



25. ICCI

Enerji ve Çevre Fuarı ve Konferansı Türkiye Kojenerasyon Derneđi Özel Oturumu

Endüstride Yüksek Verimli, Kaliteli ve Güvenilir Enerji Üretimi - Kojenerasyon

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PETROKİMYA TESİS VE PROSES VERİMLİLİĞİ İÇİN KOJENERASYON UYGULAMASI

Sedat Leblebiciođlu
Enerji Yönetimi Müdürü
PETKİM Petrokimya Holding A.Ş.







GENERAL INFORMATION

18%

meets Turkey's
petrochemical needs

21

Production facilities
(15 main and 6 utility)

3,6

million tons
annual gross
production capacity

>800.000

TEP
energy consumption.



SOCAR



Petkim



GENERAL INFORMATION

9.3

billion TL
Net sales in 2018

640

million USD
Exports in 2018

Biggest Exporter

in the Aegean Region of Turkey



MAJOR PROJECTS IN SOCAR TURKEY'S ALIAGA SITE

Refinery - Petrochemical - Energy - Logistics - Distribution Integration

SOCAR Terminal, 3rd largest port in Turkey

STAR Refinery, 10 million ton capacity

PETKİM Wind Power Plant, 51 MW capacity with 17 turbines





COGEN PLANT

>70 %

total Cogen efficiency

STEAM ; 1200 tons/hour XHS total capacity

- **4 pcs boilers**

POWER ; 222 MW total capacity

- **2 pcs Double Extraction Back Pressure ST**
- **2 pcs Condensing ST**
- **1 pc Gas Turbine**



BENEFITS OF COGENERATION

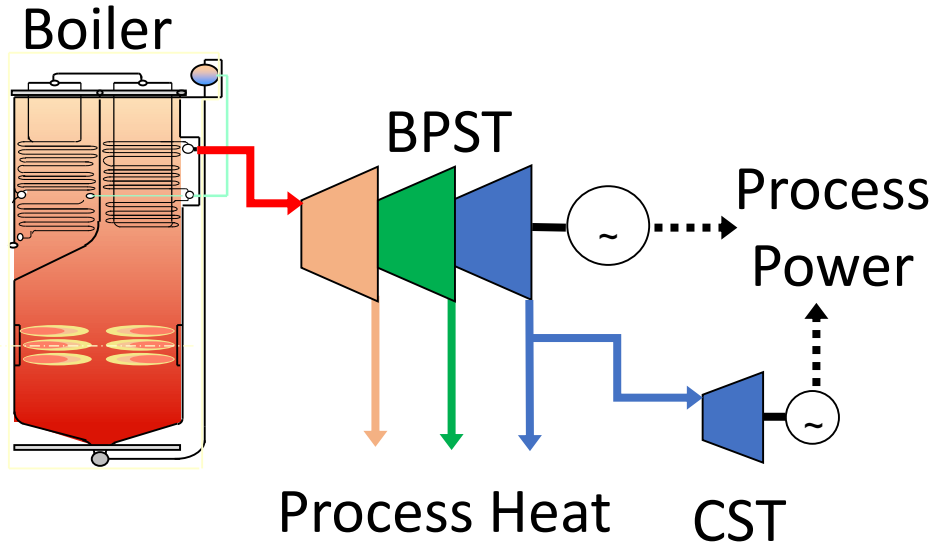
EFFICIENCY

- **Total efficiency higher than 80%**
- **Less fuel for needed energy (heat and power) demand**
- **Heat and Power cost reduction**
- **Less payback time**

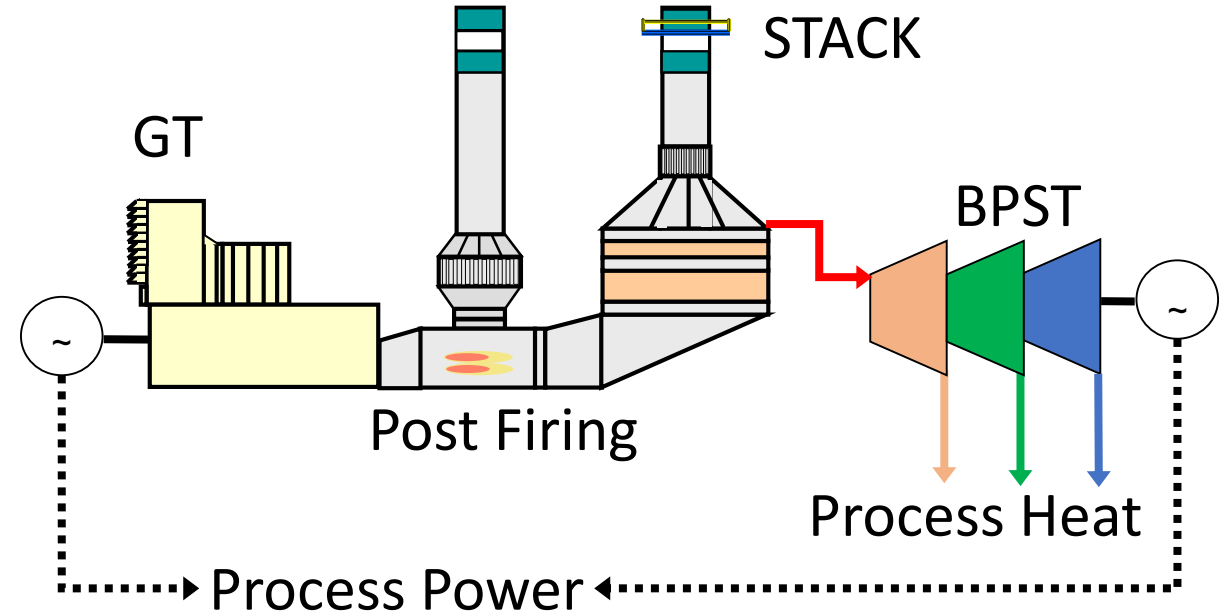


COGENERATION - EFFICIENCY

Power Plant (traditional)



Power Plant (cogeneration)



70 MW	Process Heat Demand	70 MW
30 MW	Process Power Demand	30 MW
169 MW	Power Plant Input	114 MW
59 %	Efficiency	88 %
69 MW	Energy Loss	14 MW



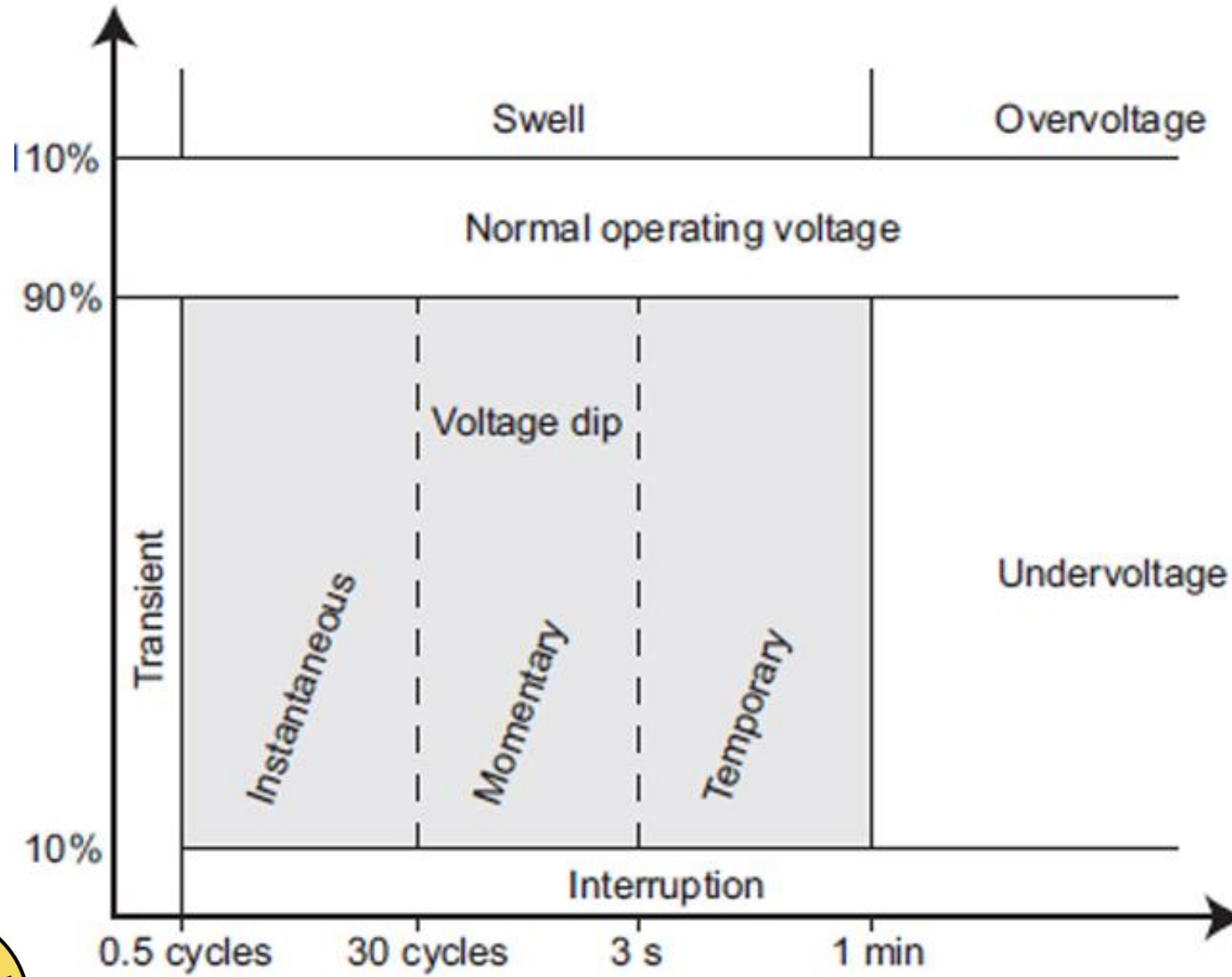
BENEFITS OF COGENERATION

RELIABILITY

- **Reliable and high quality energy for process plants by;**
 - ✓ **Protecting from grid failures (voltage dips..)**
 - ✓ **Island mode operation when necessary**
- **Prevent the production losses of the process plants**
- **Protection of the corporate image**



COGENERATION - RELIABILITY



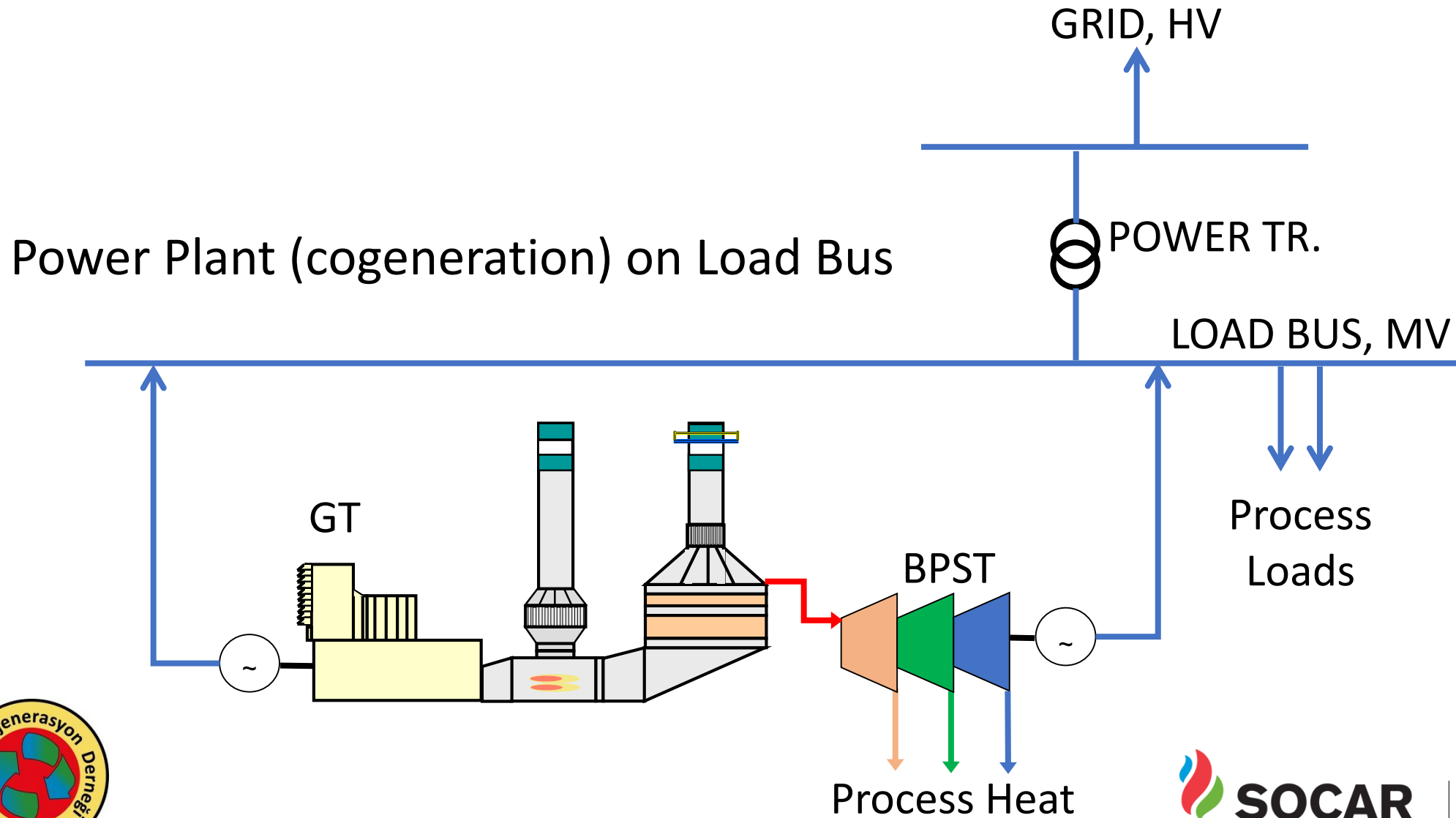
VOLTAGE DIP

- Contactors may drop out if the voltage dips below 80% of U_n for more than 50-100ms.
- Induction motors slow down during the voltage dip, and try to accelerate to the operating speed after voltage recovered.



Voltage dips according to IEEE Std. 1159-1995

COGENERATION - RELIABILITY



BENEFITS OF COGENERATION

HSE

- **Reduced gas emissions**
- **Prevent unplanned shut-down related risks**

