

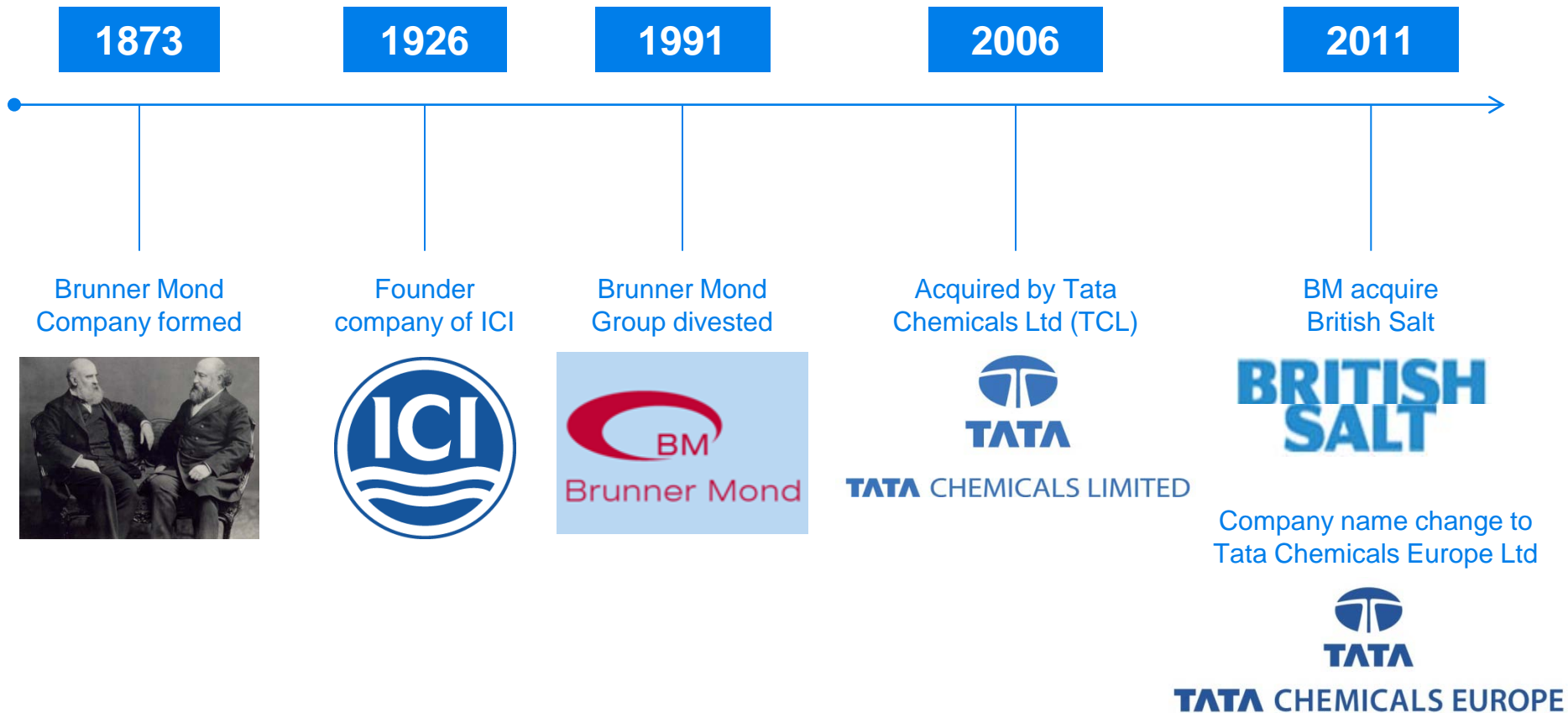
NW Energy Forum

22 September 2011

AGENDA

- Understanding and quantifying the challenges for an energy intensive industry
- Deciding on an energy strategy and action plan
- Setting targets and gaining commitment – from the Board to the shop floor
- How it is working – what has been successful and what hasn't, and why

Who are Tata Chemicals Europe?



Tata Chemicals Europe and our energy profile

- We operate on three sites in Cheshire.
- We are the only UK manufacturer of soda ash (mostly used for glass manufacture), and sodium bicarbonate.
- We manufacture about 1M tonnes /year
- Plant is very big, very old – huge challenges
- Also (since acquisition in January 2011) manufacture salt – mostly for food industry

Energy Efficiency in the Chemical Industry

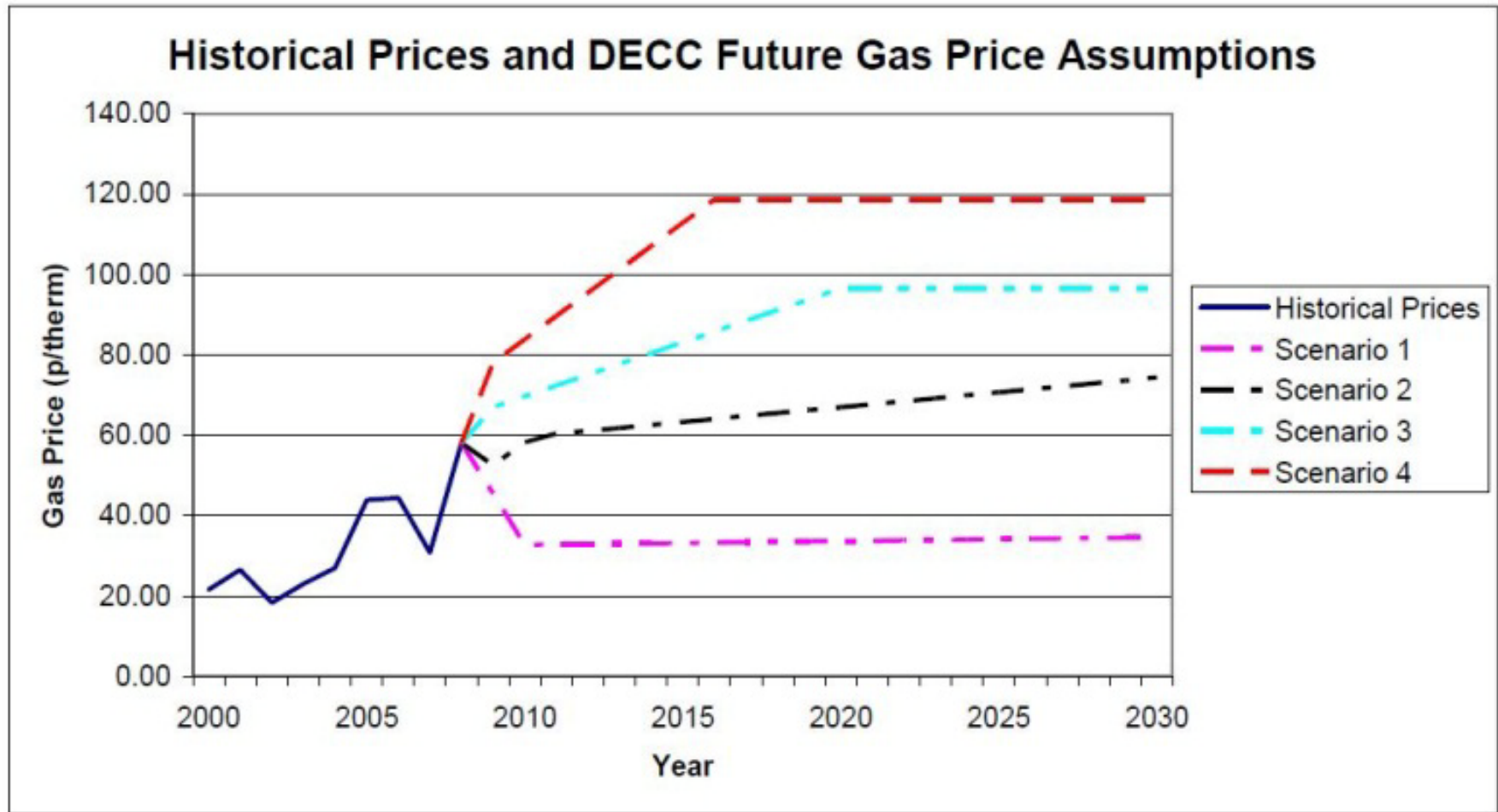


- For our Soda Ash operations in Northwich we import about 270MW steam and 17MW electricity – from a gas fired CHP plant which also exports up to 100MW to the grid
- This replaced 3 old coal /HFO fired in-house power stations, decommissioned in 2000
- Novel arrangement – 5km steam / return condensate pipes, and 132kV private wires electrical connection, across Northwich
- Salt operations : provide all our heat and almost all electricity from on-site gas fired power plant, using about 11m therms/year (37MW) of gas
- This presentation will focus on energy for the Soda Ash operations

What are our energy challenges?

- Energy is already 37% of our operating costs
- High UK energy costs, and increasing faster than other costs
- + a minefield of energy taxes e.g. CCL, CRC, EU carbon taxes (EUETS), unilateral UK electricity taxation (Carbon Price Floor)
- Soda ash is a commodity - prices constrained by global market – can't pass on energy price rises to customers

Energy Efficiency in the Chemical Industry



Not hard to see the threat – and the opportunity, so

the Board appointed an energy manager, in April 2010

The TCE Energy Manager approach

- Looked at our data in detail: steam and electricity usages v production rates
- Analysed the trends – identified our periods of best and worst efficiencies, and correlated with what was going on
- Modelled the process – calculated theoretical achievable usages
- Benchmarked our energy efficiencies versus other operations

Result of analysis: efficiency losses attributable

- 65% to plant upsets (production losses / unsteady running)
- 15% to operational control
- 20% to efficiency items : eg steam leaks, compressed air leaks, equipment running unnecessarily, air ingress into process gases, other specific process issues

also

- within efficiency items, Pareto principle applied: eg for compressed air leaks, fewer than 10 leaks (out of hundreds) accounted for >80% of the losses

This dictated the strategy

- Getting the plant right and the rates steady
- Training of operations people and providing them with useful real time data
- Tackling efficiency issues
- New projects to change the baseline
- Political lobbying & proactive involvement in industry groupings, to influence policy and legislative decisions

and

it determined what targets for improvement would be challenging but credible for our circumstances

- We have pitched it at 2% year-on-year

Gaining commitment from the Board

(easy- “pushing at open door”)

- Written proposal in simple terms, including a suggested
 - Vision statement
 - Formal energy policy
 - Detailed strategy / action plan with timeline
 - Savings deliverable
- Presented to Board, with adequate time for discussion



Formal buy-in



business-wide communication

Gaining commitment from the Management Team

(a bit harder – very busy people)

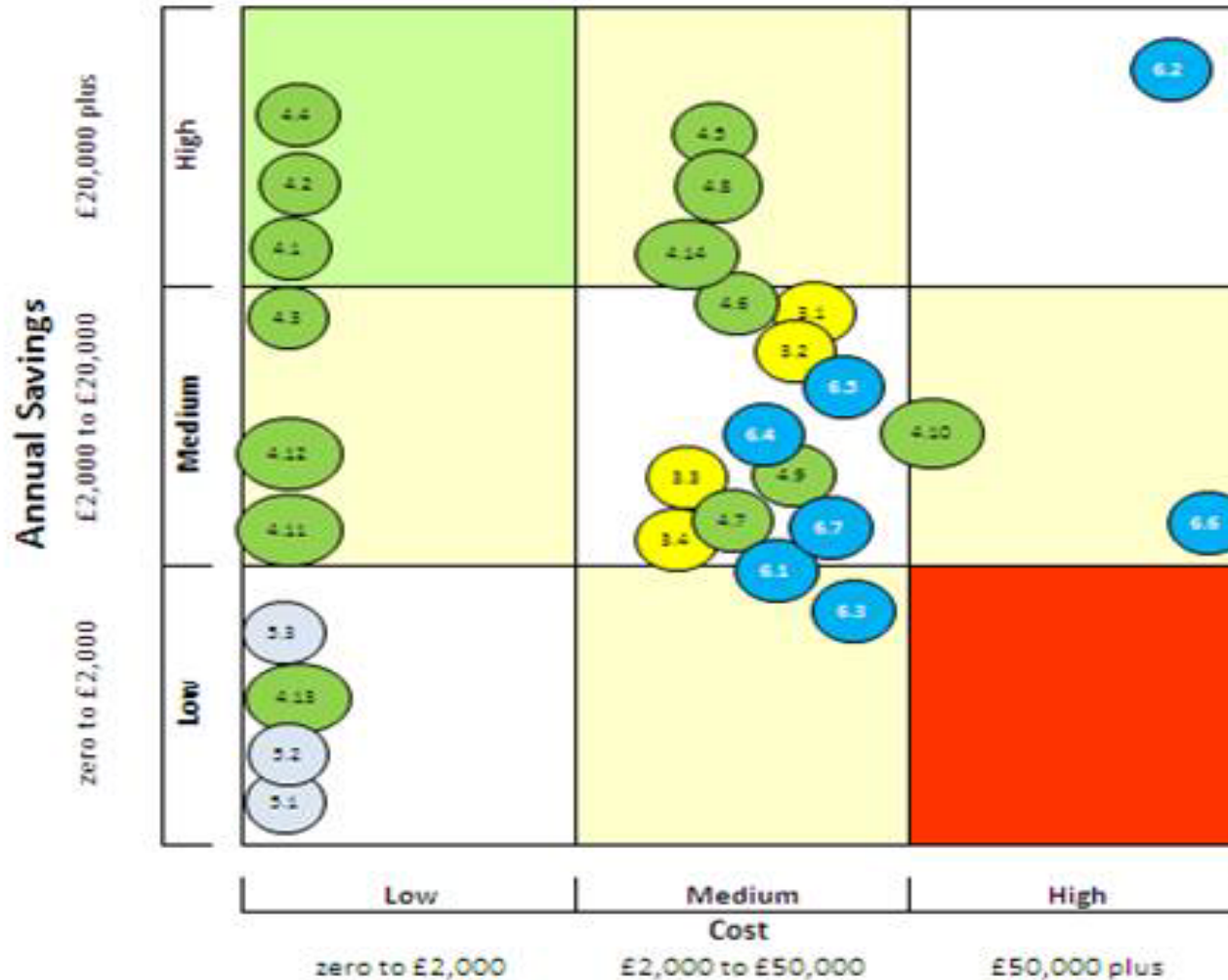
One day workshop

- Share vision, energy policy, strategy / action plan, timeline / savings
- Syndicate exercises to add to the ideas and gain understanding and belief
- At least one written & agreed action for each person, with timeframe

Energy Efficiency in the Chemical Industry



ENERGY OPPORTUNITIES RANKING MATRIX



Gaining commitment from the whole workforce

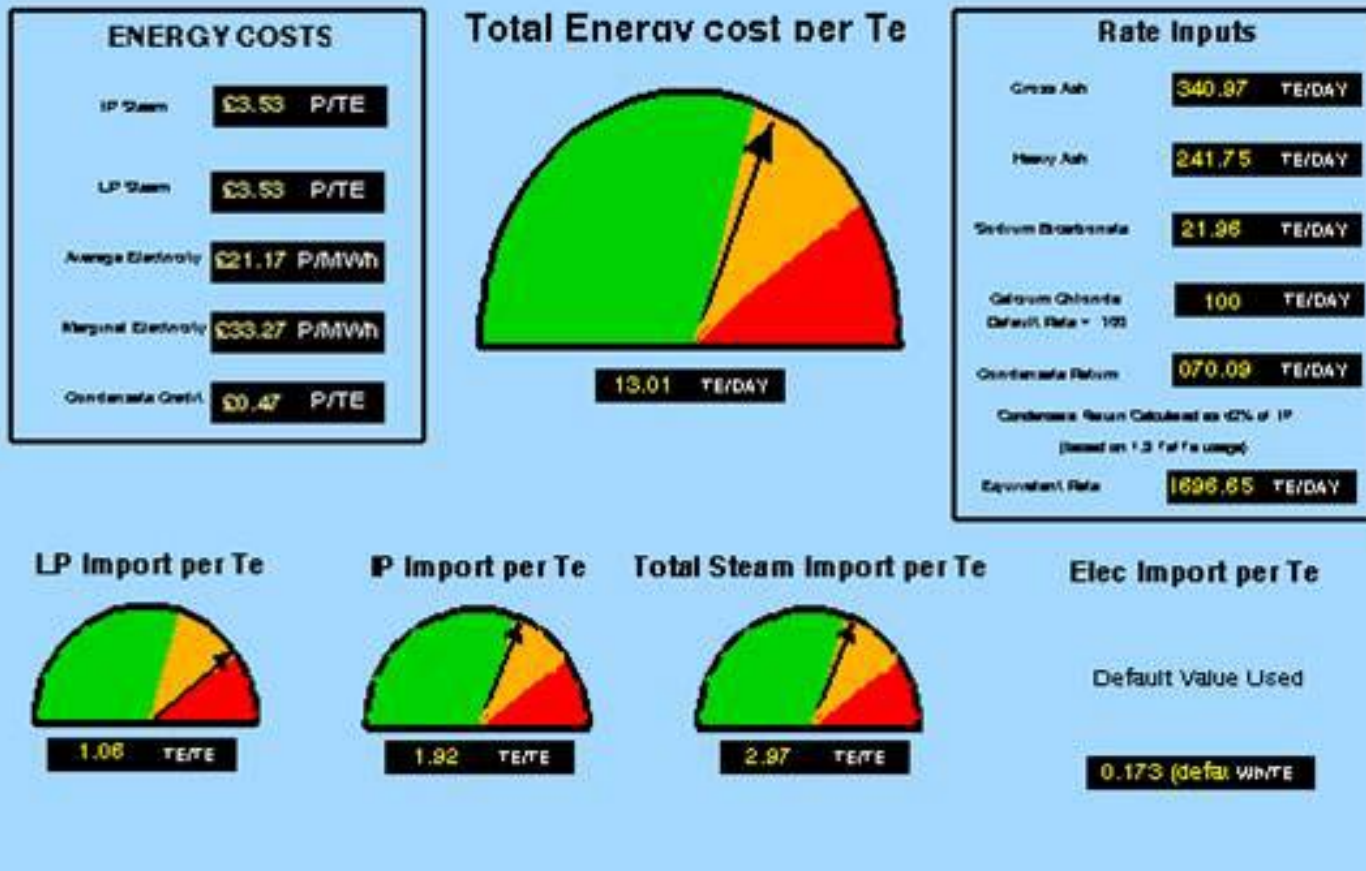
(hardest of all – perceived lack of influence, cynicism)

- Articles in company magazine
- Prize quiz
- Input at training / communications sessions
 - Describe issues in stark and simple terms
 - Show specifically what the individual can do
 - Provide the right “tools” – in our case, real time information
- Follow up – report progress

Energy Efficiency in the Chemical Industry



N. West Current Energy Usages Per Equiv Te



What is working well?

- Clarity of focus on the big ticket items
- “Spend to save” – breaking the silo management problem
- Taking a proactive part in Industry /Interest Groups
 - CIA, EIUG, CBI, CHPA, ESAPA
- Lobbying
 - MP’s, DECC, Treasury, BIS

Where is the jury still out? (work in progress)

- Exploitation of real time energy info
- Embedding process training

What is proving most difficult?

- Ongoing real commitment from managers
- Putting right dilapidation of equipment (long haul)
- Getting quick results on new ideas / projects

Energy Efficiency in the Chemical Industry



And you reckon it's cheaper to
leave it running all the time?