LESTOS

ΗΦΑΙΣΤΟΣ

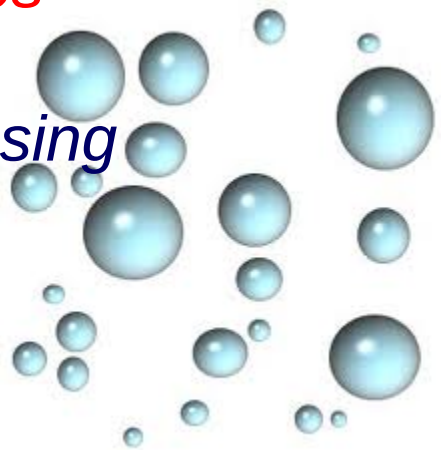
1926

STEAM | CO-GENERATION | PROCESS | PRESSURE | HEAT RECOVERY

Hephaestus

Drops…..into…..Bubbles

in High Efficiency Condensing Economizers



Research Team name: Hephaestus SA - HELLAS
Presenter name: Lestos Nikos

Team Presentation – Annual Workshop, COST Action MP1106
Dublin, September, 2012

Hephaestus

Research Team Name: Hephaestus

Number of team members: 16

- Phd & Msc- Mechanical, Electrical, Architectural & Economics (6)
- Expert Technicians in Combustion-Heat Transfer (10)

Research interests related to MP1106

- Work Group No4-Technology

- ➢ Material & Surface Treatment - Morphology for Drop Concentration
- ➢ Heat concentration and direction to transform Drop into Bubbles
- ➢ Flue gas shearing flow for removing drops-bubbles

Basic facilities, equipment, devices:

Located in the North Part of Greece

- Basic Manufacturing Area of 10,000 sq.m
- Large scale Testing Area of 400sq.m with infrastructure for
  - Liquid, gaseous, solid and dust fuel
  - Diathermy oil
  - Saturated & Superheated steam
  - Hot & Superheated Water
  - Flue Gas

- X-ray and Ultrasonic Testing Equipment
- Flue Gas Analysis Testing

Project:

Drops into Bubbles in High Efficiency Condensing Economizers

The main Scope of Project

•*To investigate*

- ➢The way we can avoid and reduce the formation of condensation on the economizer heat transfer elements (fins) which results into oxidation and corrosion of fins.

•Our aim is to

- ➢Manage to gather together condensation from the whole area into specific areas where the formation of larger drops are formulated
- ➢To direct and concentrate latent heat energy to these specific concentration areas in order to transform drops into bubbles
- ➢To provide shear flow of hot gases in order to remove drops-bubbles form eco-fins surface towards the chimney

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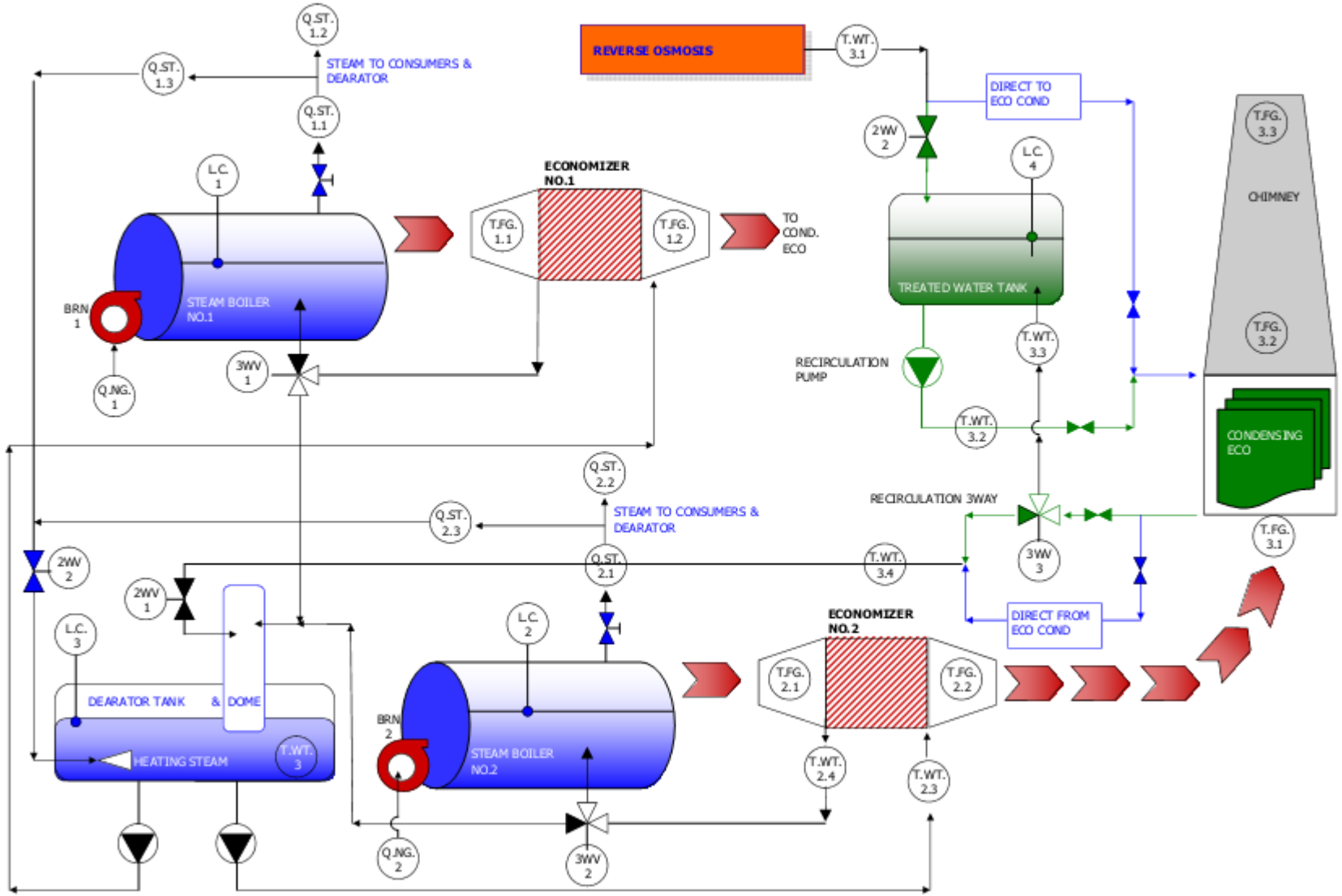
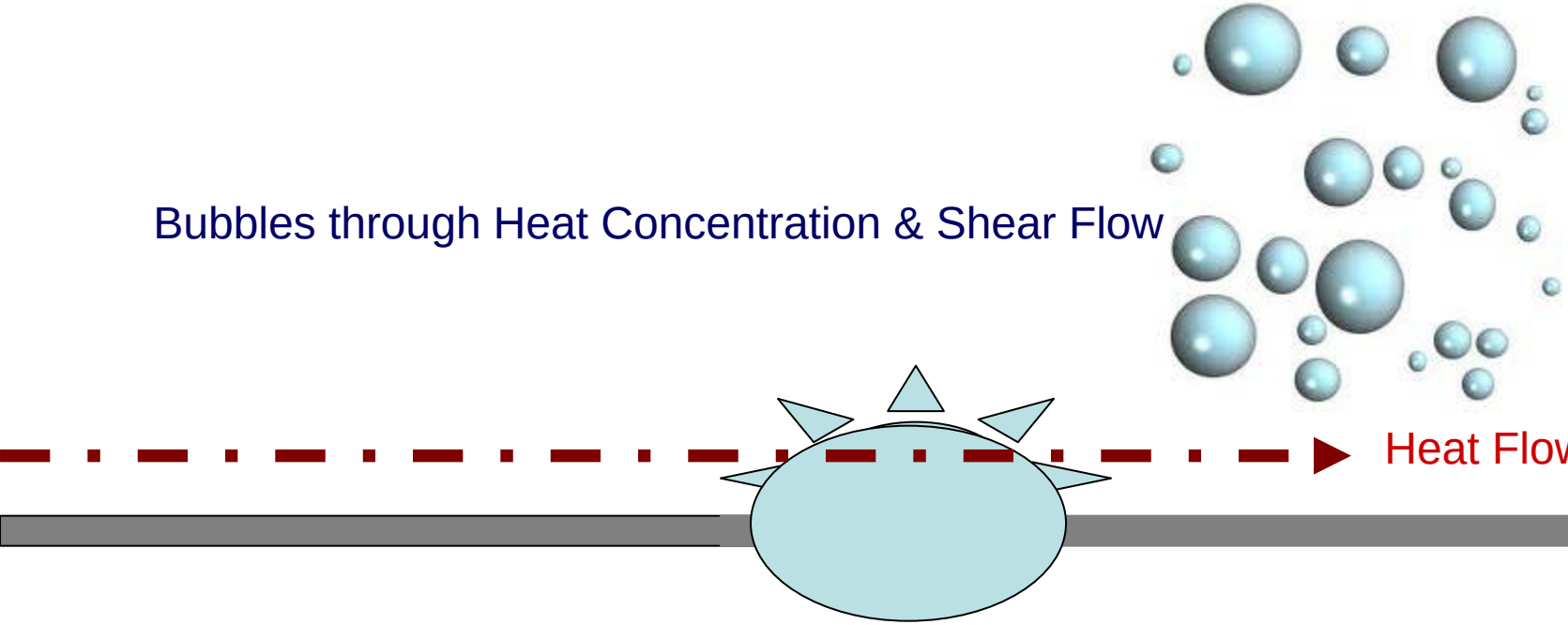

Q.ST. 1.2
STEAM TO CONSUMERS & DEARATOR
Q.ST. 1.3
Q.ST. 1.1
L.C. 1
REVERSE OSMOSIS
T.WT. 3.1
DIRECT TO ECO COND
2WV 2
L.C. 4
ECONOMIZER NO.1
T.FG. 1.1
T.FG. 1.2
TO COND. ECO
T.FG. 3.3
CHIMNEY
TREATED WATER TANK
BRN 1
STEAM BOILER NO.1
Q.NG. 1
3WV 1
RECIRCULATION PUMP
T.WT. 3.3
T.FG. 3.2
T.WT. 3.2
CONDENSING ECO
Q.ST. 2.2
RECIRCULATION 3WAY
Q.ST. 2.3
STEAM TO CONSUMERS & DEARATOR
T.FG. 3.1
2WV 2
Q.ST. 2.1
T.WT. 3.4
3WV 3
2WV 1
L.C. 3
L.C. 2
ECONOMIZER NO.2
DIRECT FROM ECO COND
DEARATOR TANK & DOME
T.FG. 2.1
T.FG. 2.2
BRN 2
STEAM BOILER NO.2
HEATING STEAM
T.WT. 3
T.WT. 2.4
T.WT. 2.3
Q.NG. 2
3WV 2

Bubbles through Heat Concentration & Shear Flow



Concentration of Condensates

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Thank you for your attention