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## **THE ROLE AND POTENTIAL OF INTERRUPTIBLE LOAD AS TERTIARY RESERVE IN THE GERMAN RESERVE MARKET: A SURVEY AMONG INDUSTRIAL CONSUMERS**

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### **Overview**

Interruptible load contracts concluded between major industrial consumers and the Transmission System Operator (TSO) have been for long a standard method in securing short term electricity supply. The load of interruptible consumers can be used for restoring grid stability in emergency cases caused by, for instance, sudden drops in generation capacity<sup>1</sup>.

With the development of markets for reserve and with consumers being confronted with increasing power prices, an intensified use of interruptible load should be an interesting option for both large industrial customers and TSOs. The former could benefit from an overall reduction of their power costs; the latter by an enlarged pool of reserve capacity potentially lowering balancing costs.

### **Methods**

A survey among six energy-intensive industries in Germany has been carried out to analyse the current use of interruptible load and industrial customer participation in the reserve market. The questionnaire was structured along the following lines: (1) Technical industry-specific requirements for interrupting production lines; (2) Current participation in the balancing market and corresponding experiences; (3) Use of interruptible load contracts, their structure, frequency of interruption and participants' experiences; (4) Load reduction potential and customers' willingness to participate in the reserve market under different market designs.

### **Results**

Firstly, preliminary results show that so far, participation in the reserve markets is still limited. There seem to be three decisive factors why companies do not participate: (1) Technical restrictions resulting from production technology; (2) High technical and administrative barriers from market design set by TSOs; (3) Lack of detailed knowledge and /or human resources with respect to the functioning of the reserve market. Companies, who participate, however, report the one and only crucial factor: their financial benefit.

Secondly, there is potential in the market for higher participation and therefore in increasing the liquidity of the minutes reserve market. To tap the full potential requires the removal of some above mentioned obstacles.

Thirdly, different options arise for companies who fulfil the required technical conditions, have invested into building up knowledge within the company and know their production cost curve. These companies see themselves in the position of having the choice between different options with respect to load reduction: (1) Holding an interruptible load contract; (2) Bidding actively into the reserve market; or (3) Bidding into the spot or intraday market.

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<sup>1</sup> In the events of the cascading blackout starting in northern Germany on November 4, 2006, the Italian TSO Terna reported the interruption of 800 MW industrial load who could be cut off to stabilise grid frequency.

**Conclusions**

There is potential for increasing the liquidity of the reserve market by using more industrial load. This can only be achieved if market barriers are reduced. The German regulator ("Bundesnetzagentur") has lately made a first attempt with introducing new rules at the reserve market to foster competition and participation of industrial consumers. These rules can only be regarded as a first step on the way towards a functioning market. With liberalisation and the development of electricity markets, industrial consumers are more and more in the position to rethink their strategy with respect to load management: moving from passively holding electricity and interruptible load contracts towards actively managing their entire power supply including providing short term flexibility. Whether interruptible load contracts or bidding into either reserve or spot markets is the most beneficial strategy to the company depends on its cost curve and its risk profile.