

Commercial Success from Second-Hand Power Plants and Components



29 June 2017, POWER-GEN Europe

Agenda

0 troveo – Who's behind it?

1 What is going on?

2 What would be the solution and can it work?

3 What drives relocations?

4 What is the investment challenge?

5 What is the trading challenge?

6 What is the conclusion?

0. troveo – Who's behind it? A team of experts!

In the **troveo** joint venture, we have combined – at equal shares – the expertise of the two German companies **SPRINT! Energy Consulting** and **VPC**:



Business activities:
engineering and service company for power plants

Turnover:
55 Mio. Euro

Employees:
750 permanent in total

Subsidiaries:

- Encotec Energy (India) Pvt. Ltd.
- VPC East d.o.o., Serbia
- VPC Turkey

(in the course of formation)



Certifications¹⁾
ISO 9001, ISO 14001, OHSAS 18001,
KTA 1401, SCC, DAkkS accreditation



Business activities:
consulting services for utility companies and for international investors

Turnover:
< 0.5 Mio. Euro

Employees:
3 permanent
+ 20 associated fee lancers

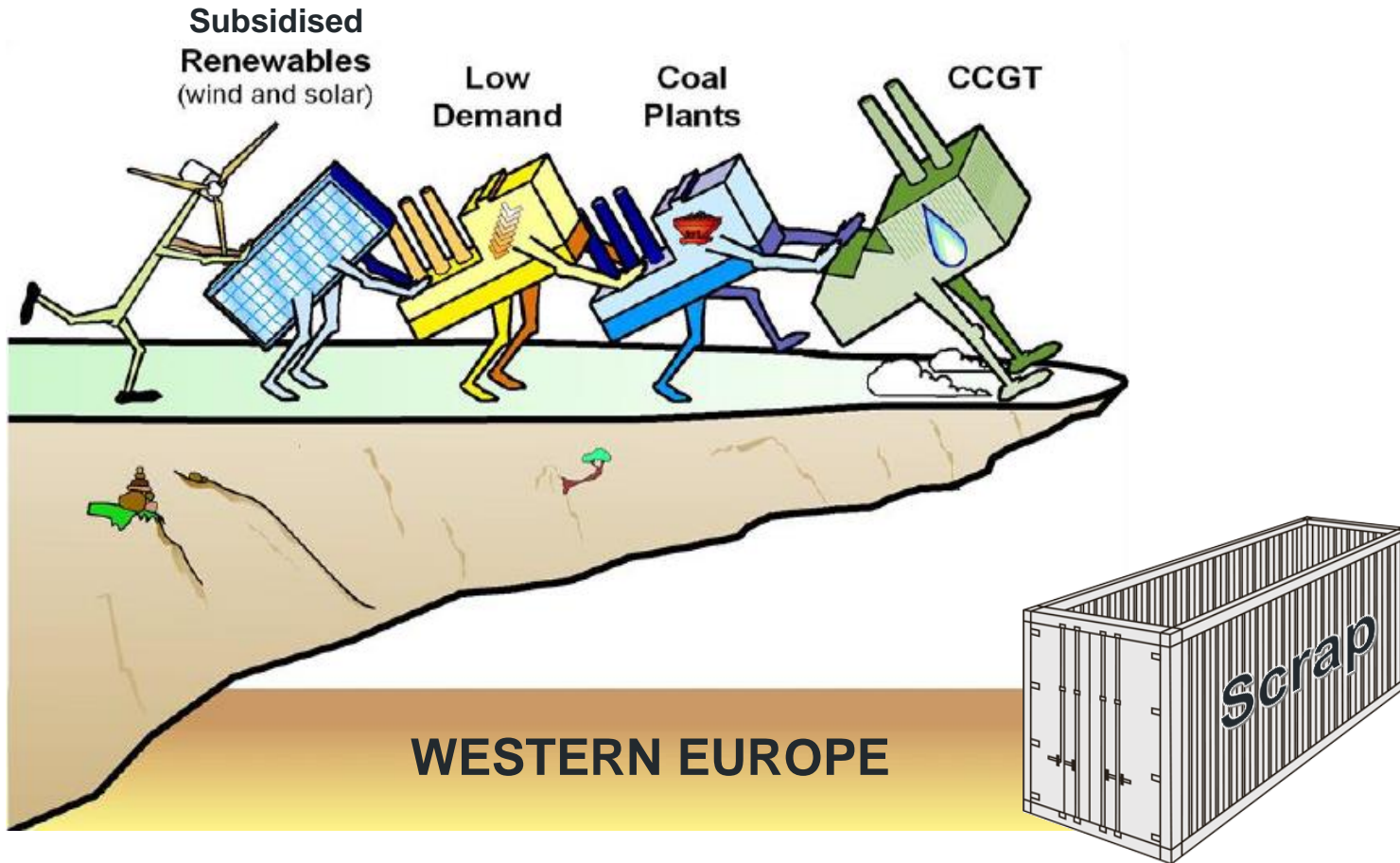
International Network:
selected sales agents

1) obtained by VPC GmbH



1. What is going on?

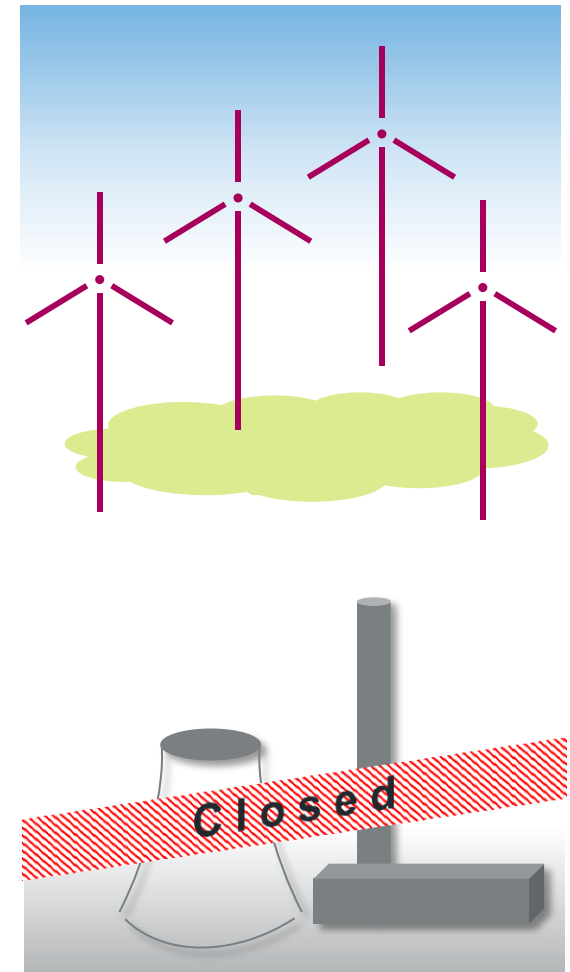
Energiewende and emerging economies



Availability of second-hand, first-class power plants

Situation in Germany and Western Europe

- due to the transition of energy supply, full-load operation of thermal power plants decreases
 - even quite new thermal power plants become less and less profitable
 - especially coal fired power plants shall be replaced by renewable sources for overall economic reasons
 - fuel costs for oil and gas fired power plants did rise significantly in Western Europe
- **thermal power plants of all sizes and ages are being shut-down, mothballed or decommissioned**
- **in case of decommissioning, selling the plants is usually more profitable than scrapping**

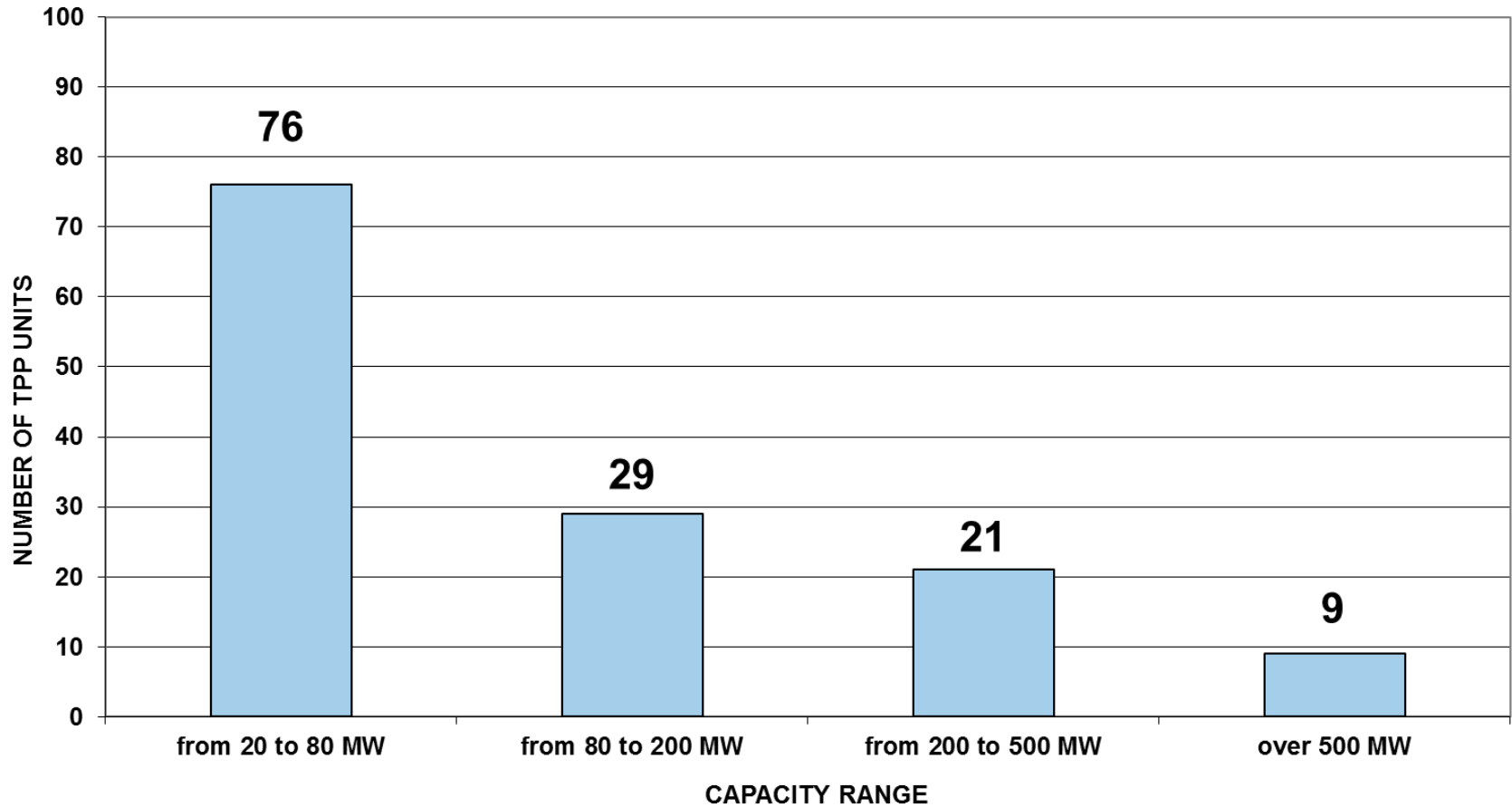


Announced or published offerings of used power plants

gas-fired

Histogram of Second-Hand Gas-Fired TPP Units and Single GTs

Source: troveo Market Research 2017

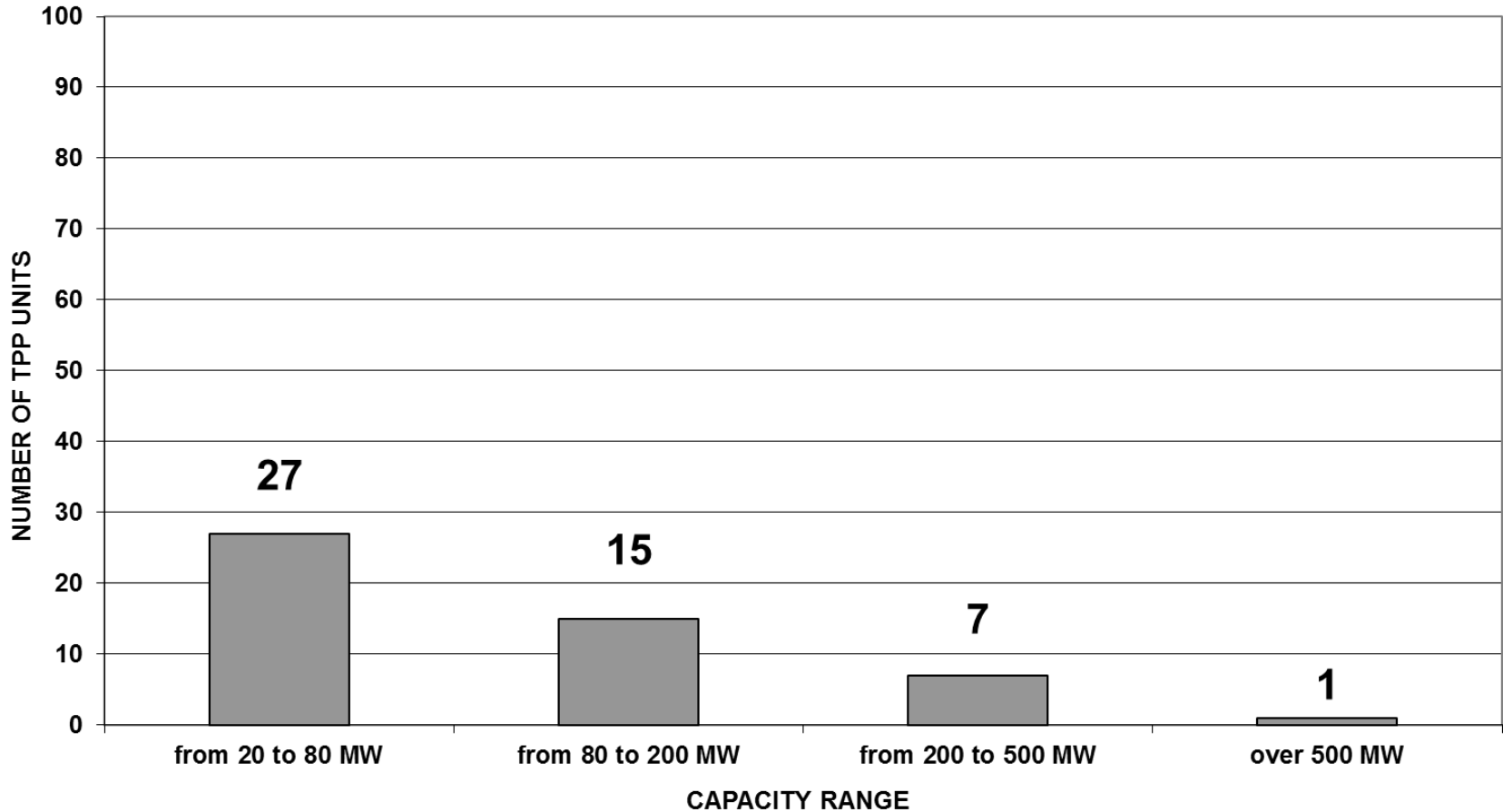


Announced or published offerings of used power plants

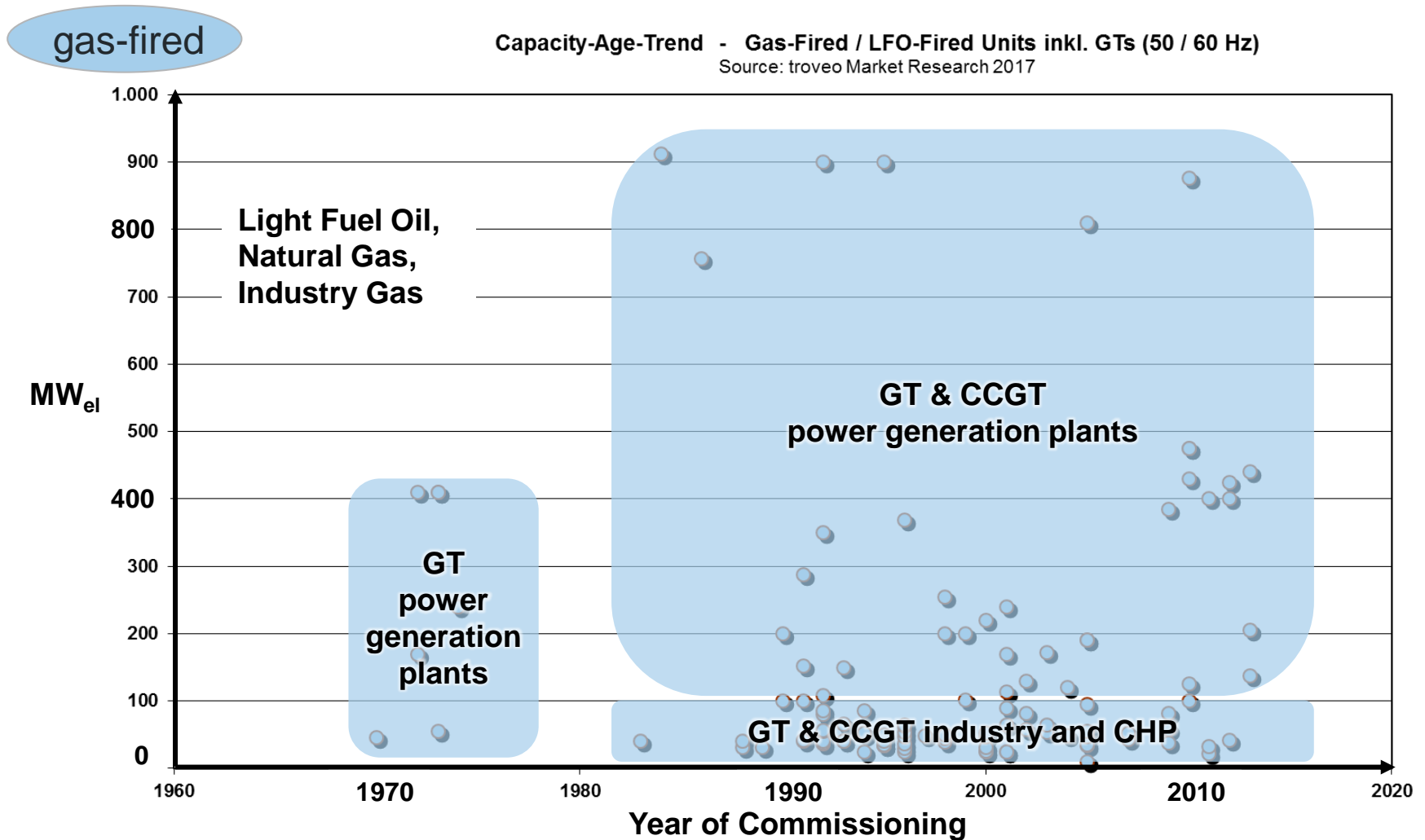
coal-fired

Histogram of Second-Hand Coal-Fired TPP Units and Single STs

Source: troveo Market Research 2017



Portfolio of second-hand plants on offer

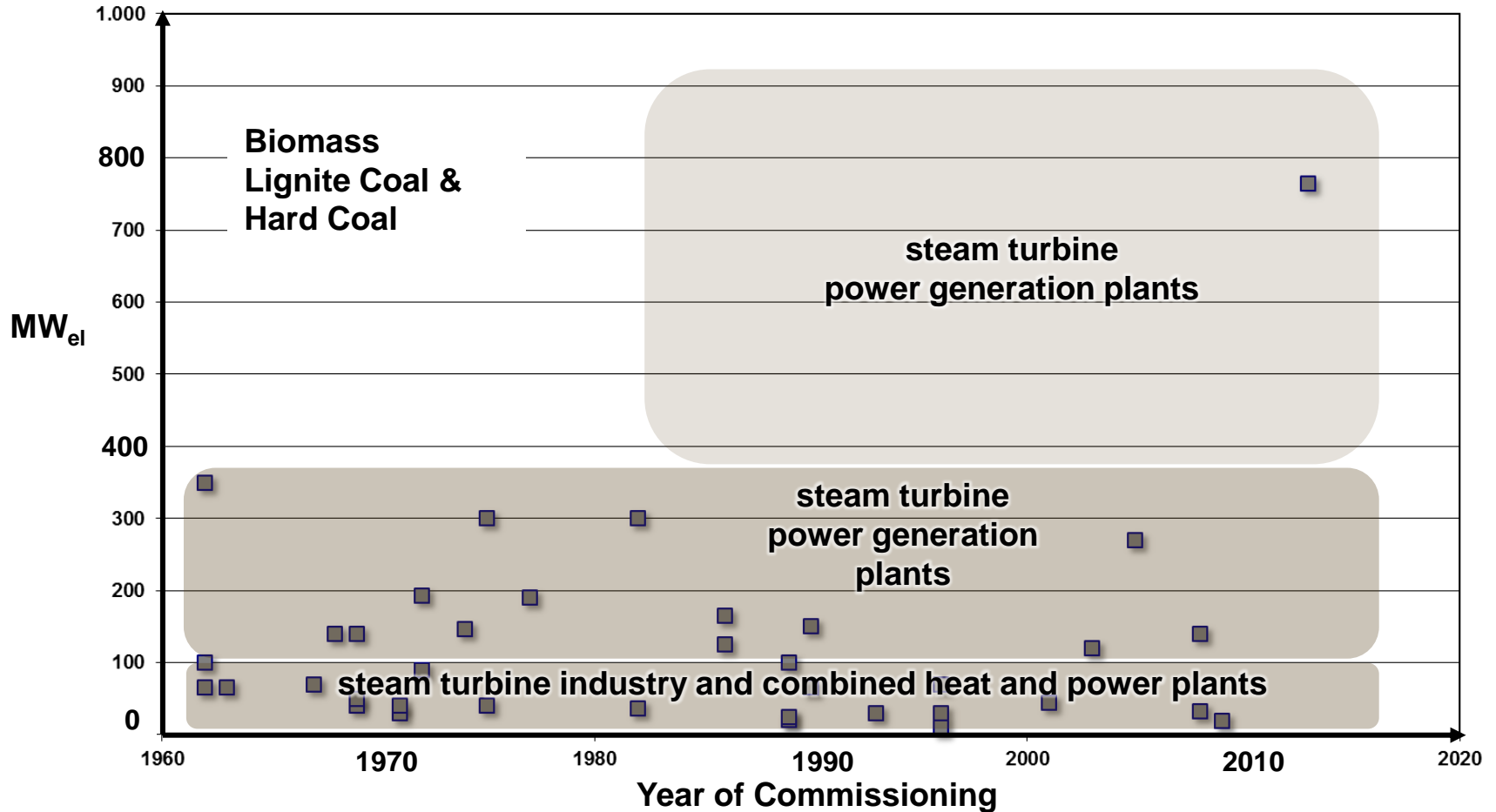


Portfolio of second-hand plants on offer

coal case

Capacity-Age-Trend - Coal-Fired Units incl. single STs (50-60hz)

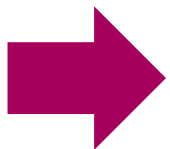
Source: troveo Market Research 2017



2. What would be a solution and can it work?

An example: Korea Midland Power Co. (KOMIPO)

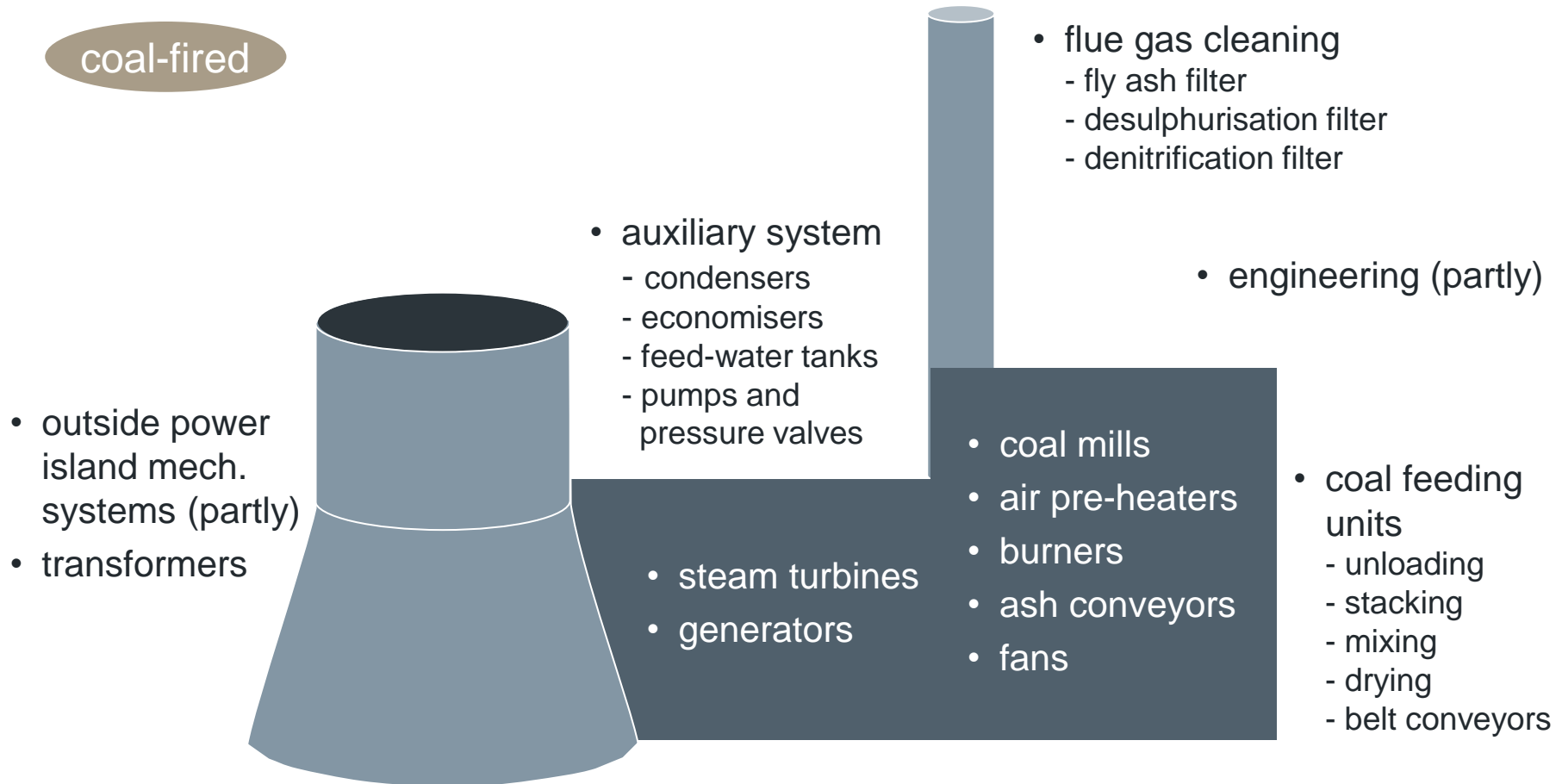
- Relocation of a 15 year old, efficient 500 MW combined cycle gas turbine (CCGT) power plant
- Disassembled plant was packed into 7,500 separate modules for shipment
- Gas generators were upgraded, and heat extraction for district heating was added
- These two measures together increased the efficiency of the unit from 51.6 percent to 82.8 percent
- Significant cost savings compared to a common decommissioning/ new build project



For example: An investor can save up to 40 percent of the cost involved in engineering if he re-uses an existing plant

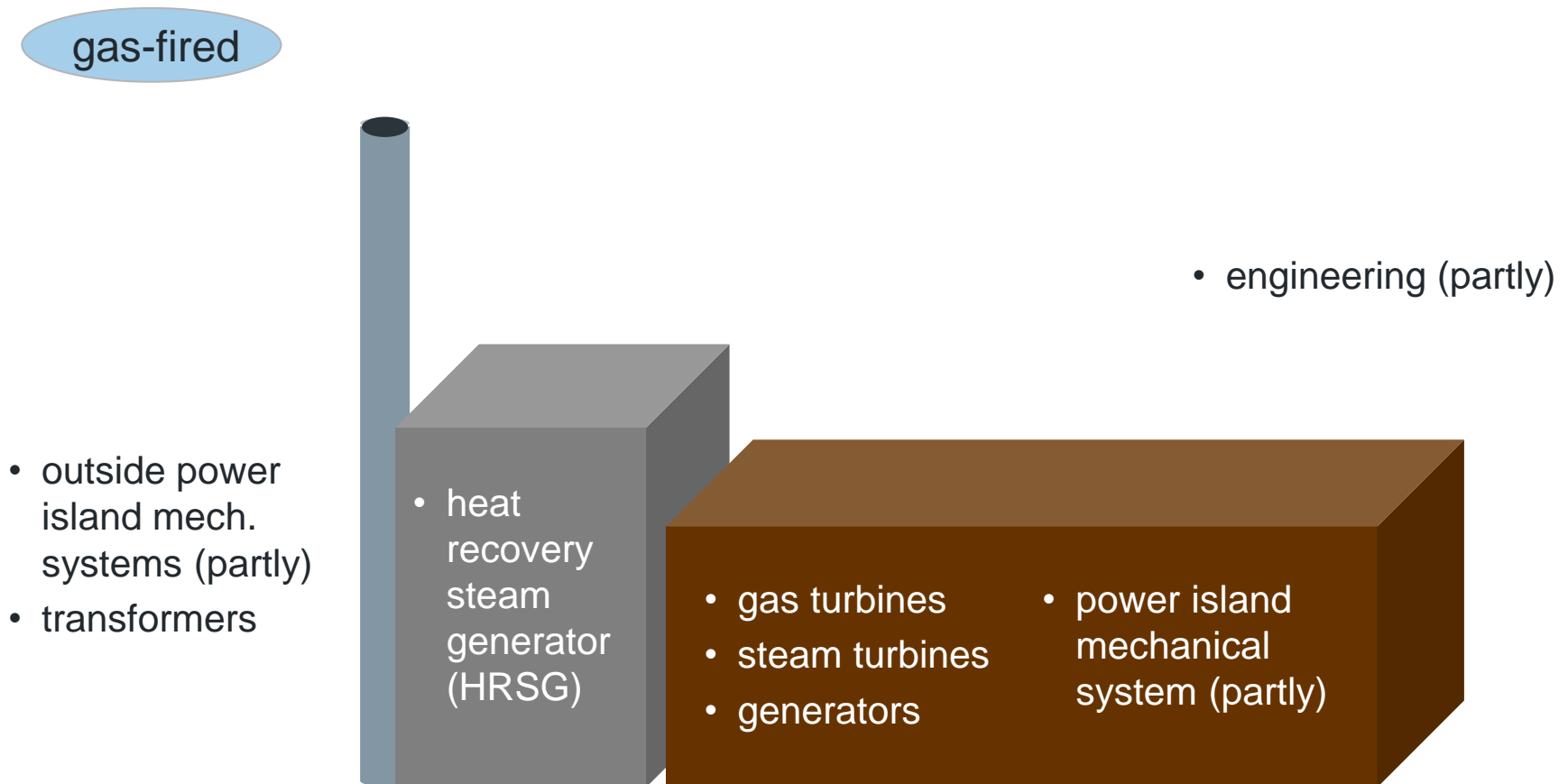
Re-usability of second-hand, first class power plants

Re-usable components – general assessment



Re-usability of second-hand, first class power plants

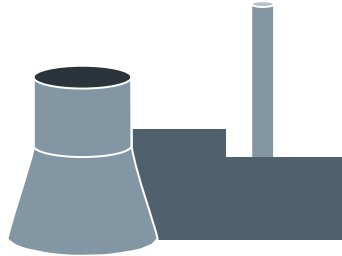
Re-usable components – general assessment



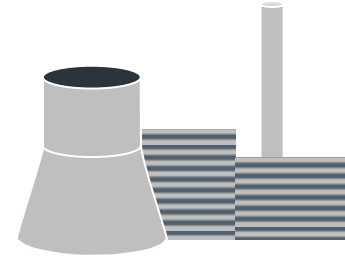
3. What drives relocations?

Money changes everything – potential savings of investment costs

Lignite and hard coal

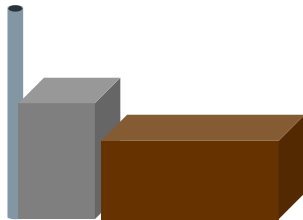


considering cost-effectiveness, up to 50% of the technical components can be re-used



total investment cost reduced by up to 35% compared to using new components

Natural gas and industry gas



considering cost-effectiveness, up to 70% of the technical components can be re-used



total investment cost reduced by up to 50% compared to using new components

Benefits

For buyers

- Significantly lower investment costs
- Modern and ultra-modern technology meeting European standards (safety and emissions)
- Quick availability of the plants to meet basic energy supply requirements
- Purchase plant components with the exact residual service life needed
- Securing electricity supply until renewables-based generating
- Use of readily available parts – for instance after cases of damage
- Prior to decommissioning of the existing plant, the buyer can have his own staff trained in real-life operation

For sellers

- No disposal and dismantling of operational plants at seller's own cost
- Sales prices significantly above scrap prices
- Stocks of materials needed for maintenance/operation of the plant can also be sold
- During decommissioning, seller's own staff can be involved in training of purchaser's staff

4. What is the investment challenge?

Convincing investors and financing institutions

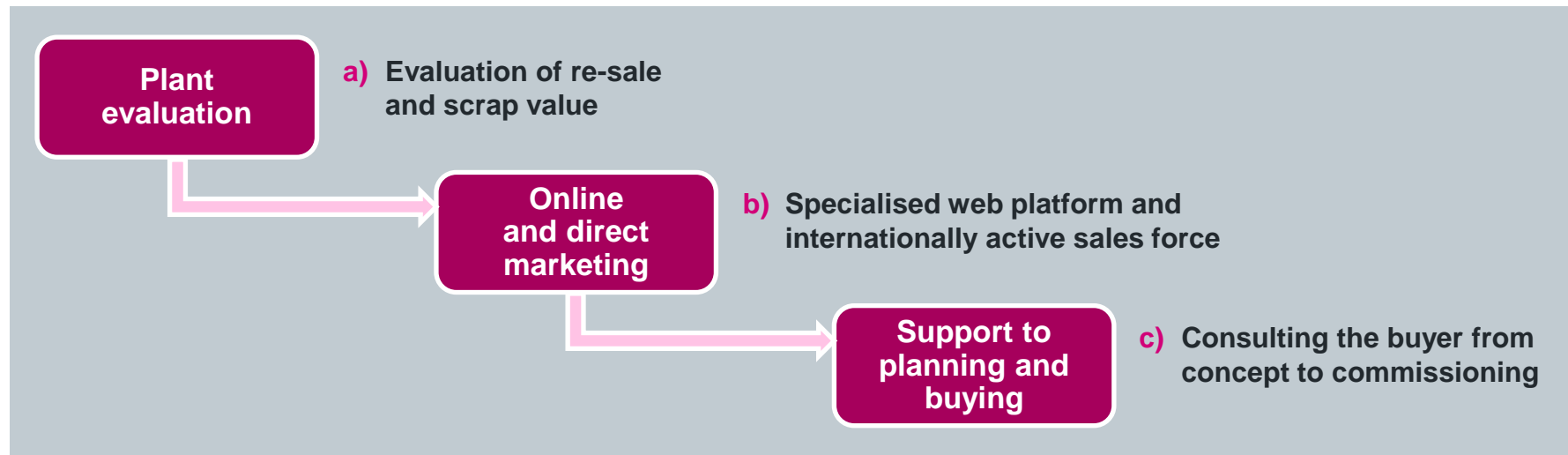
- One of the biggest challenges is finding and convincing buyers
- Awareness of the availability of second-hand plants might even trigger the investment decision as such
- In addition to the cost benefit, it will in any case be necessary to provide the potential purchaser with:
 - assurances concerning the permitting procedure,
 - the right to import second-hand plants and equipment,
 - financing and warranties/ sureties
- The process of marketing may be supported by feasibility studies to attract suitable capital providers and financing institutions
- The more precise the needed information prior to commencement of marketing is, the more successful will the match be



5. What is the trading challenge?

Combining networking with a technical match

- The use of second-hand components should be considered at an early stage; once the technical planning and engineering has begun, it is usually too late to include existing components
- The components to be reused must be immediately reusable, or be reusable after a maintenance service or overhaul at least



The evaluation – a key success factor

The evaluation should cover the following aspects:

- assessment as regards sale of the plant as a whole or sale of selected, usable components only
- assessment of necessary repair effort and expense, if any
- assessment of buyer's market
- assessment of chance of sale
- assessment of sales revenue above scrap value
- recommended actions

Overview						
Coal and Ash Handling System						
			re-usability			estimated international demand
	available	not available	immediately	after overhaul	not re-usable	
Distributors	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	see comments
Coal mills	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	very high
Pulverised coal ignition supply system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	medium
Ash conveying system	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	low
Fly ash disposal system	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

The marketing potential assessment

The marketing potential assessment is the basis for direct or web-based marketing

This should include:

- Potential regions/ countries/ companies
- Planned expanding capacities
- Available fuels/ technologies
- Estimation of marketing success
- Recommended marketing strategy
(entire plant/ combined sets / individual components)



6. What is the conclusion?

Used is the new „NEW“:

- The seller receives a price which reflects the value still immanent in the components (well above scrap prices)
- The purchaser can acquire plant components for the precise (residual) life required at a highly competitive price
- The continued use of second-hand plant components is economically and ecologically a rational consequence

Key success factors are:

- Knowledge of the energy market and planned capacity additions
- Timely identification of potential markets and purchasers
- Involvement of purchasers in a very early stage of capacity expansion plans and investment projects
- Covering risks in the sales and purchase transactions by facilitating financing and warranties

THE END
could be a new beginning !



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