BRITISH ceramic CONFEDERATION

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Response to Ofgem Consultation on the Potential Requirement for New Balancing Services by National Grid Electricity Transmission plc (NGET) to Support an Uncertain Mid-decade Electricity Security of Supply (Ref 106/13)

Introduction

The British Ceramic Confederation (BCC) is the trade association for the UK ceramic manufacturing industry, representing the common and collective interests of all sectors of the industry. Our 100 member companies comprise over 90% of the industry's manufacturing capacity and include manufacturers from the following industry sub-sectors:

- Bricks
- Clay Roof Tiles
- Clay Drainage Pipes
- Gift and Tableware
- Floor and Wall Tiles
- Sanitaryware
- Refractories
- Industrial Ceramics
- Material Suppliers

The sector (including its suppliers) employs approx. 20,000 people and generates £2 billion sales. The sector is an active exporter, particularly for industrial ceramics, refractories, clay drainage pipes, tableware and giftware.

The ceramic sector is energy-intensive (but not energy inefficient). Energy bills / taxes can be up to 30 - 35 % of total production costs. The majority of the energy consumed by the sector (≈ 85%) is derived from natural gas, with lesser use of electricity (and some limited use of LPG and coal only where mains gas is unavailable.)

Electricity is essential for all ceramic manufacturing processes including: raw materials preparation, conveying, shaping, decoration, firing (e.g. kiln control and heat recovery), machining, inspection and packaging. Firing is the most energy intensive process step since it requires high temperature heat (generally in excess of 1000 °C). Although direct fuels (e.g. natural gas, LPG) are mainly used for firing, electricity is used in some situations including: i) very high temperatures firing in excess of the maximum temperatures achievable with fossil fuels (> 1750 °C where electric arc or electric induction furnaces are required), ii) lower temperature firing (where the inferior energy efficiency of electricity compared to gas is less marked) and iii) where an ultra-clean kiln atmosphere is required (e.g. manufacture of technical ceramics, electro ceramics and highest quality glaze finishes). Although the sector as a whole is not classed as electro-intensive, we have a number of highly electro-intensive installations within our membership.

The ceramics sector is also a solution provider for the low carbon energy generation and electricity distribution. In the recent European Commission report[1], ceramic components were acknowledged to be critical in most low carbon generation technologies, with applications including wear resistant components (for heat pumps / wind turbine bearings), heat resistant components (used in the fabrication of solar photovoltaic panels) and transducers (for smart meters, temperature and flow regulators).

BCC is a member of the Energy Intensive Users Group and we support their response to this consultation. Further comment (provided below) supplements this with information relevant to our sector. BCC supports cost-effective action to ensure electricity supply security is maintained.

[1] Materials Roadmap Enabling Low Carbon Energy Technologies
http://setis.ec.europa.eu/system/files/Materials_Roadmap_EN.pdf

BCC Response to the Ofgem Consultation

1. Do you agree with our assessment regarding the risk to mid-decade electricity security of supply?

BCC shares Ofgem's concerns that there is a growing risk to electricity security of supply mid-decade. A number of recent reports have consistently pointed to a rapidly deteriorating UK capacity margin driven by: i) retirement of non-LCPD (Large Combustion Plant Directive) compliant coal-fired / oil-fired generating plant, ii) mothballing of gas-fired plant, iii) limited investment in new non-renewable capacity and iv) growing investment in intermittent renewable generation. For several years, we have been concerned of the looming threat to electricity supply security and the associated dire consequences for large industrial consumers.

The 2013 Ofgem Electricity Capacity Assessment Report[2] projects the capacity margin narrowing to around 2 to 5% in winter 2015/16, coupled with a dramatic increase to the risk of involuntary supply disruption (with a Loss of Load Expectation (LOLE) exceeding 8 hours per year under some scenarios). Furthermore, we note the asymmetry associated with these risks, in that a small drop in capacity margin will have a large impact on supply security. These projections leaves the UK dangerously exposed to an unplanned outage at a major power station at times of peak demand.

This is a critical issue for ceramic manufacturers (and indeed other energy-intensive industries) since these businesses depend on secure and internationally competitively priced electricity (and gas) in order to remain in business. In addition, the threat to electricity supply security also acts as a major disincentive for investment in UK manufacturing operations. This is exacerbated for a number of our members who have overseas parent-companies, who make dispassionate decisions regarding where to invest.

We are pleased that Ofgem recognises these threats and that the Ofgem, National Grid and DECC are exploring additional short-term measures to alleviate the risks. However, BCC considers that the critical need to consider additional balancing services (from both demand and supply sides) is an indictment of a national energy policy which (over a number of years) has failed to provide the right investment framework to deliver sufficient generation capacity to maintain a healthy capacity margin. The development of additional balancing services must not be seen as a substitute for an energy policy that delivers adequate generation.

2. If so, do you agree with our view that it is prudent to consider the development by NGET of additional balancing services, which NGET would procure and use if there is a need for them?

Given the rapidly deteriorating capacity margin and the threat to security of supply, BCC believes it is essential, that the Government, Ofgem and National Grid consider all options for ensuring that the risk of any involuntary interruption is kept to a minimum. Whilst it is prudent to explore the development of additional balancing tools, we are concerned that the two proposals: i) Demand Side Balancing Reserve (DSBR) and ii) Supplemental Balancing Reserve (SBR) may not provide sufficient additional reserves.

Although a demand side response may be possible in some manufacturing sectors, we believe that only a small proportion of ceramic manufacturing companies may be able to offer this kind of service due to the following constraints:

- **Continuous manufacturing**. Many ceramic manufacturing processes are designed to operate continuously (24 hours per day, 7 days per week, 52 weeks per year) and therefore are unable to offer (or can only offer limited) load reduction at short notice.
- **Costs / plant integrity.** If an unplanned interruption was to occur, significant costs (which stretch beyond the outage period) would be incurred, for example: product loss / scrap, equipment damage, lost sales, lost labour. Many ceramic companies do not have the ability to shed significant load without sustaining significant financial losses. The impact would be particularly acute for operators of large continuous kilns (which may be up to 200 metres long) as these cannot be safely switched off at short notice, since a progressive reduction in temperature (over a period of several days) is required to avoid damage to the delicate refractory lining and the structural integrity of the kiln. Rapid, uncontrolled cooling could cause serious, multi-million pound damage to the kiln, thereby threatening business survival.

[2] Electricity Capacity Assessment Report 2013
http://www.ofgem.gov.uk/Markets/WhlMkts/monitoring-energy-security/elec-capacity-assessment/Documents1/Electricity%20Capacity%20Assessment%20Report%202013.pdf

- **Lack of on-site back-up generation.** The majority of ceramic manufacturers do not have on-site back-up generation (e.g. diesel generators) in order to sustain manufacturing operations during a period of supply interruption. Furthermore, we do not believe this measure will be sufficient to incentivise investment in new on-site back-up generation.
- **Short notice period**. For many firing processes, sufficient warning prior to any demand reduction would be required to allow completion of the kiln firing cycle (some products can take up to seven days to fire). We believe that DSBR uptake will be severely limited by the short (almost real-time) notice that participants are likely to receive informing them of the need to reduce load.
- **Existing load management strategies.** Many members already actively manage load demand to: i) avoid peak periods (e.g. red band Distribution Use of System (DUoS) charges and triad Transmission Network Use of System (TNUoS) charges) and ii) where possible participate in demand reduction schemes (e.g. Short Term Operating Reserve (STOR)). Given the existing participation in these schemes, it is unclear how much additional demand side capacity could actually be delivered.

Consequently, despite attractive utilisation fees, we see limited scope for companies in our sector to participate in DSBR. It is important that Ofgem, National Grid and DECC are aware of the constraints limiting participation and that they do not over-estimate uptake rates across industrial sectors.

Aspects of the scheme that we strongly welcome include: i) the proposal not to levy a penalty for non-delivery in the event that load reduction is requested since the threat of an overarching financial penalty would undoubtedly discourage participation and ii) the voluntary nature of scheme participation.

Regarding the Supplemental Balancing Reserve (SBR), our primary concerns are: i) the reliability of old generating plant that would otherwise be mothballed or closed to actually operate when required to do so and ii) the amount of capacity that could be kept in reserve given non-LCPD compliant oil / coal plant will be excluded from participation since it will no longer be legally allowed to operate.

Both proposals would need to be met by additional increases to electricity bills. This is set against a backdrop where UK ceramic manufacturers already pay comparatively high electricity bills and where charges on electricity are set to escalate at a faster rate than for EU and international competitors[3]. Most ceramic manufacturing companies operate in highly competitive international markets, meaning there are limits on how much of the additional costs can be passed through to customers. A number of ceramic factories have already relocated from the UK into mainland Europe and USA because of lower electricity bills. The introduction of additional measures increasing electricity cost can only accelerate this exodus. As noted above, businesses depend on secure and internationally competitively priced electricity (and gas) to remain in business.

3. Do you agree with our assessment of the key factors we should have regard to when considering whether to approve any changes to NGET's Balancing Services Procurement Guidelines and associated documents?

Value for money for all consumers (including large industrial users), robust and transparent procurement and minimising unintended consequences to market operation are all critical factors in the development of new balancing services. In addition, value for money for those able to provide a demand side response must also be a key consideration. Participation must be voluntary and adequate financial compensation must be provided for any reduction in demand that is provided.

BCC are keen to engage with the authorities to maximise the contribution of voluntary, demand response from the minority of businesses that may be able to offer this service and hence play our part in minimising the risk of involuntary power disruption to all consumers.

Please feel free to contact me if you require clarification on any of the above information. As an energy intensive industry we are keen to continue engaging with DECC, Ofgem and National Grid to ensure cost-effective action is taken to maintain electricity supply security.

Dr Andrew McDermott
Technical Director

[3] An International Comparison of Energy and Climate Change Policies Impacting Energy Intensive Industries In Selected Countries http://www.bis.gov.uk/assets/biscore/business-sectors/docs/i/12-527-international-policies-impacting-energy-intensive-industries.pdf