Emerson Power & Water Solutions

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Emerson Process Management
Power & Water Solutions

EMERSON
Process Management

Agenda

1. Emerson Corporate Introduction
2. Water & Waste Water Treatment Capability
3. Emerson's Experience in Water Industry
4. China's Biggest City-Wide Water Project
5. Benefits from City-wide Control System

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Emerson Corporate Introduction

- One of the most admired companies in the world
- Founded in 1890, headquarters St. Louis
- More than 60 operating divisions with 3,500 plants and sales offices
- More than 111,500 employees
- Product/Market leadership in all eight business areas
- Total sales for 2005 was USD 15.6B
- Strong commitment to R&D
- Emerson is Organized Around 8 Customer-Focused Businesses

Fortune World's Most Admired

GLOBAL ELECTRONICS		
1	General Electric	7.92
2	Sony	6.91
3	**EMERSON**	**6.90**
4	Siemens	6.39
5	Samsung Electronics	6.11
6	Royal Philips Elec.	5.92
7	Toshiba	5.84
8	Mitsubishi Electric	5.42
9	Matsushita Electric	5.38
10	Hitachi	5.36
11	Sanyo Electric	5.25
12	NEC	5.20
13	LG Electronics	4.99
14	ABB	4.62
15	Tyco International	2.62

- Emerson jumped onto the coveted top 50 **"2003 All Stars"** list, which is based on a global survey that asks respondents to rank top companies across all industries.
- "Newcomers to the All-Star list, such as Unilever and Emerson Electric, were rewarded for delivering solid products – and financial results."

Fortune, 2003

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Technology Leadership: Emerson Process Management

Highest Overall Rankings vs. Major Process Competitors

	1st	2nd	3rd	Total
Emerson	28	8	3	39
Allen-Bradley/ Rockwell	7	5	5	17
Honeywell	1	9	6	16
Siemens Moore	3	4	8	15
Invensys	2	6	6	14
Endress+Hauser	0	4	3	7
ABB	1	3	1	5
Yokogawa	1	1	2	4

Large Scale Systems Momentum

1997	2001	2002	2003
Honeywell	Honeywell	**Emerson**	**Emerson**
Siebe	**Emerson**	Hone[illegible]	Honeywell
Elsag-Bailey	Rockwell	ABB	Tie:Rockwell/ Invensys
Emerson	Invensys	Tie:Invensys/ Rockwell	Tie:Siemens/ ABB
Tie:Moore/ ABB	ABB		

21 "Best in Class" Rankings Including:

- #1 Process Control System
- #1 Process Control Software
- #1 Batch System
- #1 Hybrid Control System

Control Magazine
January 2003
Survey of End Users

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Scope of Experience

Over 3,500 installations worldwide

The Point Loma Water Treatment Plant— along with the North City Water Reclamation Plant, the Metropolitan Biosolids Center, the South Bay Water Reclamation Plant, and the Mission Bay Sewer Interceptor System, this facility is part of the City of San Diego COMNET project, a state-of-the-art I&C system upgrade using both Ovation and WDPF technologies.

Midland Cogeneration Plant — a 1500-megawatt facility in Michigan, started an outage to upgrade its entire process control system, one of the largest such installations in the world, from WDPF technology to Ovation. Midland's upgrade outage began on Saturday, and two days later, the plant was generating again. By Tuesday, it was operating at full power.

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Industry Focus
Offering the competitive edge

- **Water/Wastewater**
  - Over 100 water/wastewater system installations
  - Skilled with large & small applications, including water treatment, wastewater treatment, pumping stations, SCADA, remote networking, & simulator technology
  - Experience includes City of Detroit, City of San Diego, City of San Antonio, City of Sacramento, and many more
  - Benefits include increased automation for complete control, access to real-time data for effective monitoring & control to detect and isolate trips and leaks, and stable maintenance of plant chemistry levels

EMERSON

Water/Wastewater Industry Focus

Over 100 water/wastewater system installations for a variety of applications including:

- Wide-area interceptor monitoring
- Preliminary, primary, secondary & tertiary treatment
- Solids handling
- Filtration
- Phosphorus reduction
- Odor control
- Disinfection
- Effluent metering and quality monitoring
- Methane recovery
- Composting
- Incineration
- Combined sewer overflow programs
- Energy management

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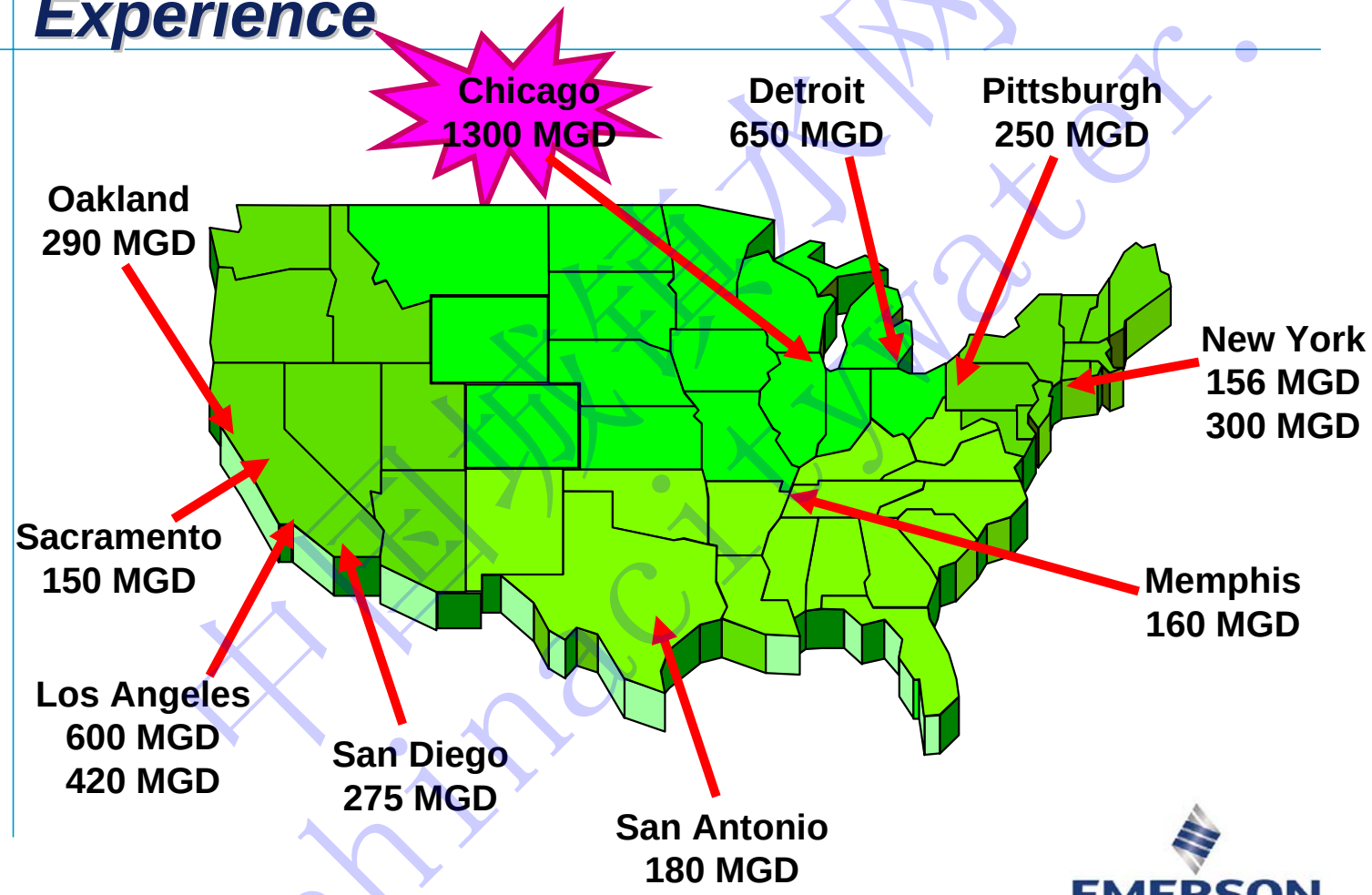
Unsurpassed Major Metropolitan Experience



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City of San Diego COMNET Success

- COMNET is a management system integrating all automation, monitoring and information systems for its entire wastewater process
- Designed to control the new four-plant structure, improve efficiency and reduce overall costs, to deal 275 million gallons of Wastewater Daily
- Expanded to adjust for the City's growth:
  - Point Loma WWT Plant
  - North City Wastewater Reclamation Plant
  - Metro Biosolids Center
  - South Bay Water Reclamation Plant
  - SCADA for over 100 pump/valve stations
  - About 30,213 I/O Points

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City of Detroit WWW Infrastructure

- In November 1999, $240m contract to upgrade the city's Water /waste water control system infrastructure
- Implemented to help solve capacity problems with an ever growing suburban and downtown areas, 710 million gallons average per day.
- Scope includes 2 new control facilities, 6 new area control centers and upgrades at over 400 remote sites
- Emerson's solution will provide:
  - More effective monitoring and control of the distribution network
  - Quicker detection and isolation of system leaks
  - 67 Redundant Controllers, 2 eDB Historians, and 1 Redundant Ovation Networks
  - About 30,000 I/O Points

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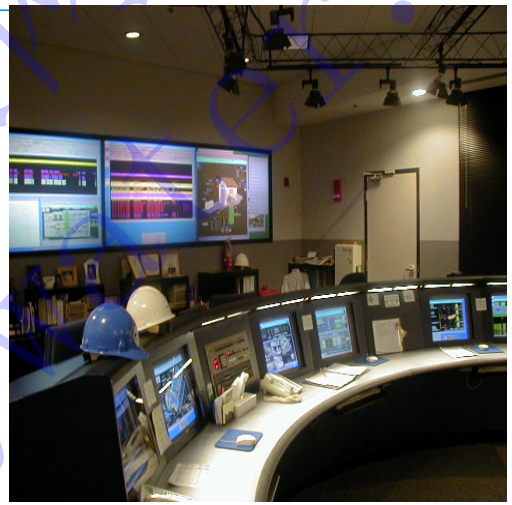
Haerbin Citywide Water Supply & Drainage Project



- In Jun 2005, $5.8m contract to construct China's first citywide water /waste water control system infrastructure
- Implemented to help supply 450km3 purified water per day for 3 million people in Haerbin, one 0.356 billion m3 reservoir, and 175 km pipe line.
- Emerson's solution will provide:
  - More effective monitoring and control of the distribution network
  - Quicker detection and isolation of system leaks
  - 5 Redundant Controllers, 2 Redundant Network, 1 Redundant SCADA Server, and 142 Ff field bus devices.
  - About 20,000 I/O Points

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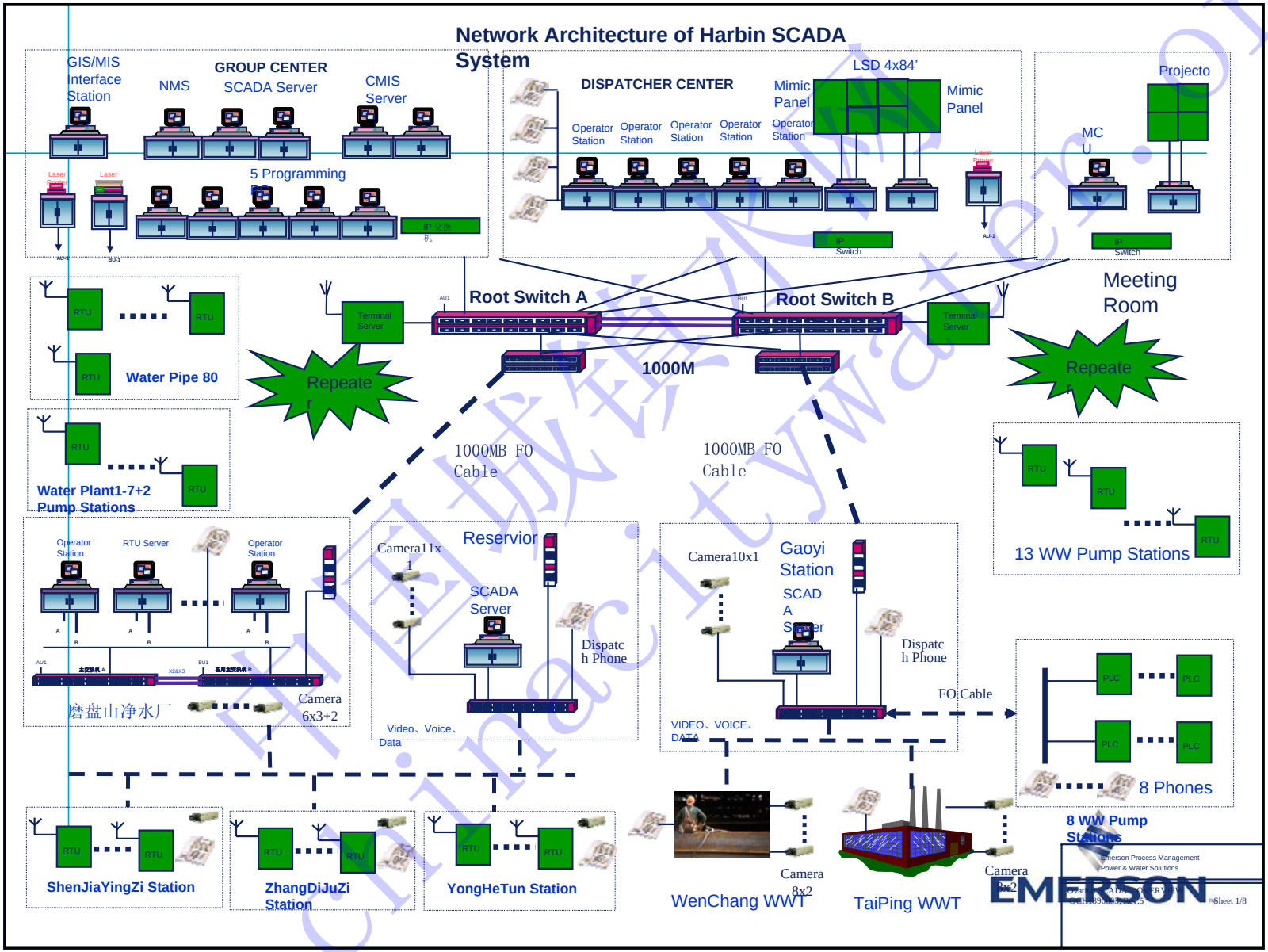
Network Architecture of Harbin SCADA System
GIS/MIS Interface Station
NMS
GROUP CENTER
SCADA Server
CMIS Server
5 Programming
DISPATCHER CENTER
Operator Station
Mimic Panel
LSD 4x84'
Projecto
MCU
IP Switch
Root Switch A
Root Switch B
1000M
Meeting Room
Repeater
Terminal Server
RTU
Water Pipe 80
Water Plant1-7+2 Pump Stations
1000MB FO Cable
Reservior
SCADA Server
Dispatch Phone
Camera11x1
Video、Voice、Data
磨盘山净水厂
Camera 6x3+2
Camera10x1
Gaoyi Station
SCADA Server
VIDEO、VOICE、DATA
FO Cable
13 WW Pump Stations
PLC
8 Phones
8 WW Pump Stations
ShenJiaYingZi Station
ZhangDiJuZi Station
YongHeTun Station
WenChang WWT
TaiPing WWT
Camera 8x2
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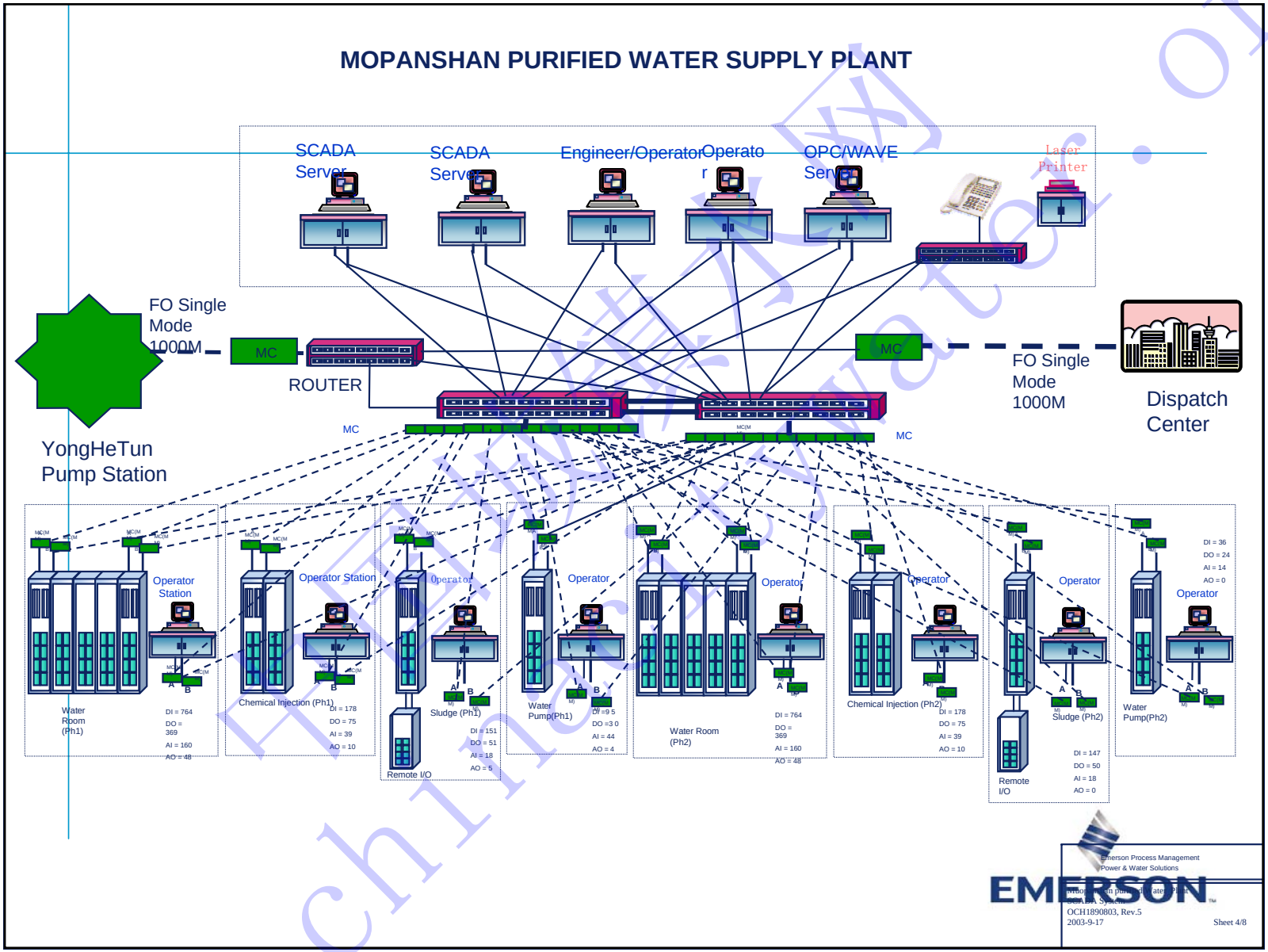
MOPANSHAN PURIFIED WATER SUPPLY PLANT
SCADA Server
SCADA Server
Engineer/Operator
Operator
OPC/WAVE Server
Laser Printer
FO Single Mode 1000M
MC
ROUTER
MC
FO Single Mode 1000M
Dispatch Center
YongHeTun Pump Station
MC
MC
Operator Station
Operator Station
Operator
Operator
Operator
Operator
Operator
Water Room (Ph1)
DI = 764
DO = 369
AI = 160
AO = 48
Chemical Injection (Ph1)
DI = 178
DO = 75
AI = 39
AO = 10
Remote I/O
Sludge (Ph1)
DI = 151
DO = 51
AI = 18
AO = 5
Water Pump(Ph1)
DI =9 5
DO =3 0
AI = 44
AO = 4
Water Room (Ph2)
DI = 764
DO = 369
AI = 160
AO = 48
Chemical Injection (Ph2)
DI = 178
DO = 75
AI = 39
AO = 10
Remote I/O
Sludge (Ph2)
DI = 147
DO = 50
AI = 18
AO = 0
Water Pump(Ph2)
DI = 36
DO = 24
AI = 14
AO = 0
Emerson Process Management
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OCH1890803, Rev.5
2003-9-17
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5. **Benefits from City-wide Control System**

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Benefits from City-wide Control System (1)

- Centralized monitoring of remote sites
  - Early detection of equipment failure
  - Compensate for seasonal flow
  - Reduces potential impact on environment
- Increases process control reliability
- Reduces operation and maintenance costs
  - Better utilization of field crews
  - Minimizes spare parts
  - Less training
- Preserves equipment investments

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Benefits from City-wide Control System (2)

- Collect useful data for GIS,MIS and other optimize software
- We build a platform to improve feasibility and efficiency. Customers can hold a overall meeting at site, know the equipment and instruments status without travel to the site. etc.
- Save long term cost of instruments and system maintenance
- Build a platform for the management level to know their business well and decision-making

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Q & A

Thanks

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