tkUCE Technology Service

CLOROSUR Technical Seminar & WCC Safety Workshop
14 -16 November 2018 Monterrey - Mexico

thyssenkrupp Uhde Chlorine Engineers (Italia) Srl

engineering.tomorrow.together.

thyssenkrupp

Globally leading technologies for chlorine and cautic soda production

BM single element

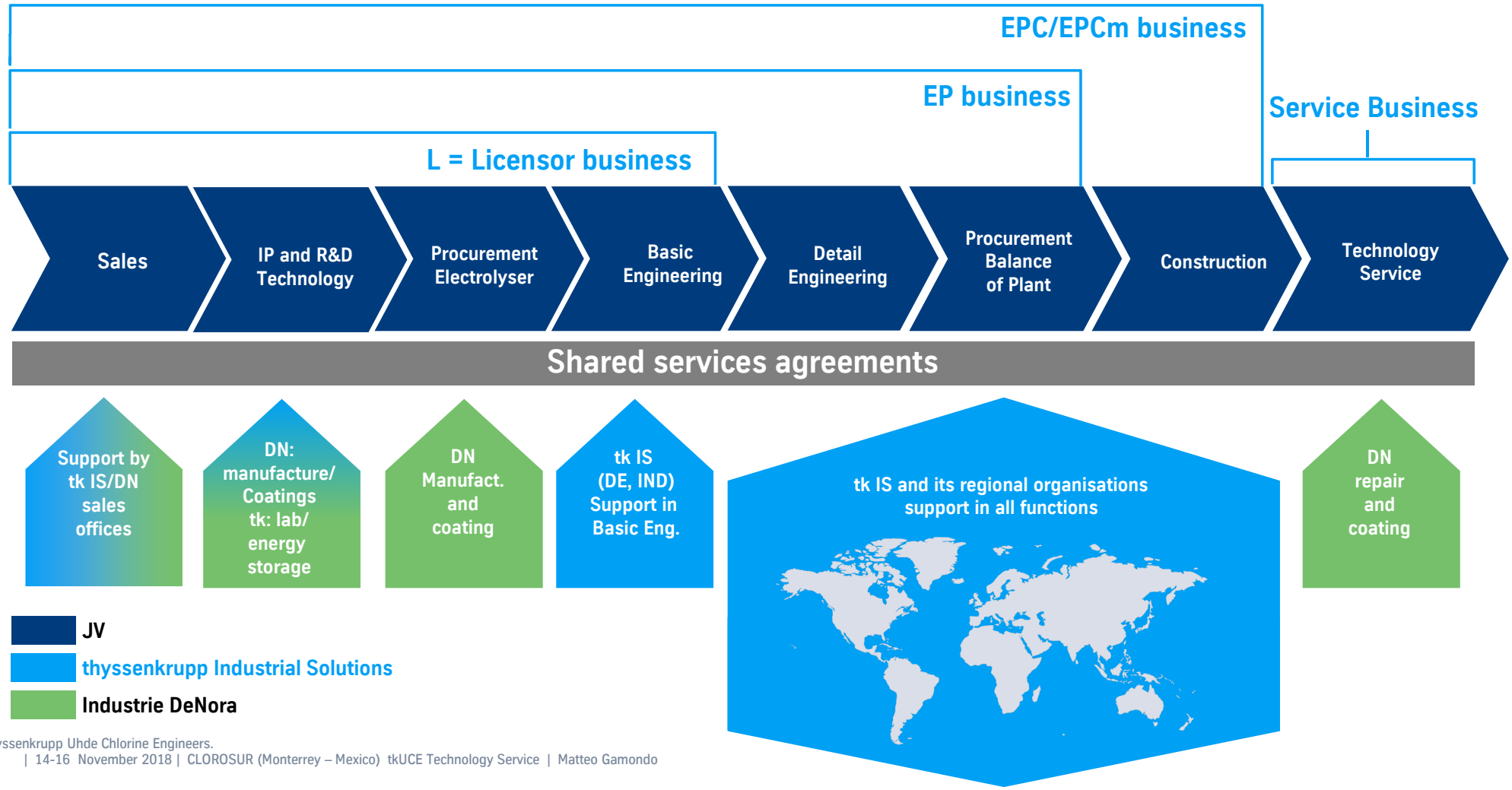
NaCl-ODC

BiTAC filter press

Skid mounted plants

What we offer to our Customers

Focus of Technology Service



tkUCE Technology Service: key statements

1. thyssenkrupp Uhde Chlorine Engineers offer a service concept for continuous plant improvement

2. Our technology service is based on a large competence network

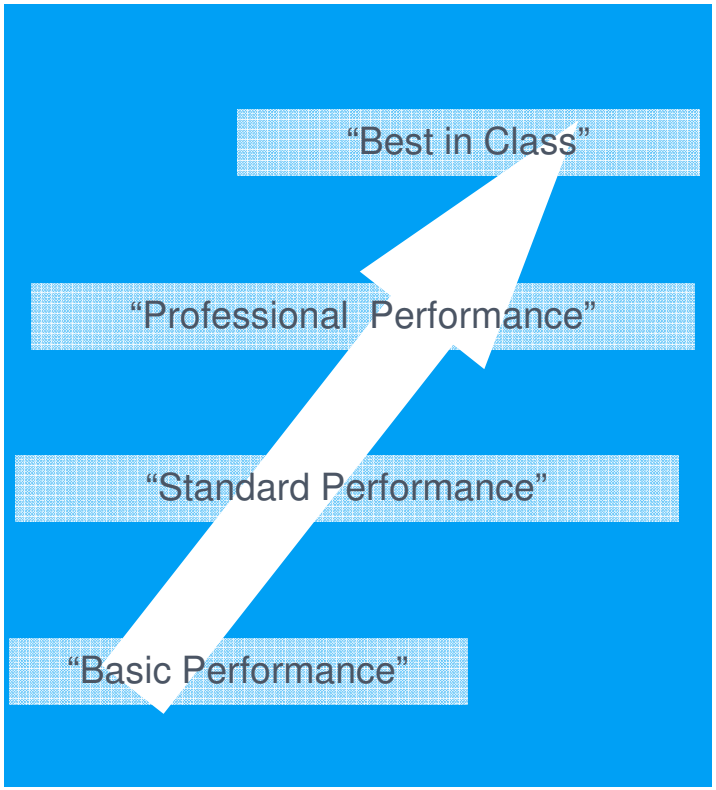
3. The service product portfolio consists of modules covering the entire plant lifetime

4. Technology service is provided locally

1. thyssenkrupp Uhde Chlorine Engineers offer a service concept for continuous plant improvement

tkUCE Service concept

Way to “Best in class”



Targets

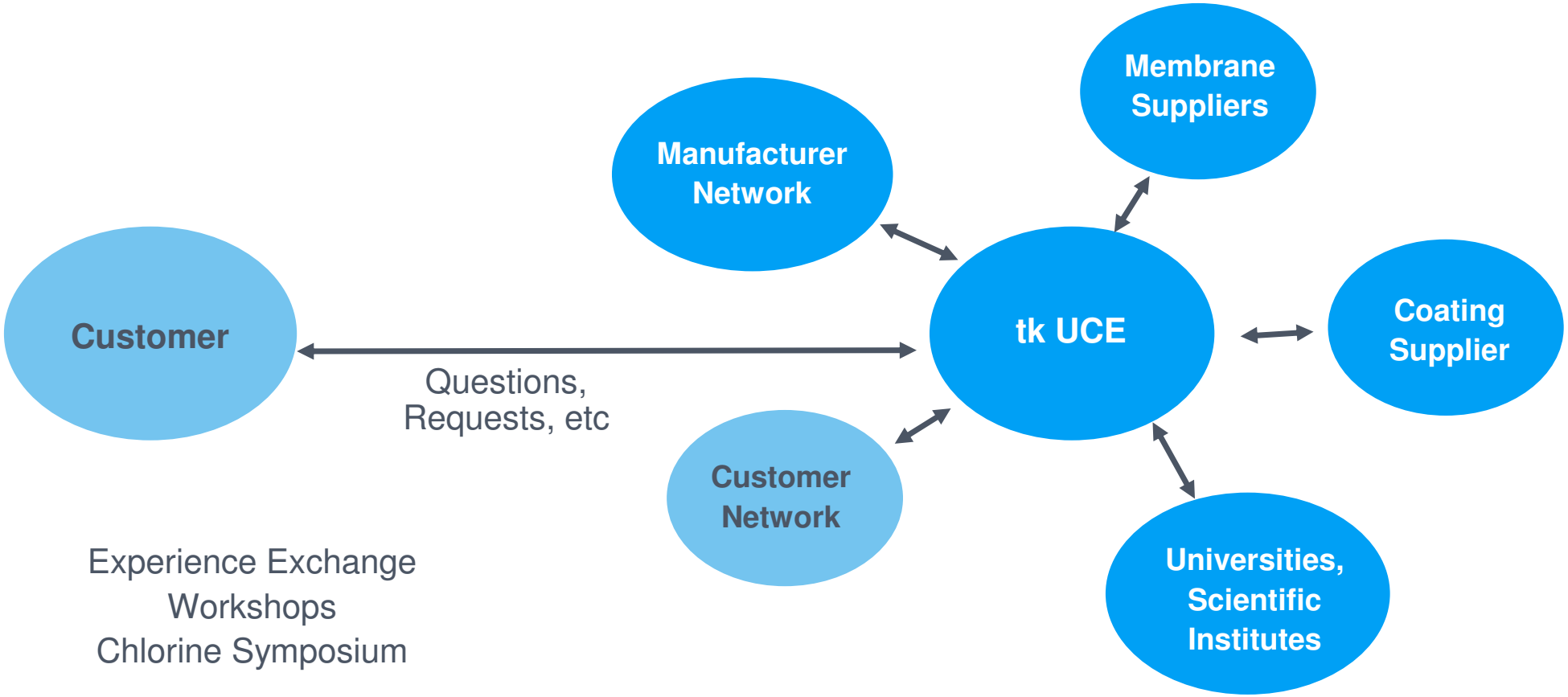
- Significant minimized power consumption
- Plant availability & safety
- Product quality

Methods

- Analysis
- Plan for improvements
- Implementation
- Controlling / Monitoring

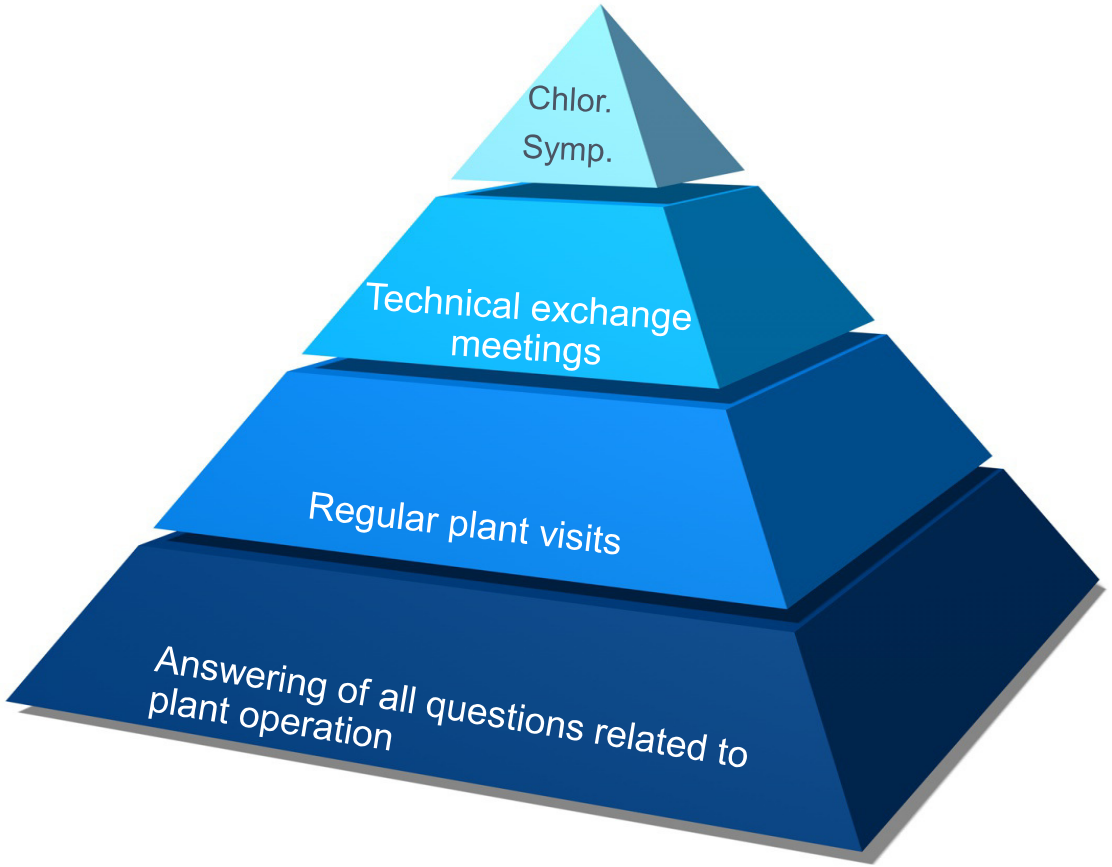
2. Our Technology Service is based on a large competence network

Our competence network helps to learn from the best



3. The service product portfolio consists of modules covering the entire plant lifetime

Customer support covers all questions related to plant operation



Remote condition monitoring is a continuous process

Performance Data
- Electrolyzer
- Catholyte, Brine
- Element Assembly

Implementation
Action items

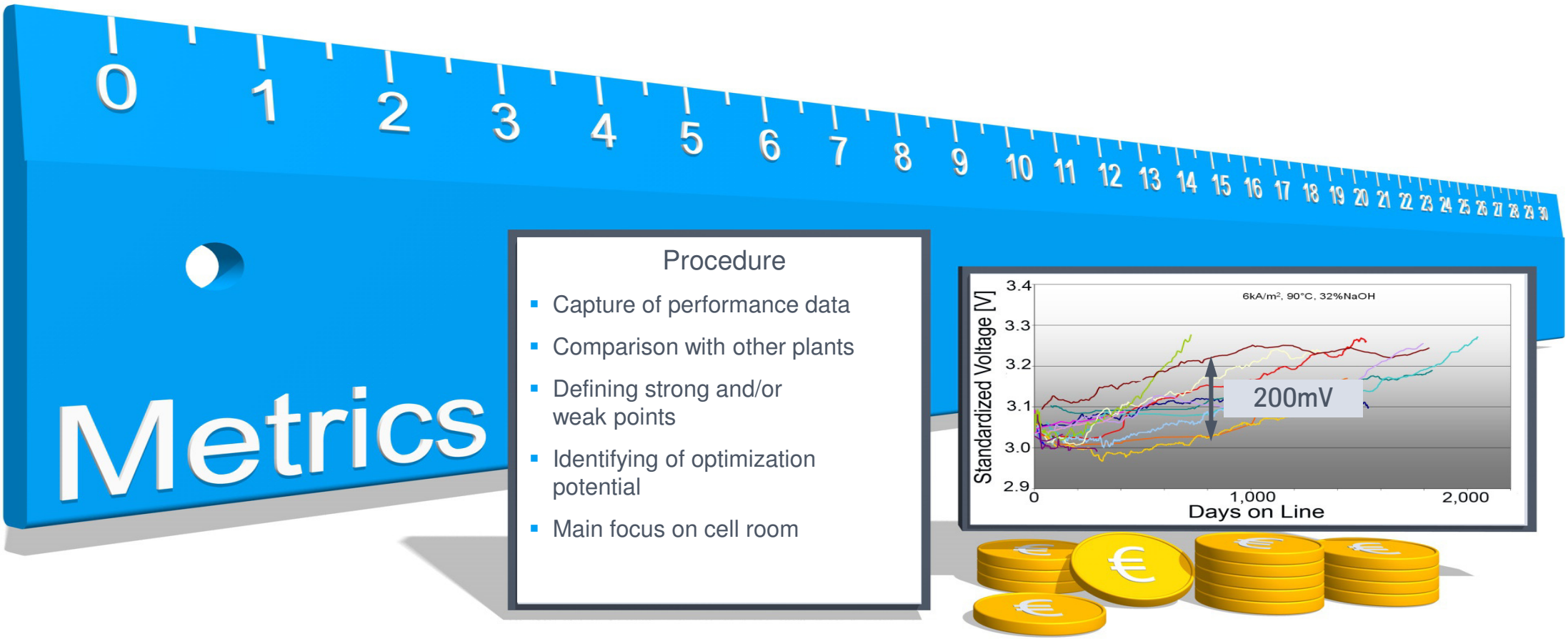
Email, FTP

VPN, CD

Collection
Editing
Analysis
Documentation

Report
Recommendations

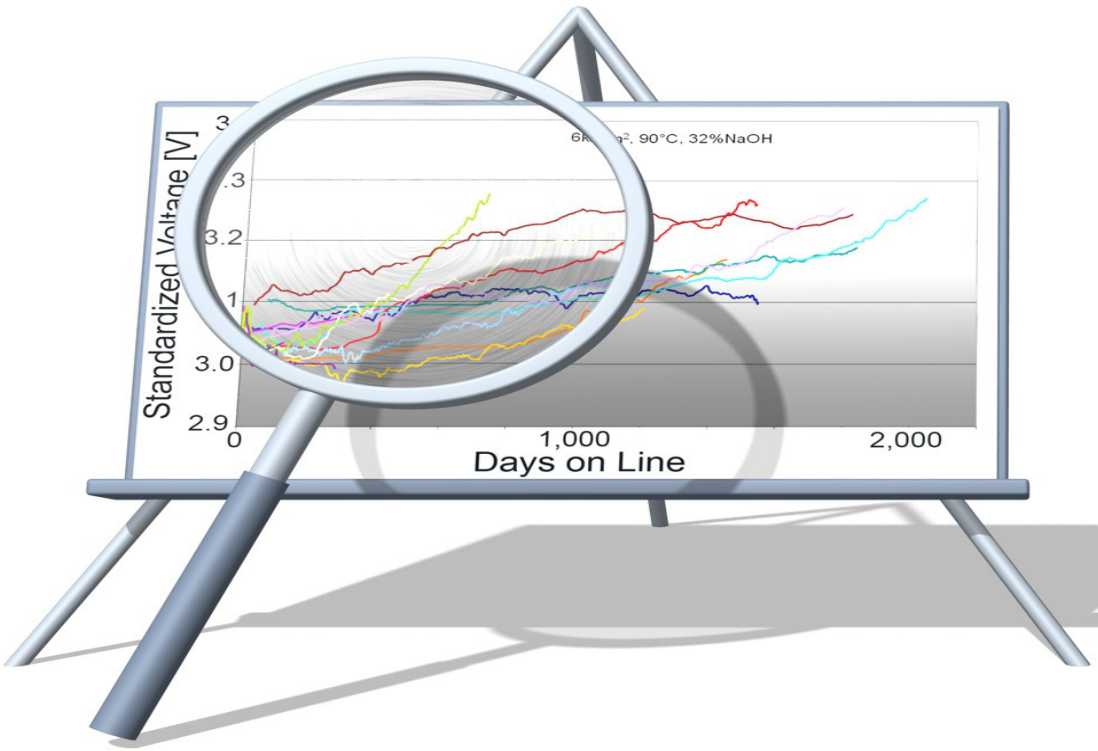
Benchmarking identifies optimization potential



Procedure

- Capture of performance data
- Comparison with other plants
- Defining strong and/or weak points
- Identifying of optimization potential
- Main focus on cell room

Performance investigation is a basis for potential improvements



Procedure

- Investigation program
- Kick off meeting
- Capture of operating data
- Compilation of samples
- Operating data analysis
- Investigation of samples
- Program with corrective action
- Implementation

n-BiTAC element refurbishment

An example

CLEAN

- Remove Cathode Mesh
- Clean Element

CORRECT

- Adjust the Height of Cathode Finger
- Fix Damages

COMPLETE

- Adhere New Element Gasket
- Return Cathode Mesh

Importance of training to keep the knowledge level during the entire plant lifetime

Safe and economic plant operation are ensured

Introduction tkUCE Revamps

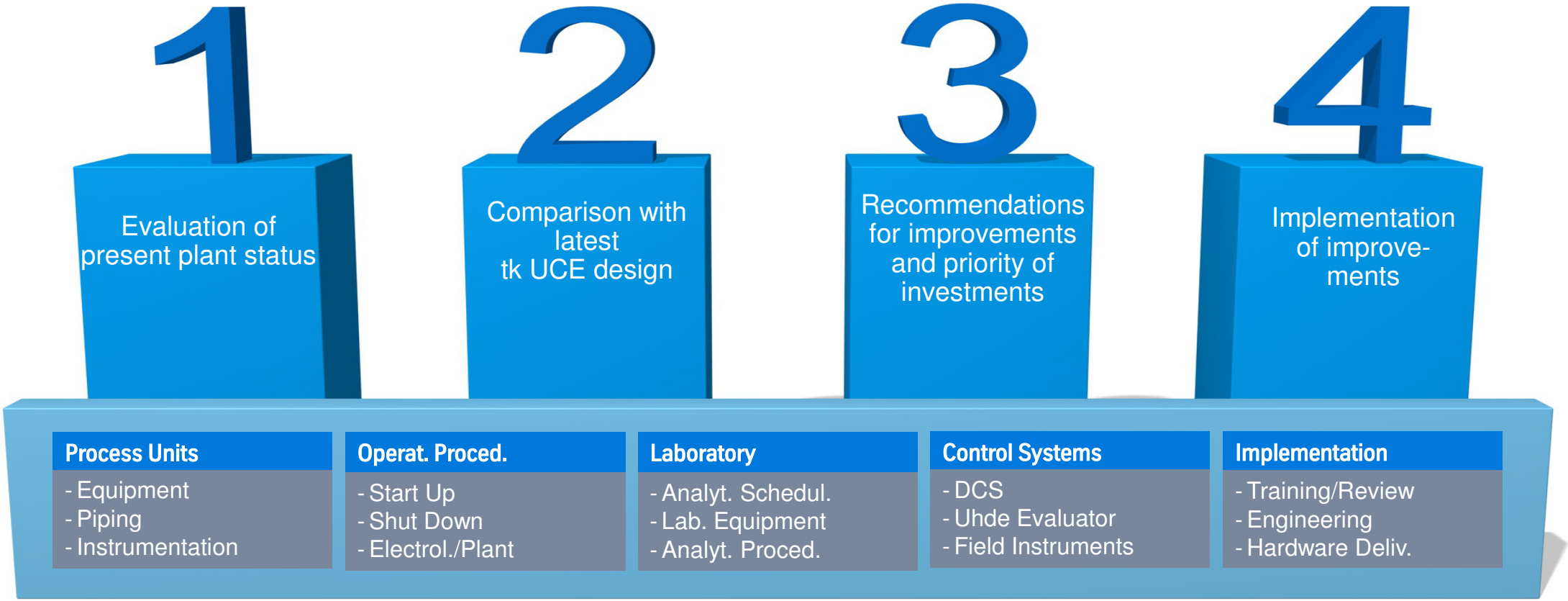
Why Revamp ?

Reasons for revamping of existing Chlor-Alkali Plants

- Problems in existing plant facility
- Change in Laws or Regulations, e.g. „Zero Emissions“
- Economical Drivers, e.g. New Technology available
- Plant expansion
- Replacement of equipment end of life cycle and integration into operating plant
- Change of salt quality
- Integration of new plant units into existing facility
- etc.




Plant upgrade study provides suggestions for improvements



Electrolyser Performance Optimisation

for BiTAC

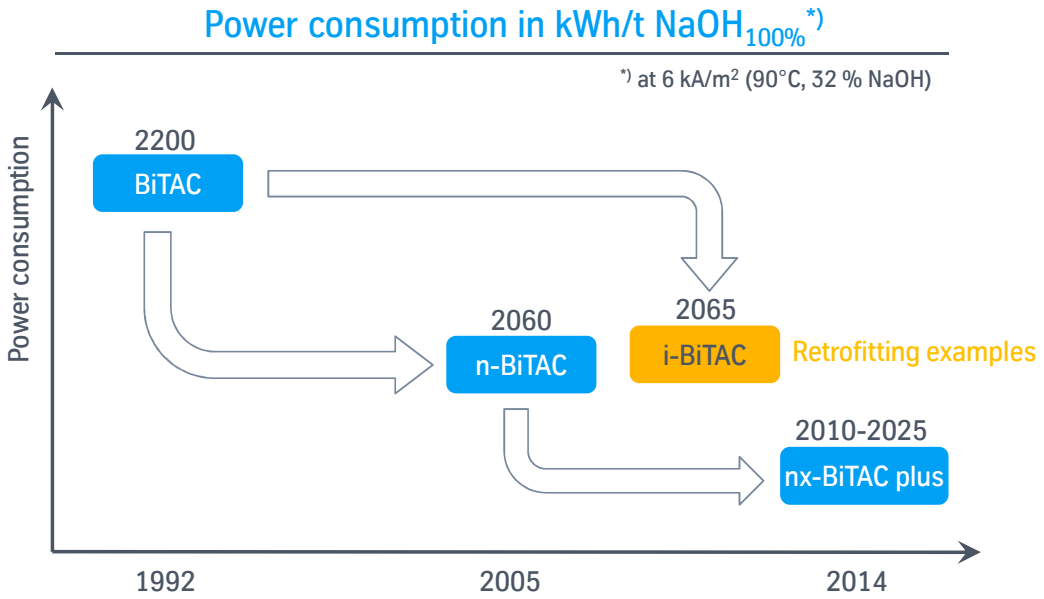
Your added value

- Easy efficiency increase, directly on-site
- No change of periphery necessary
- Up to 5% lower power consumption

Better plant performance, less power consumption

Improvements in BiTAC technology can pay off directly for you. A few simple changes make a big difference:

- Insert new high-performance membrane
- Only cathode side is adjusted



Electrolyser Performance Optimisation

for BM 2.7

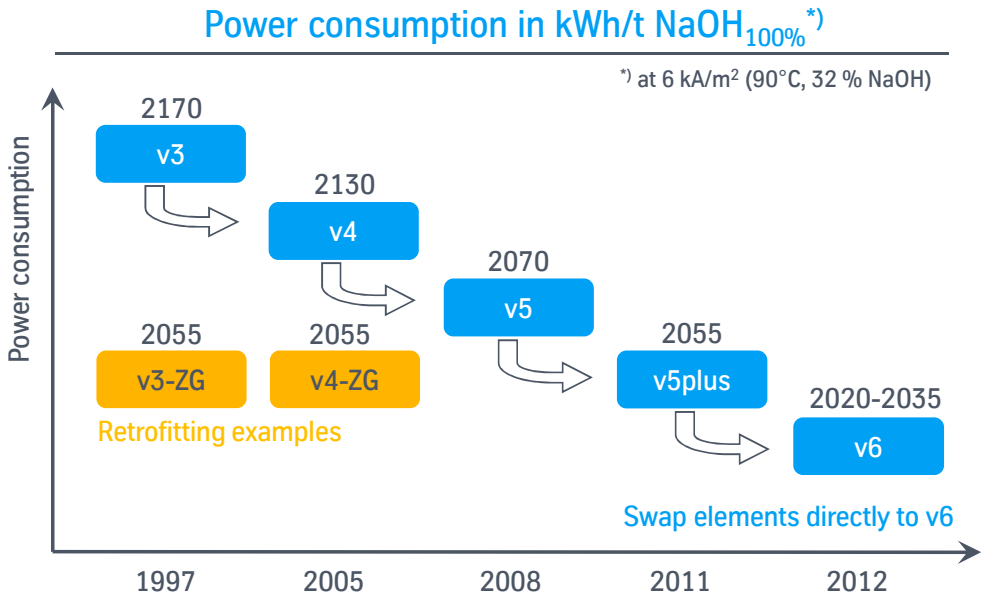
Your added value

- Easy performance increase by retrofitting current elements or by replacing them with new elements of generation 6
- No change of periphery necessary
- Up to 9% lower power consumption
- Higher efficiency and/or output (NaOH & Cl_2)

Better plant performance, less power consumption

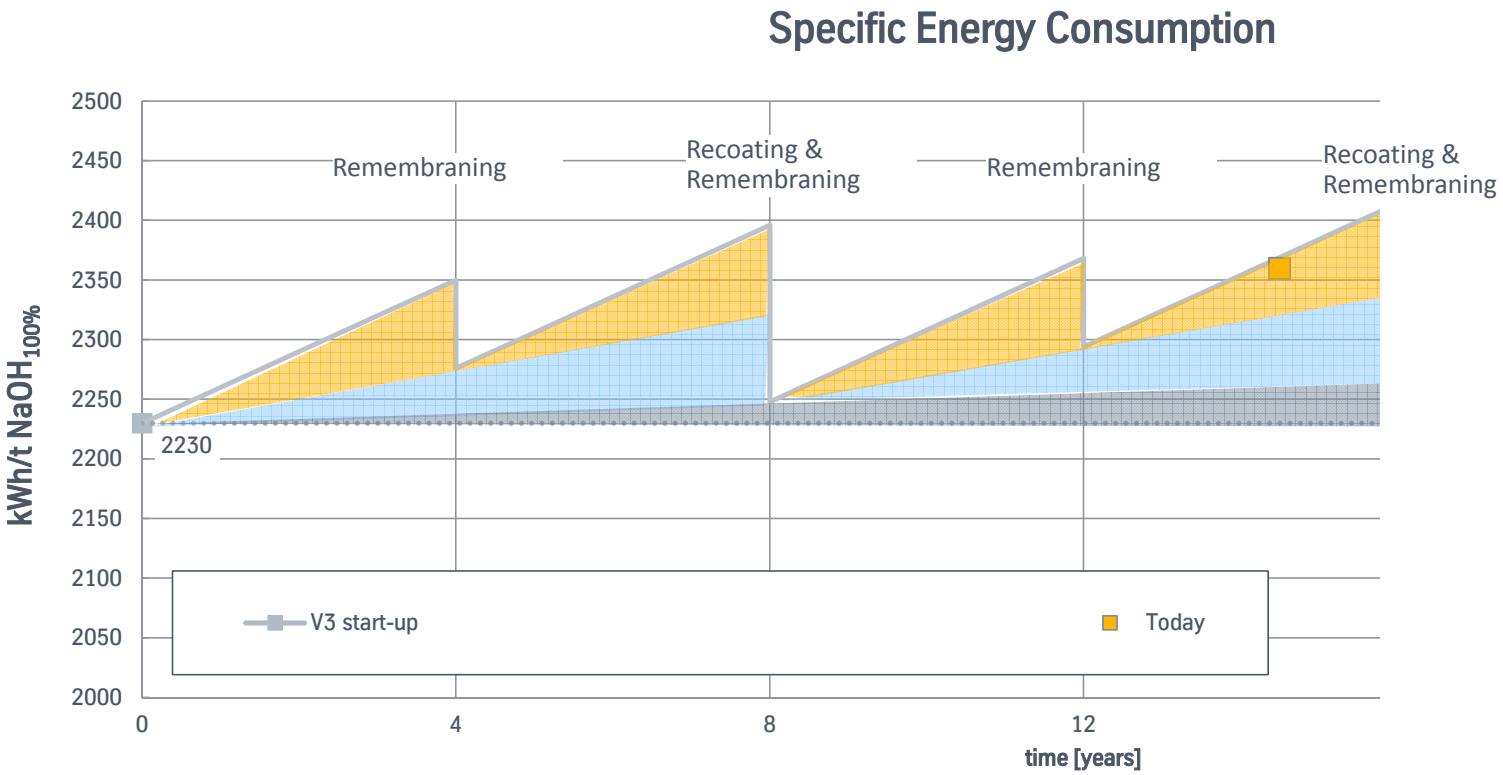
Improvements in BM 2.7 cell technology can pay off directly for you. We can either **upgrade/retrofit** your cells or simply **exchange your old cells for a new generation**:

- Thinner elements – more elements per stack
- Higher voltage efficiencies – more elements per trafo/rectifier



Electrolyser Performance Optimisation

Use your maintenance window for a leap into the future



ageing cell elements

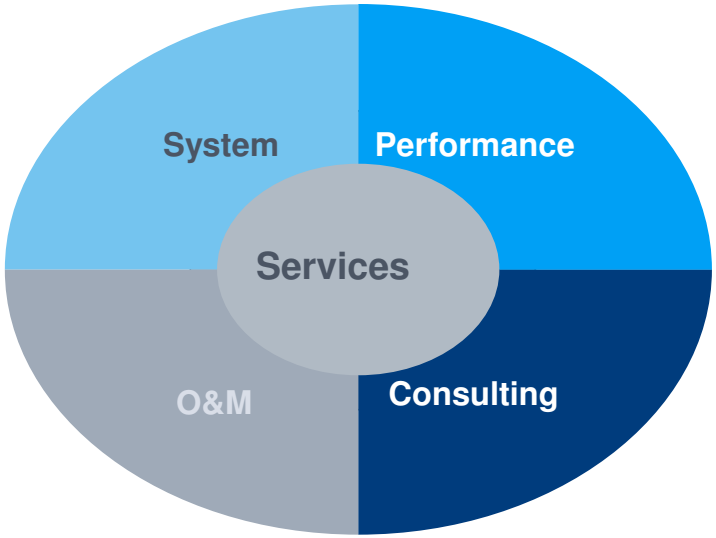
ageing coating

ageing membrane

thyssenkrupp Uhde Chlorine Engineers service concept

From modules up to full service packages

System Service
Customer Support
Benchmarking
Performance Investigation
Delivery of Elements
Delivery of Accessories
Training
Element Assembly
RCM, Uhde Integrator™
Remembr./Recoat./Remesh.
Uhde PipeTech™
Gasketing



Performance Service
Element Replacement
Element Upgrade/Retrofit
Process Improvements

Consulting Service
Plant Upgrade Study
Risk Analysis
Project Management

4. Technology service is provided locally

Delivering service faster

We are in the time zone of our customers and we provide services locally

Houston (LO)
M. Kuroda

Milan (LO)
M. Gamondo

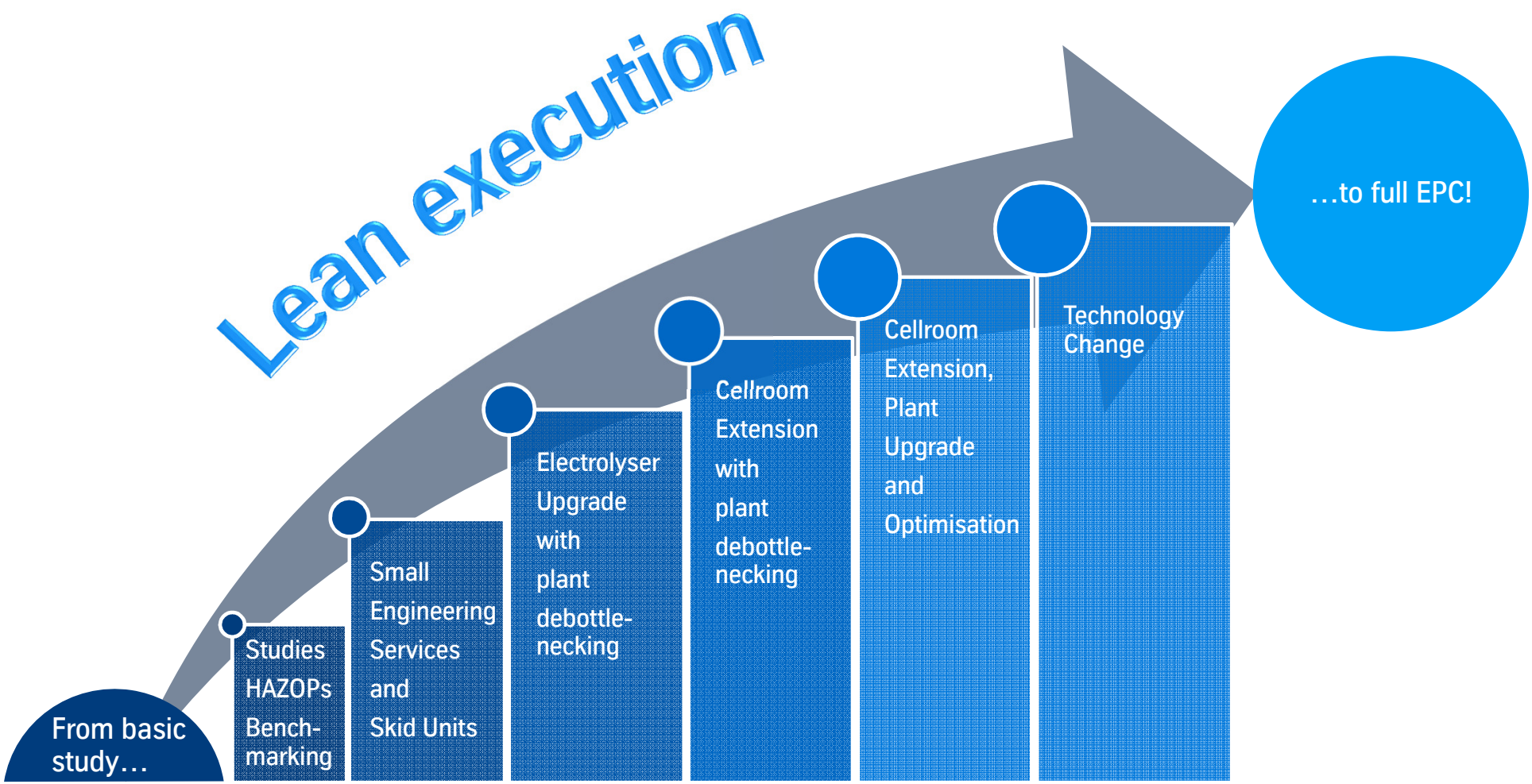
Global Function (HQ)
D. Donst

Dortmund (LO)
D. Donst

Shanghai (LO)
J. Chen)

Tokyo/Okayama (LO)
H. Furutono

Everything from a Single Source



Selected references

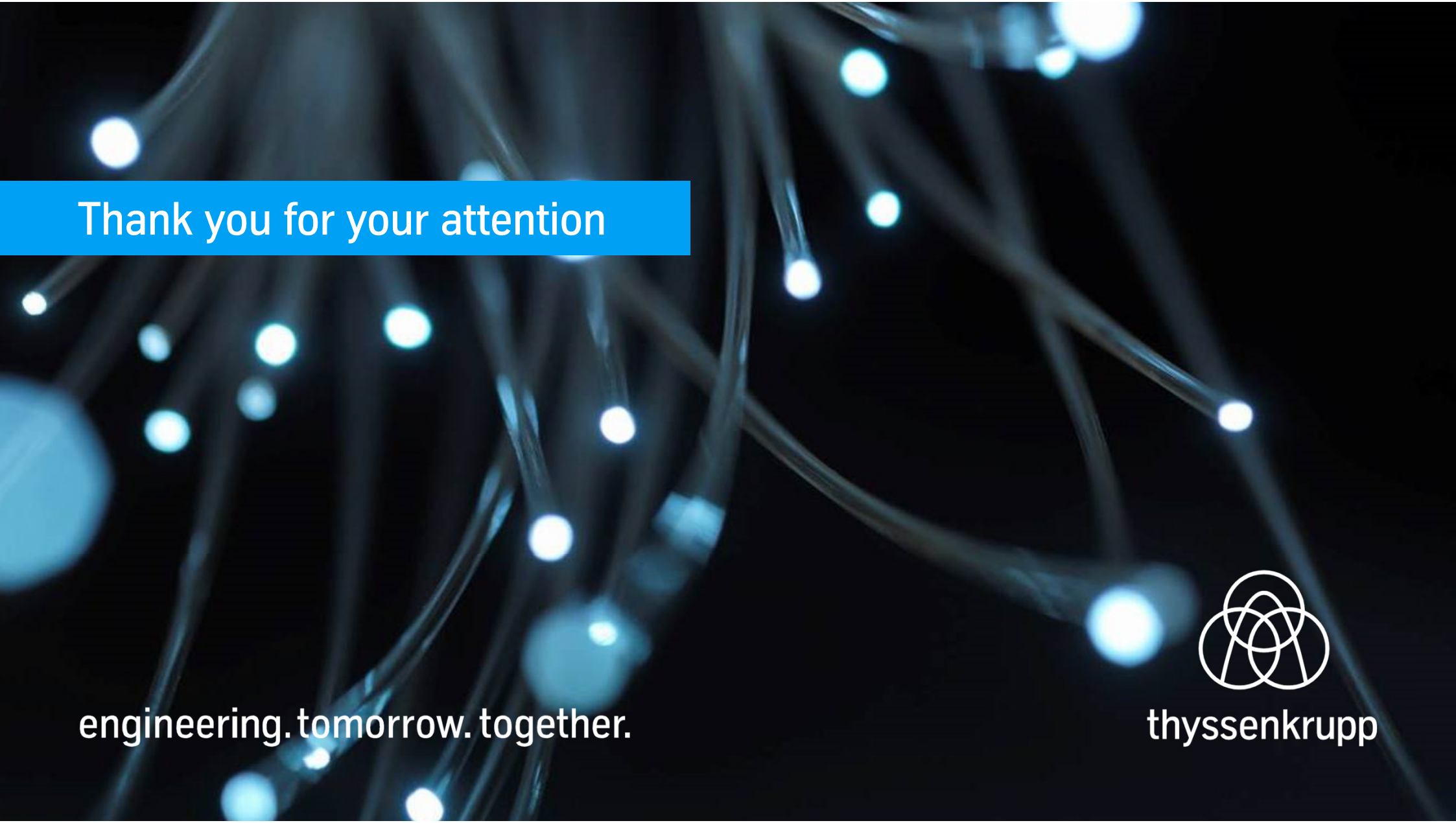
Revamp jobs (I)

CLIENT	JOB	YR	GEN. V	EL NR.	S/U	NOTE
Client 'A' China	Q011083	2011	4b <-> 6b	1	Mar 2013	Capacity expansion
Client 'B' U.S.A.	P126THU	2012	4a <-> 6b	1	Oct 2013	Electrolyser re-coating, plant revamping
BCI Saudi Arabia	P128BDA	2013	3b <-> 6b	2	Oct 2014	Electrolyser re-coating, brine treatment section revamping and capacity increase
Koruma (Kirikhan-I) Turkey	Q013058	2013	3b <-> 6b	1	Dec 2013	Electrolyser re-coating, cell room revamping
Malay-Sino Malaysia	Q013072	2013	3b <-> 4b	1	Apr 2014	Electrolyser re-coating
Ledesma Argentina	Q014510	2014	3b <-> 6b	1	Oct 2014	Electrolyser re-coating capacity increase
Koruma (Izmit I-II) Turkey	Q015507 Q015553	2015	3b <-> 6b	2	May 2016	Electrolyser re-coating, cell room revamping
Client 'C' Italy	Q016568	2016	BiTAC <-> nxBiTACplus	1	Jan 2017	Electrolyser re-coating, cell room revamping
Koruma (Izmit III) Turkey	Q017568	2017	3b <-> 6b	1	Oct 2017	Electrolyser re-coating, cell room revamping

Selected references

Revamp jobs (II)

CLIENT	JOB	YR	GEN. V	EL NR.	S/U	NOTE
Koruma (Kirikhan II-III) Turkey	Q2018-0019	2018	3b <-> 6b	2	Jun 2018	Electrolyser re-coating, cell room revamping
SNEP Morocco	Q2018-0004	2018	3b <-> 6b	2	Feb 2019 (FC)	Electrolyser re-coating, cell room revamping
Koruma (Izmit - IV) Turkey	Q2018-0031	2018	3b <-> 6b	1	Sep 2018	Electrolyser re-coating, cell room revamping
Sitara Chemicals Pakistan	E301SFP	2018	3b <-> 6b	1	Mar 2019 (FC)	Cell room revamping and capacity increase
Shaanxi Beiyuan China	E302SJC	2018	4b <-> 6b	1	Jul 2019 (FC)	Electrolyser upgrade


Thank you for your attention
engineering. tomorrow. together.
thyssenkrupp