avatars' perform field tasks

PRODUCTION

Production optimized to market conditions

- Continuous visibility enables active business management
- Business areas optimized in real-time across interconnected systems
- Predictive digital twins enable exception management along entire value chain

A SELF RELIANT CHEMICAL PLANT

ENERGY & EMISSIONS

Recognized sustainability leader

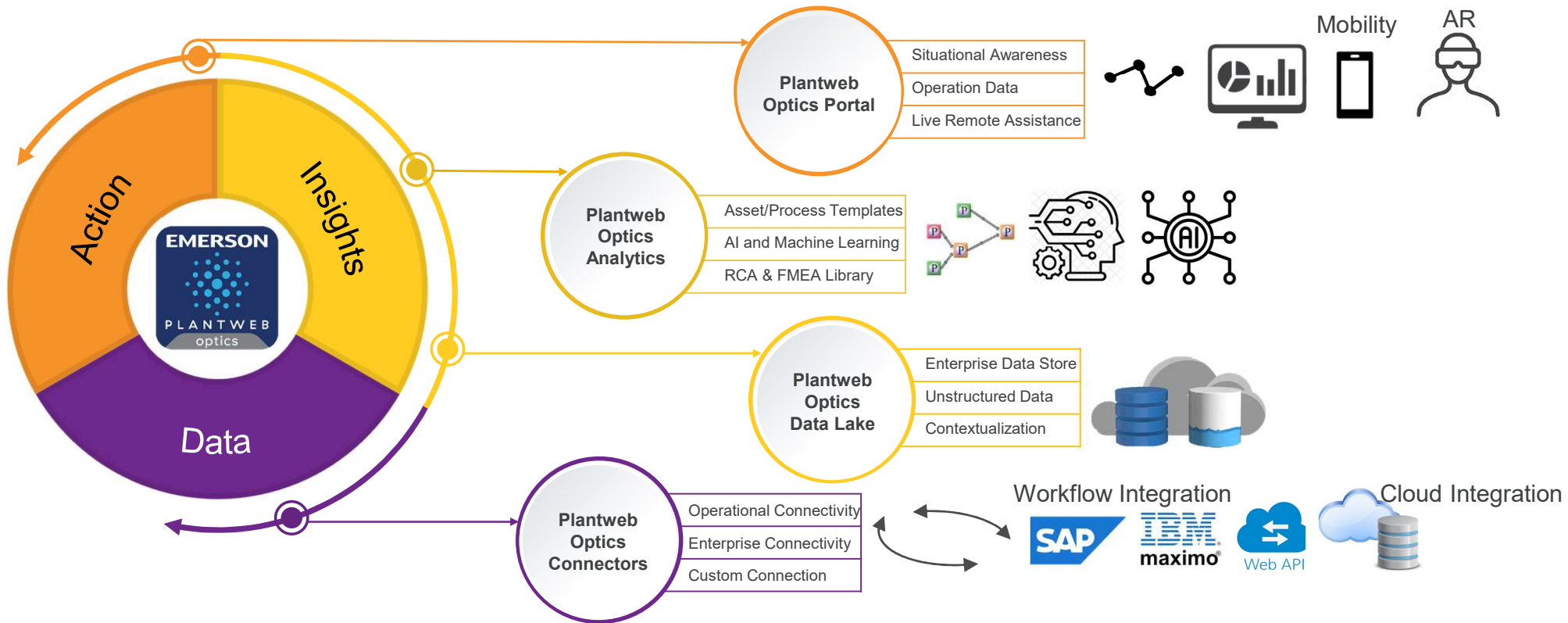
- Continuous analytics predict and prevent releases
- Energy consumption measured and dynamically optimized with production
- Energy sources balance business and shared community goals

WORKFORCE

Empowered workers drive even more value

- All routine tasks automated: staff takes larger role in meeting KPIs
- Collaboration embedded in culture and work processes
- Faster, better decisions supported by analytics and on demand expertise
- Career-long development and certification through virtual tools

Plantweb Optics Platform for Digital Transformation



Device to Cloud – “OT In a Box” – Software AND Services

Typical Digitization Applications for Chemical Industry

SAFETY

- Location Awareness
- Hydrocarbon leak detection
- Safety Alert System
- Independent Tank overfill detection
- ESD valve position and performance
- Safety shower / eye wash monitoring
- PRV monitoring

RELIABILITY

- Root cause analysis models
- Corrosion / erosion monitoring
- AMS Device Manager
- Machinery Health Manager
- Pump condition monitoring
- Heat tracing temp profile monitoring
- Blower / Fan condition monitoring

PRODUCTION

- Plantweb Optics Analytics – AI, ML
- Plantweb Insight – Asset health
- Dynamic Batch targeting
- Condition base analytics
- RCA, Remaining useful life
- Smart equipment modules
- Mobile Operator rounds

ENERGY & EMISSIONS

- Energy Advisor software - KPI
- Mass and Energy balance
- Steam Trap health monitoring
- Heat exchanger monitoring
- Utilities management sensors and software

WORKFORCE

- Digital Twin
- Augmented Reality
- Virtual Reality
- Interactive workflows
- Upskilling & Change Management

Digital transformation is a customer-owned strategy of integrating digital capabilities to improve project and operational performance