

A SECURE, SIMPLE AND EFFICIENT WAY TO TRADE CONTRACTS

**PARTISIA CONTRACT EXCHANGE**



**PARTISIA**  
MARKET DESIGN


## SECURE

- The bids are encrypted and remain so forever
- The required computations are done directly on the encrypted bids
- The decryption key is split such that no single organization or person can access the system

## SIMPLE

- Users submit demand/supply schedules once over the internet
- A single competitive market price is determined
- The security policy is reduced to a minimum – just protect the key!

## EFFICIENT

- Maximize gains from redistribution of contracts
  - Cost efficient administration since no confidential information is involved
  - Cost efficient repetition since all processes are computerized
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THE PARTISIA CONTRACT EXCHANGE  
WAS AN IMPORTANT ELEMENT  
TO ENSURE A FAST ADJUSTMENT TO  
THE NEW MARKET SITUATION  
THAT RESULTED FROM THE SUGAR REFORM

Lars M Petersen, Head of Department, Danisco Sugar

## INTRODUCTION

Production contracts are useful to coordinate and control the relationship between producers and a processor. A continuing challenge however is to select the producers.

By reallocating contracts (production rights, quotas etc.) from high to low cost producers everyone can gain:

- Buyers gain from paying less than the contracts are worth to them
- Sellers gain from getting more than the contracts are worth to them
- The sector as a whole increases its total profit

Partisia Contract Exchange is a secure, simple and efficient way to organize the reallocation. It solves the allocation problem without compromising the privacy of the submitted bids. It directly matches buyers and sellers and determines the competitive market price.



THE SECURE APPROACH CONTRIBUTED  
POSITIVELY TO OUR DECISION  
OF DEPLOYING PARTISIA CONTRACT  
EXCHANGE. AFTERWARDS,  
IT WAS OF A GREATER IMPORTANCE FOR  
THE GROWERS THAN I INITIALLY THOUGHT

Klaus Sørensen, Chief consultant, Danish sugar beet growers' organization

## SECURE

A fundamentally different approach to information security guarantees *ideal* confidentiality. Participants' bids are encrypted using state-of-the-art security technology before they leave the participants computer. The submitted bids remain encrypted at all times and are *never* decrypted. Using the unique Partisia technology computations are done directly on the encrypted bids.

The system relies on a number of "key custodians" and the security can only be broken if they cooperate. So by giving parts of the decryption key to each of several interest groups, the security can only be broken if they cooperate - and if they do so, confidentiality would not have been an issue in the first place.

Keeping the bids confidential is an important feature. In a questionnaire answered by about 450 users of the Partisia Contract Exchange 80 % stated that keeping the bids private was important or very important. Reasons for keeping the bids confidential include:

- General reluctance to share private information
- Avoid a central accumulation of private information
- Hold back information that may be used in renegotiations of the profit sharing



SIMPLIFYING THE TRADING  
AND SETTLING OF A SINGLE  
MARKET CLEARING PRICE HAVE  
TURNED OUT TO BE IMPORTANT  
FOR MANY GROWERS.

Lars M Petersen, Head of Department, Danisco Sugar

**SIMPLE**

Trading is simple: It only requires that the participants submit information about the quantities they are interested to trade at different prices (demand/supply schemes). This is done through a secure and user-friendly web page. Hereby, the participants no longer has to go through the hassle of finding buyers or sellers and negotiate prices at the risk of not settling at the right prices and quantities. With Partisia Contract Exchange all trades are examined and all mutual attractive exchanges are realized.

Administration is simple: The secure approach simplifies the administration. All the required computations are done directly on the encrypted bids and the public result is revealed simultaneously to the involved parties. Therefore, no special procedures are required to handle confidential information. In practice, the traditional complex security policy is reduced to safeguarding a decryption key. A decryption key that is useless by itself.

Also, in terms of communicating the security, the simplicity makes it easy: All bids are encrypted and remains encrypted forever. Only through the keys held by the custodians can computation be performed.

To ease the implementation of Partisia Contract Exchange with existing IT systems, the required integration is kept at a minimum.



IT IS DIFFICULT TO QUANTIFY  
THE SAVINGS, THOUGH BEFORE,  
THE PRODUCERS HAD TO CALL  
EACH OTHER AND NEGOTIATE A PRICE,  
WHICH HAVE RESULTED IN MANY  
UNSUCCESSFUL CALLS AND LOST DEALS

Klaus Sørensen, Chief consultant, Danish sugar beet growers' organization

## EFFICIENT



The central matching and pricing using our secure and simple approach activates the untapped profits at minimal costs. Partisia Contract Exchange ensures

- Maximal gains from redistribution of contracts
- Automated matching of buyers and sellers
- Automated price negotiation
- Cost efficient administration with no confidential information involved
- Cost efficient repetition since all processes are computerized

FROM THE PERSPECTIVE OF IT WE CAN ONLY  
RECOMMEND THE PARTISIA CONTRACT EXCHANGE.  
TO OUR JUDGEMENT, THE SIMPLE INTEGRATION  
WITH OUR EXISTING SYSTEMS AND THE GOOD  
DISTRIBUTION OF RESPONSIBILITIES HAS BEEN CRUCIAL

Troels Høegh, Administration & IT Manager, Danisco Sugar

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