

Support Network Critical to Coker Crane Success

Mark W. Laughlin
Global Product Manager – Coke Handling
Konecranes America
mark.laughlin@konecranes.com

Anil Sutar
Coker Team India Leader
Konecranes, Pvt. Ltd.
anil.sutar@konecranes.com



SUPPORT IS KEY:

Successful operation needs trained operators and maintenance personnel:

- Protective features require periodic maintenance/replacement:
 - Encoders for position sensing
 - limit switches for travel limits, brake wear sensing, wire-rope mis-reeving
 - Skew sensors



“Mostly quiet...”

- (2) Existing P&H brand cranes, Jamnagar (1987)

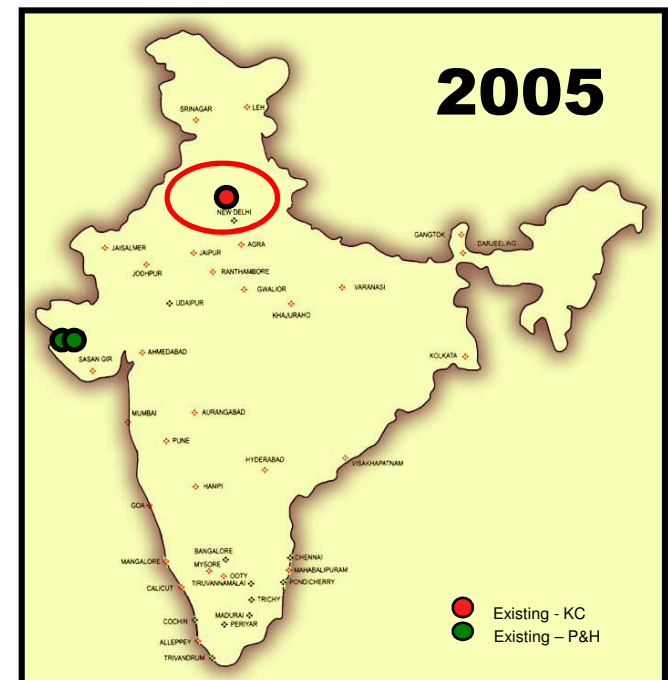
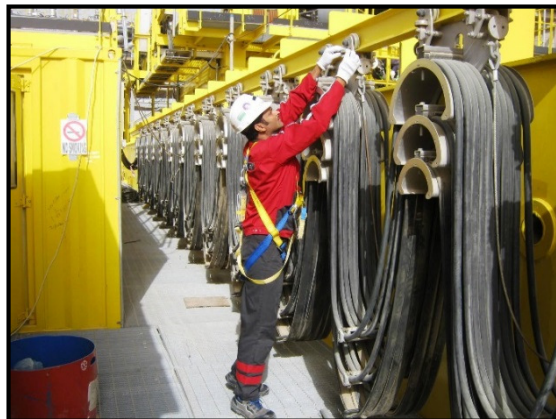


SUPPORT IS KEY:

Successful operation needs trained operators and maintenance personnel:

- Protective features require periodic maintenance/replacement:
- Failures of some systems cause un-trained operators to lose confidence, turn features “Off” ...
 - Skew control
 - Sway control
 - Semi-automation

- Panipat delivered (supported by KC-Thailand)



SUPPORT IS KEY:

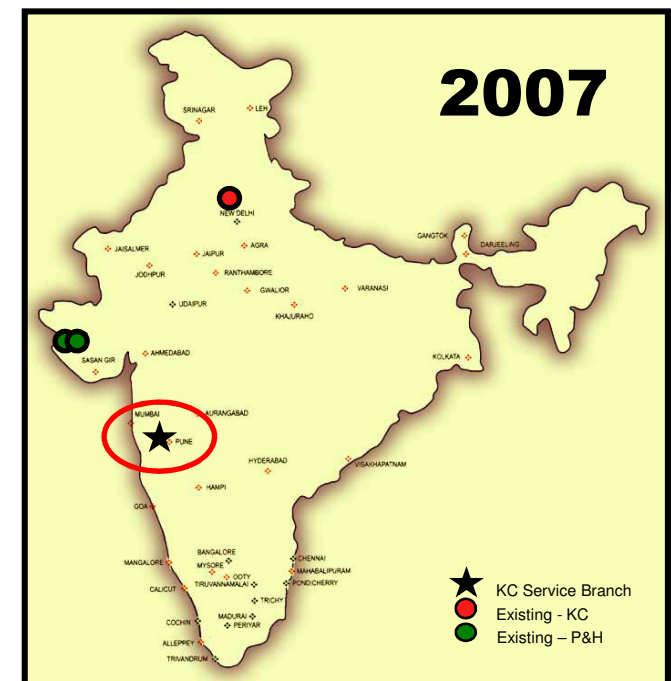
Successful operation needs trained operators and maintenance personnel:

- Protective features require periodic maintenance/replacement:
- Failures of some systems cause un-trained operators to lose confidence, turn features “Off” ...
- Trained, motivated Operators are the first-line of defense for Maintenance Team:
 - Performing pre-shift safety checks
 - Reporting alarms/symptoms accurately
 - Adjusting/repairing as instructed
 - Observing Operating procedures

“...safety features have been extremely helpful in avoiding any undesirable and unsafe incidents...” *

** See Article: Support Network Critical to Coker Crane Success*

- Pune office opened



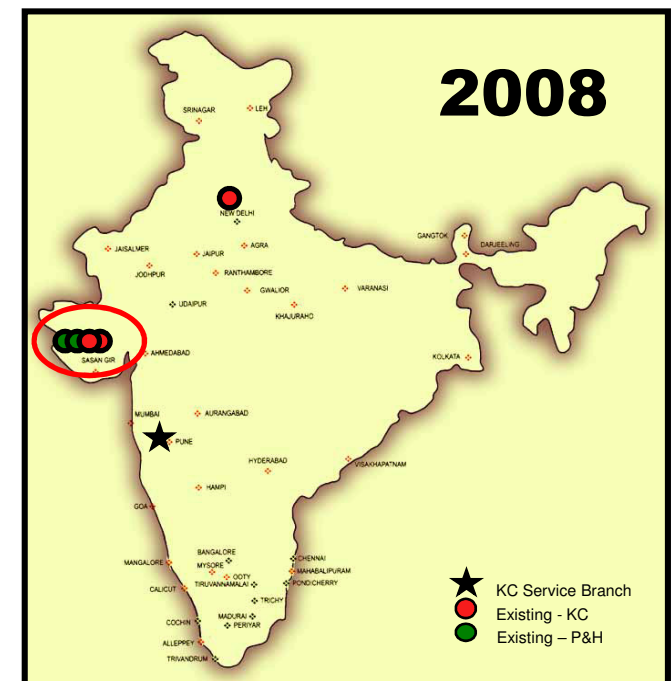
BUILDING A NETWORK:

When first delivering to India, an in-country service network was needed:

- Personnel trained at Konecranes facilities in Houston and Finland
 - Electrics Factory – Finland
 - Inverter & PLC courses
 - Project Management Training / Houston
 - Shop Assembly and Testing / Houston



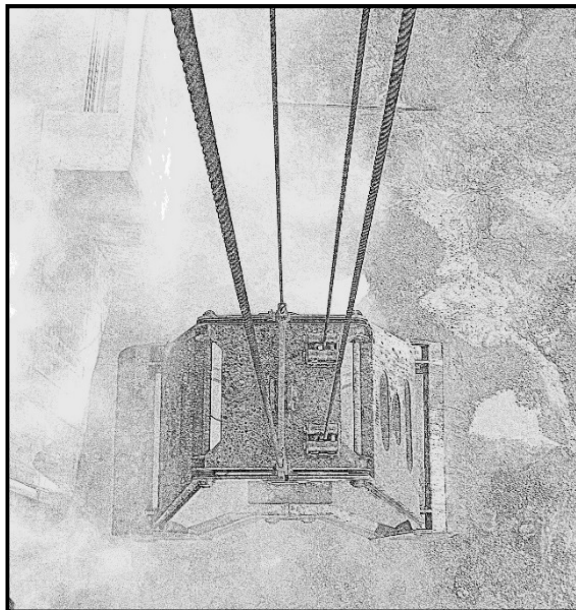
- (2) Jamnagar cranes delivered



BUILDING A NETWORK:

When first delivering to India, an in-country service network was needed:

- Personnel trained at Konecranes facilities in Houston and Finland
- Tech Support was positioned near refinery sites



- Bina crane delivered
- Delhi support added

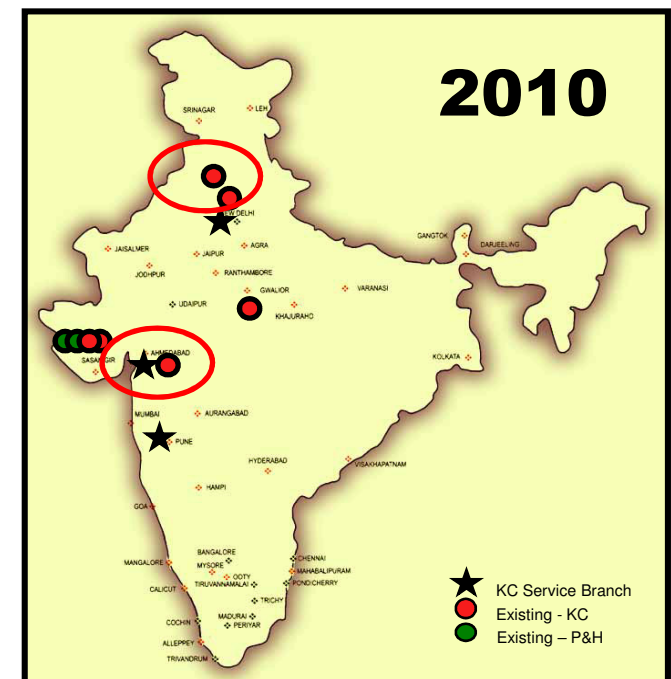


BUILDING A NETWORK:

When first delivering to India, an in-country service network was needed:

- Personnel trained at Konecranes facilities in Houston and Finland
- Tech Support was positioned near refinery sites
- Later, Service branches were opened to provide additional support

- Baroda crane delivered
- Baroda support added
- Bathinda crane delivered



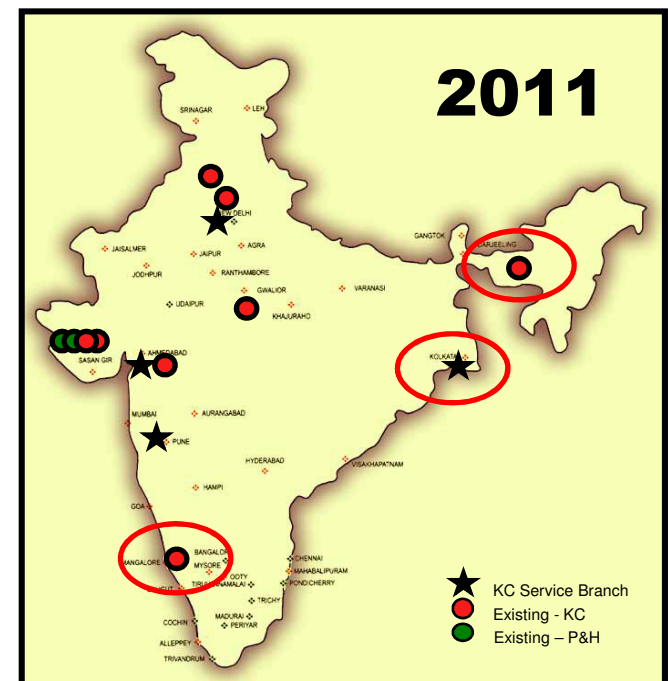
BUILDING A NETWORK:

When first delivering to India, an in-country service network was needed:

- Personnel trained at Konecranes facilities in Houston and Finland
- Tech Support was positioned near refinery sites
- Later, Service branches were opened to provide additional support
- Finally, a dedicated Coker Crane Service Team...
Coker Team India was formed:
 - Get the right resource to site
 - Customer-focused response
 - Trained experts with a **Team Culture**

**“...all of our customers
get an improved experience.”**

- Mangalore crane delivered
- Guwahati crane delivered
- Kolkata Branch opened

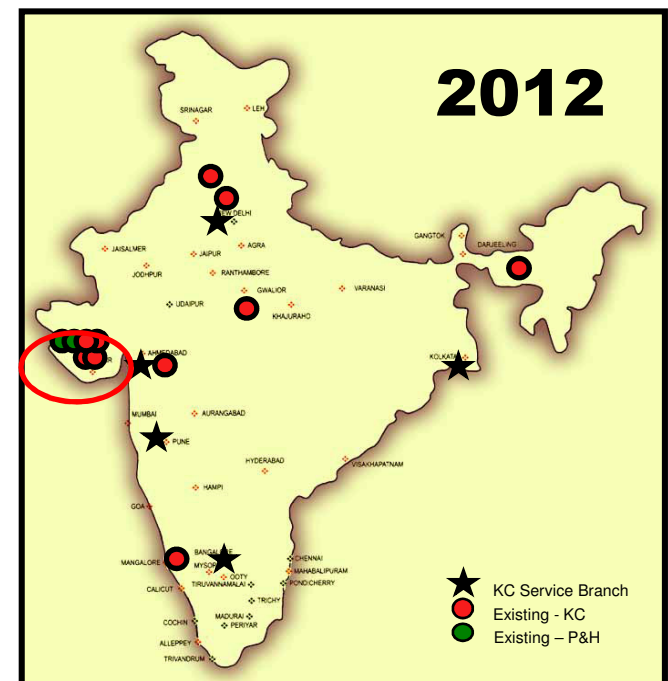


BUILDING A NETWORK:

When first delivering to India, an in-country service network was needed:

- Personnel trained at Konecranes facilities in Houston and Finland
- Tech Support was positioned near refinery sites
- Later, Service branches were opened to provide additional support
- Finally, a dedicated Coker Crane Service Team...
Coker Team India was formed
- Konecranes Services now partnering with bucket mfg., Anvil Attachments, Ltd.:
 - Spare Parts
 - Inspection services
 - Bucket rebuilds
 - Replacement buckets

- Vadinar cranes (2) delivered

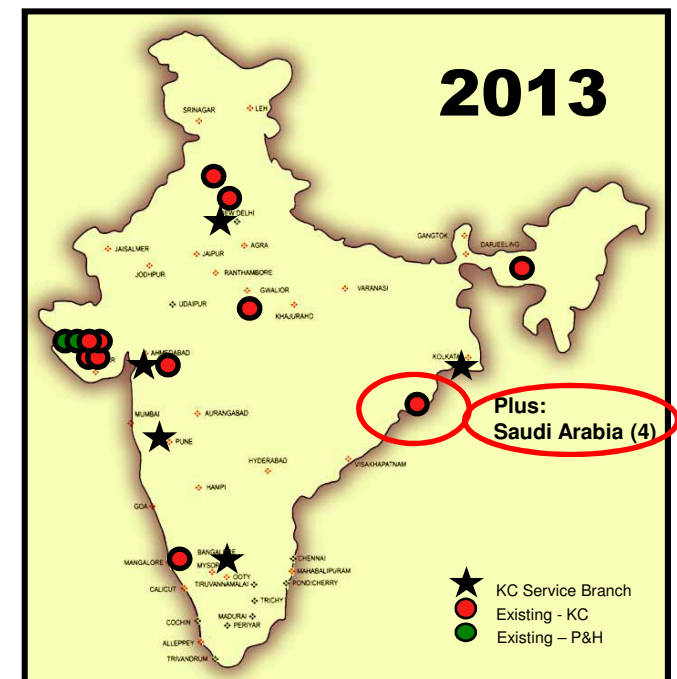


MEASURING SUCCESS:

How can we measure success ?

- **Coker Team India** is active supporting both Indian and international customers
 - Saudi Arabia
 - Philippines
 - Soon Oman, Belgium, Turkey...

- Paradeep crane delivered
- Saudi Arabia cranes (4) delivered

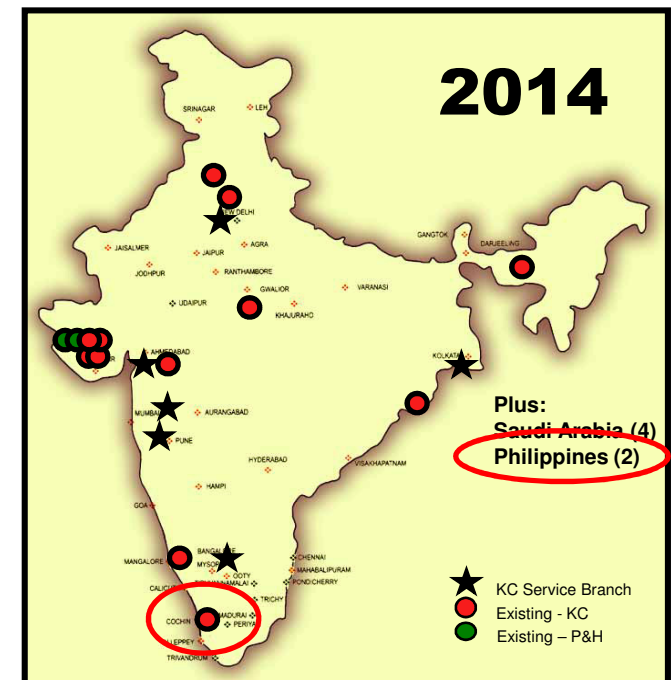
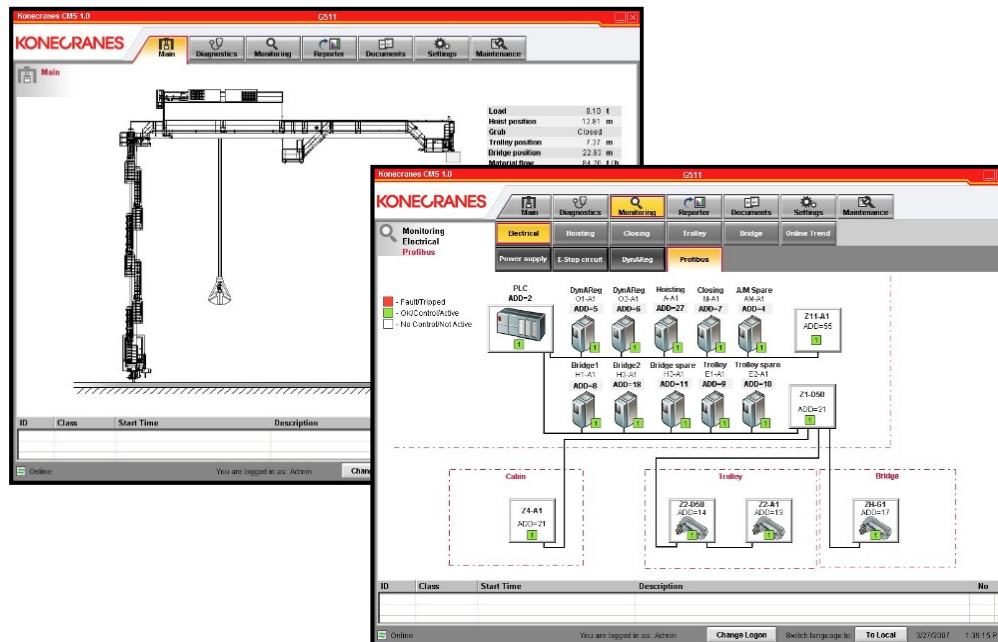


MEASURING SUCCESS:

How can we measure success ?

- **Coker Team India** is active supporting both Indian and international customers
- (11) of the Konecranes coker sites in India operate with only one crane...a testament to reliability

- Kochi crane delivered
- Philippines cranes(2) delivered

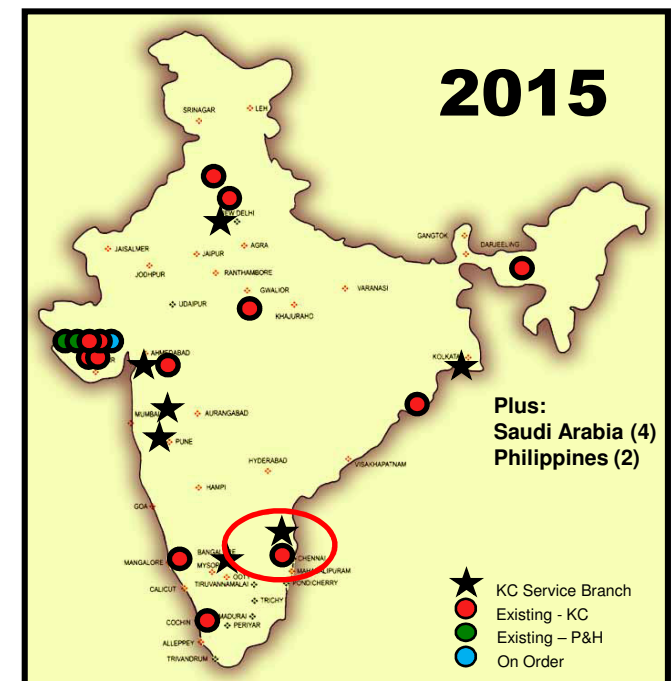
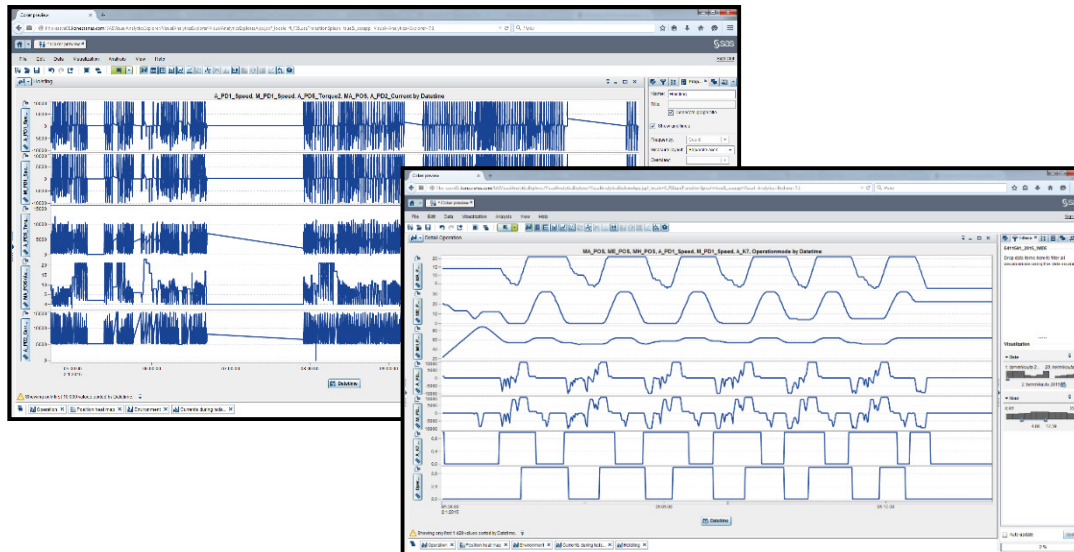


MEASURING SUCCESS:

How can we measure success ?

- **Coker Team India** is active supporting both Indian and international customers
- (11) of the Konecranes coker sites in India operate with **only one crane**...a testament to reliability
- Very high levels of customer satisfaction where Konecranes operates and maintains

- Chennai crane delivered
- Chennai Branch opened



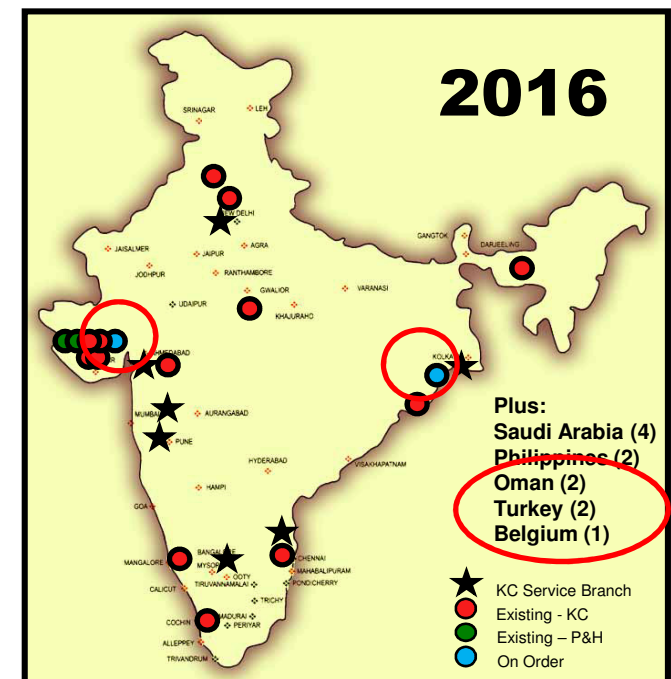
MEASURING SUCCESS:

How can we measure success ?

- **Coker Team India** is active supporting both Indian and international customers
- (11) of the Konecranes coker sites in India operate with **only one crane**...a testament to reliability
- Very high levels of customer satisfaction where Konecranes operates and maintains
- Continued business - Konecranes has received orders for 15 cokers for India
- Konecranes brand cokers have handled an estimated **200 million metric tons** of coke in India with **no prolonged downtime***

“The downtime for these cranes is extremely low...”

- Oman cranes (2) delivered
- Turkey cranes (2) delivered
- Belgium crane in process
- Jamnagar crane in process
- Haldia crane in process



MEASURING SUCCESS:

How can we measure success ?

Konecranes branded coker cranes sold to Indian Customers:

Operating Years are Approximate, as of: 2016.75													
Ordered	Qty.	Crane Lift Capacity	Bucket Size (m3)	Years Operating (per crane)	No. of Cranes	Op-Yrs	Specified Tons/Day Produced	Coke produced per Day per crane (tpd)	Handling "Factor" (times coke handled)	estimated tons/ year handled x 350 days/year (t)	Coke Handled to Date (t)	Konecranes Maintaining ?	Konecranes Operating ?
2016	1	32 MT	15 M. Mech.	[Not yet in Service]			--	--	--	--	--	--	--
2015	1	40 MT	22 M. Mech.	[Not yet in Service]			--	--	--	--	--	--	--
2014	1	33 MT	21 M. Mech.	[Not yet in Service]			--	--	--	--	--	--	--
2013	1	37 MT	23 M. Mech.	[Not yet in Service]			--	--	--	--	--	--	--
2011	1	55 MT	30 M. Mech.	0.5	1	0.5	4,172	4,172	2	2,920,400	1,460,200	Yes	Yes
2010	2	40 MT	20 M. Mech.	4.25	2	8.5	7,154	3,577	2.3	5,758,970	48,951,245	Yes	Yes
2010	1	10 MT	3.6 M Mech.	4	1	4	244	244	2	170,800	683,200	Yes	No
2009	1	41 MT	20 M. Mech.	2	1	2	3,300	3,300	2	2,310,000	4,620,000	Yes	Yes
2009	1	40 MT	20 M. Mech.	4.5	1	4.5	3,150	3,150	2	2,205,000	9,922,500	Yes	Yes
2008	1	44 MT	25 M. Mech.	5.25	1	5.25	3,314	3,314	2	2,319,800	12,178,950	Yes	Yes
2007	1	33 MT	15 M. Mech.	5.5	1	5.5	1,417	1,417	2	991,900	5,455,450	Yes	No
2006	2	35 MT	20 Yd. Mech.	7.5	2	15	12,504	6,252	1.5	6,564,600	98,469,000	No	No
2003	1	44 MT	25 M. Mech.	10.75	1	10.75	3,100	3,100	2	2,170,000	23,327,500	Yes	No
	15	= Total Cranes		Total CraneOpYrs = 55.50			38,355			25,411,470	203,607,845		
							350	x Op Days / Year					
							13,424,250	= Total Coke Produced			25.4	203.6	
							13.4	mil t		Million mt	Million mt		

MEASURING SUCCESS:

How can we measure success ?

“Typical” Break-down has been approx. **2 days**
Coker Specialists respond quickly and problems are resolved

Recently (2) significant Break-down incidents:

- **Derailing (Aug-2016) :**
 - One crane in a 2-crane facility derailed
 - Time was spent checking wheel and rail alignment
 - But failure was found to be in Skew-Control software
 - Software was re-loaded, system recalibrated, crane running fine
 - This is longest shutdown reported to date... **19 days**
- **Encoder signal failure (July-2016):**
 - Problem was first mis-diagnosed (by KC) as bad encoder
 - Time was wasted obtaining/installing replacement
 - Trouble was actually damaged encoder cable, replaced/resolved
 - This is second-longest shutdown... **10 days**



MEASURING SUCCESS:

How can we measure success ?

But the good news is...

- **55.5 OpYears / 200 million metric tons handled:**
 - No Hoist/Close Motor failures
 - No Gantry/Trolley Motor failures
 - No Gear failures
 - No Drum failures
- **Main failures, ReGen Units and Inverters**
 - Several due to improper storage prior to install
 - Most failures on Commissioning or shortly after
 - Operationally:
 - 4 failed ReGen Units
 - 1 Gantry Inverter
 - Otherwise, a few encoders, sensors, bearings...



FULL-SERVICE SUPPORT:

A variety of Services available:

- Crane operators
- Maintenance personnel
- Inspection services
- Technical support
- Training

SERVICE FOR ALL MAKES

We provide specialized maintenance services and spare parts for all types and makes of Industrial cranes, holsts, machine tools, and port equipment – from a single piece of equipment to entire operations. Our objective is to improve the safety and productivity of our customers' operations.

CRANE OPERATOR TRAINING

Crane Operator Training is designed for crane operators and the supervisory personnel responsible for the daily operation and safe performance of cranes. The training gives participants the working knowledge to assist in reducing operator errors that may lead to unnecessary downtime. Crane operator training can provide additional knowledge to help avoid possible serious injury to personnel caused by improper crane operation.

LIFECYCLE CARE

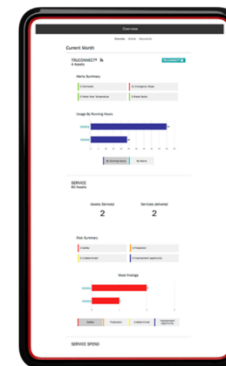
Lifecycle Care is a systematic, consistent, comprehensive and professional approach to maintenance, supported by world-class tools and processes.

Highest Lifecycle Value results from maximizing the productivity of uptime in addition to minimizing the cost of downtime. We believe merely keeping your cranes running is not sufficient. We must also help you achieve the highest productivity during every shift.



CUSTOMER PORTAL

Customers with a maintenance agreement have access to yourKONECRANES.com, our cloud-based customer portal. Usage data, maintenance data and asset details are linked, giving a transparent view of events and activities over any selected time interval. Aggregated data can be viewed, analyzed and shared quickly, for a single asset or an entire fleet. Insights can be drawn by observing anomalies, patterns and trends, helping users make informed maintenance decisions.



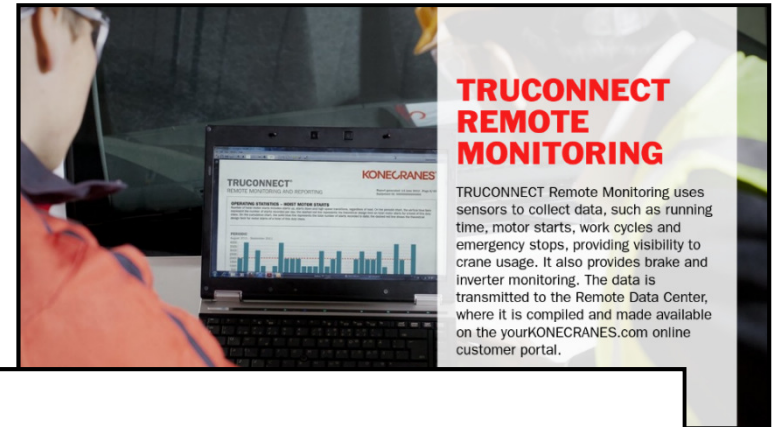
FULL-SERVICE SUPPORT:

...with a variety of Service Products:

- Mainman reporting
- TRUCONNECT® remote monitoring
- RopeQ wire rope diagnostics
- RailQ runway rail alignment
- CMS diagnostic data analysis
- yourKONECRANES.com® web portal

ROPEQ™ MAGNETIC ROPE INSPECTION

During a typical inspection, only the outer wires and strands of the wire rope can be visually inspected. Konecranes RopeQ™ technology and non-destructive testing methodology analyzes the condition of the internal wires, strands and wire rope core that are not typically visible.



TRUCONNECT REMOTE MONITORING

TRUCONNECT Remote Monitoring uses sensors to collect data, such as running time, motor starts, work cycles and emergency stops, providing visibility to crane usage. It also provides brake and inverter monitoring. The data is transmitted to the Remote Data Center, where it is compiled and made available on the yourKONECRANES.com online customer portal.

CRANEQ CRANE GEOMETRIC SURVEY

With CraneQ, we verify the crane for squareness, meaning the end trucks must be parallel to each other and perpendicular to the bridge girder for the crane to track properly. In addition, the geometry of the end trucks themselves is verified, as is the alignment of the wheels within the end trucks. Finally, the girders for the crane are measured for camber.

CraneQ is based on advanced and traditional measurement methods. Proprietary software and skilled survey technicians provide an extremely accurate geometric analysis of your crane.



KONECRANES RAILQ RUNWAY SURVEY AND CRANEQ CRANE GEOMETRIC SURVEY WORK TOGETHER FOR A COMPLETE VIEW OF CRANE AND RAIL GEOMETRY

RAILQ™ RUNWAY SURVEY

Cranes should travel or track along their runway rails with a minimum of skew and without binding. Improper tracking leads to premature wheel and rail wear, resulting in costly repairs and downtime, as well as inefficient and suboptimal crane operation.

RailQ is an industry-leading rail analysis. It delivers accurate alignment information of your rail and expert recommendations for corrective action.

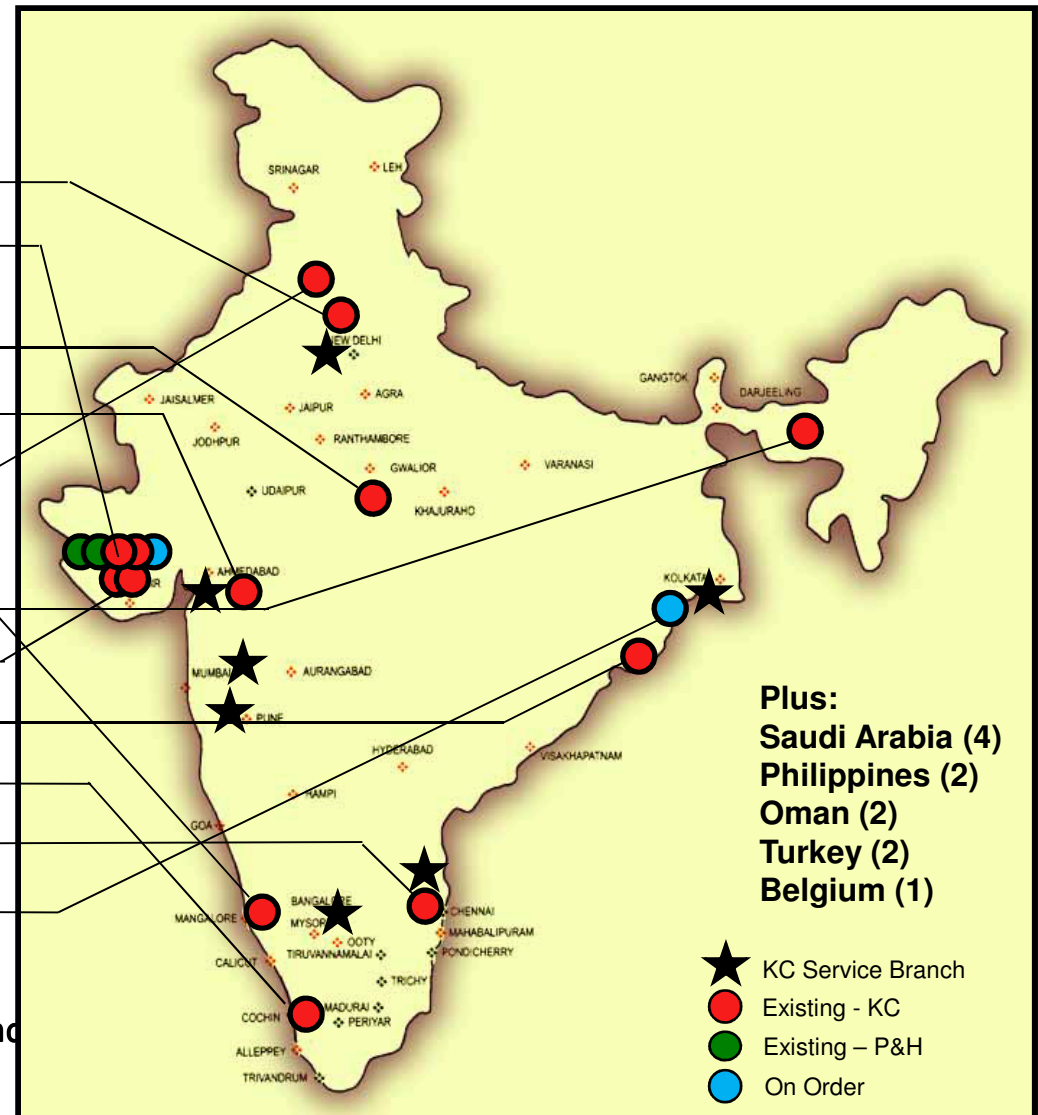


KONECRANES INDIA TODAY:

KC Coker locations:

- Panipat (2003)
- Jamnagar
(3 KC 2006/2006/2015, 2 P&H 1998/1998)
- Bina (2007)
- Baroda (2008)
- Bathinda (2009)
- Mangalore (2009)
- Guwahati (2010)
- Vadinar (2 KC 2010/2010)
- Paradeep (2011)
- Kochi (2013)
- Chennai (2014)
- Haldia (2016)

(17 cranes as of July-2016, incl P&H brand
(Year Ordered)



CONCLUSION:

The keys to coker crane success:

Experience:

- Total combined operating time for Konecranes and P&H coker cranes is now over 1,800 Operating Years
- Over 55 Operating Years for Konecranes Indian cokers

[illegible]

KEY TAKE-AWAYS:

The keys to coker crane success:

Operators:

- Whether operation is by Owner, Contractor or Konecranes, Operators **Must** be Trained

Maintenance:

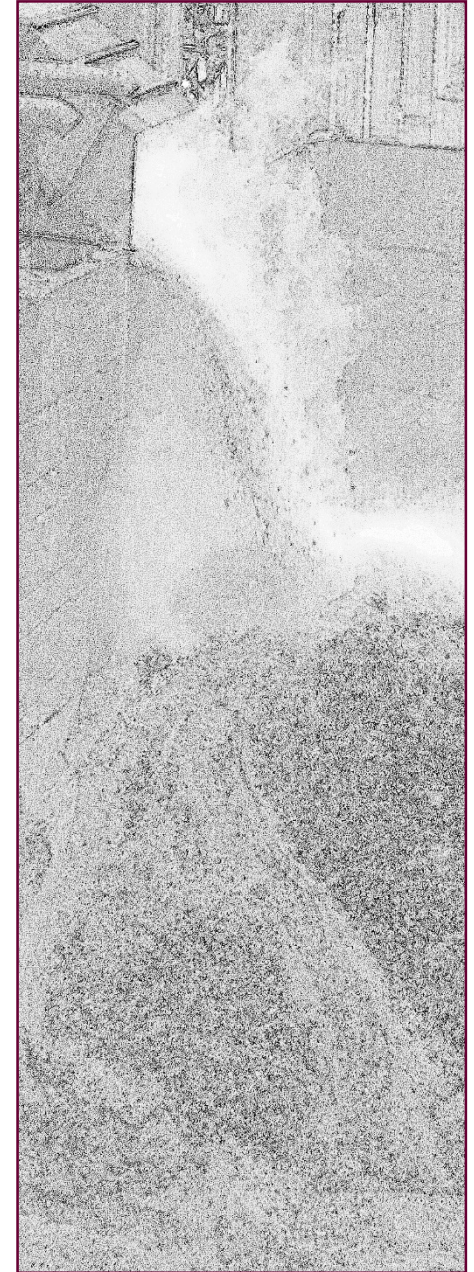
- Whether Maintenance is by Owner, Contractor or Konecranes, Maintenance people **Must** be Trained

Partner:

- Work with a partner who is **local**, **dedicated**, and **customer focused**

Equipment:

- With the above, plus the right equipment and appropriate spares... **Success !!**



MAIN RESULT:



**Satisfied
Customers !!**



Thank you !!



KONECRANES, PVT. LTD.

19, Level 2, Muttha Towers, Don Bosco Road,
Yerwada, Pune 411 066 India

SUPRA ENGINEERING

71-74, 2nd Floor, Suryakiran Complex, J. P. Road,
Vadodara – 390 015, Gujarat, India



**Safety,
Reliability,
Productivity.**