יום העיון השלישי במנועי סילון

בחסות

המעבדה למנועי סילון וטורבינות גז

הפקולטה להנדסת אוירונוטיקה וחלל

טכניון – חיפה

ענף הנעה

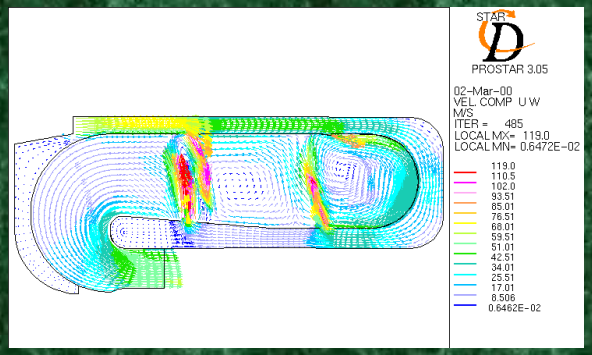
המחלקה לאוירונוטיקה, היחידה למו"פ-היחידה לתשתיות,

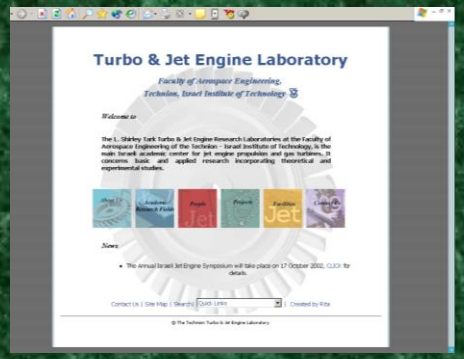
מנהלת פיתוח אמל"ח ותשתיות, משרד הביטחון

The Turbo and Jet Engine Laboratory

Faculty of Aerospace Engineering,
Technion, Israel Institute of Technology
Haifa, Israel

headed by: Assoc. Prof. Yeshayahou Levy





http://jet-engine-lab.technion.ac.il

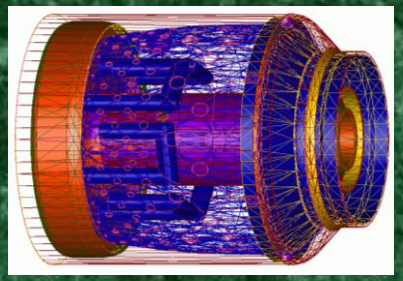
6 Ph.D. researchers, 7 graduate students, 3 engineers
900 m^2 , budget turnover - 400-500 K US$ / year

The Technion's Turbo & Jet Engine Laboratory

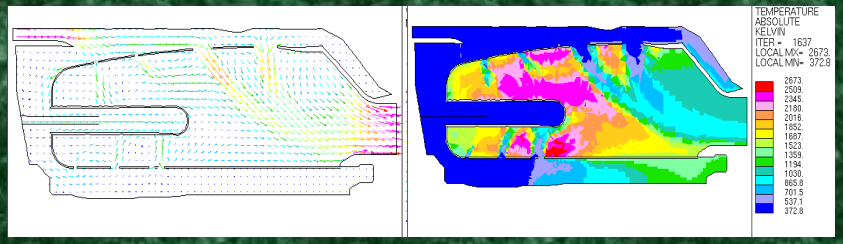
We also specialize in:

CFD OF COMPLETE COMBUSTION SYSTEMS

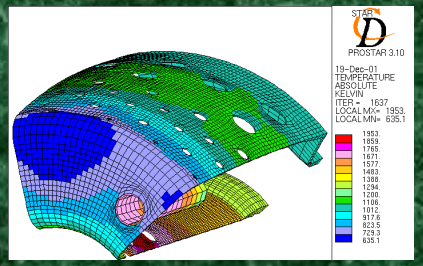
ADVANCED GRID GENERATION FOR CFD (COMPLETE COMBUSTORS)



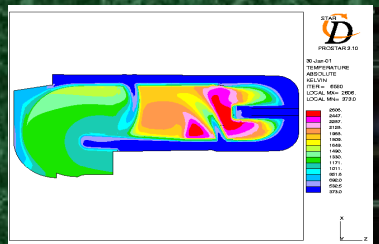
VELOCITY, PRESSURE & TEMPERATURE FIELDS



WALL TEMPERATURE



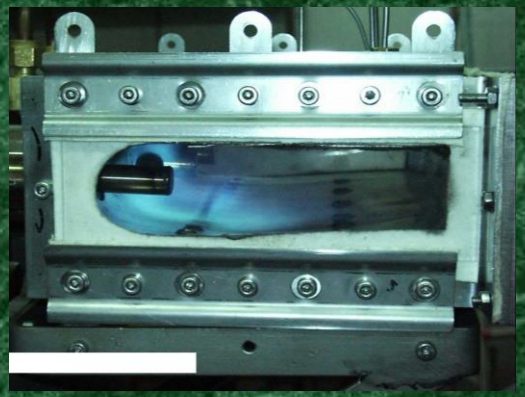
EXPERIMENTAL VERIFICATION



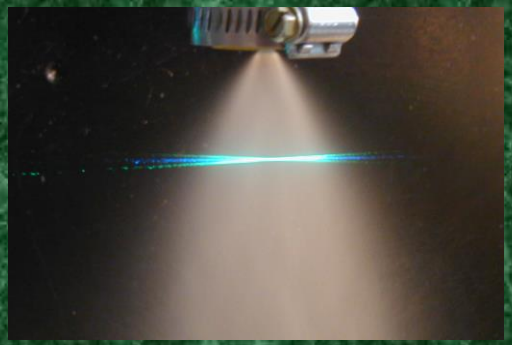
The Technion's Turbo & Jet Engine Laboratory

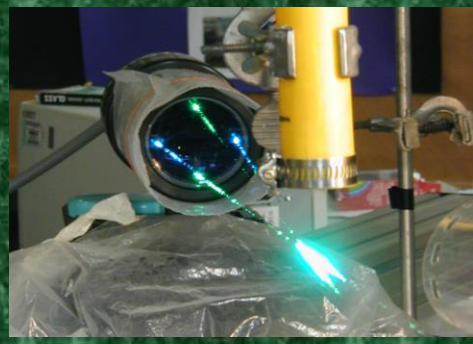
We specialize in:

LOW NOx COMBUSTION



ATOMIZATION & SPRAYS



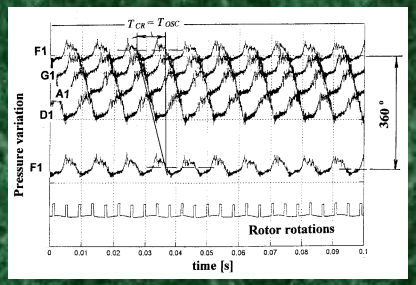


DESIGN of TEMPERATURE & PRESSURE SENSOR (HOT SECTION)

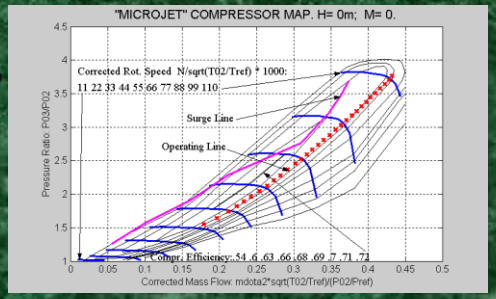
The Technion's Turbo & Jet Engine Laboratory

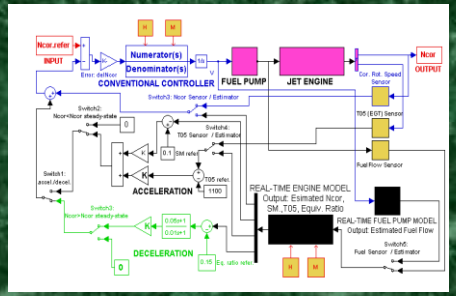
And we specialize also in:

COMPRESSOR DYNAMICS



CONTROL SYSTEM OF JET ENGINES





DEVELOPMENT OF OPTICAL DIAGNOSTICS

SOLAR ENERGY

European Community Project of Fifth Framework Programme

"FLOXCOM"
LOW-NOX Flameless Oxidation Combustor for High Efficiency Gas Turbines

CONTRACT N°: ENK5-CT-2000-00114

PROJECT COORDINATOR: TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY

PROJECT PARTNERS:

TECNION, HAIFA, ISRAEL	ANSALDO GENOVA, ITALY
IMPERIAL COLLEGE LONDON, UK	IPPT-PAN, WARSAW, POLAND
CINAR, LONDON, UK	B&B AGEMA, AACHEN, GERMANY
IST, LISBON, PORTUGAL	RWTH, AACHEN, GERMANY

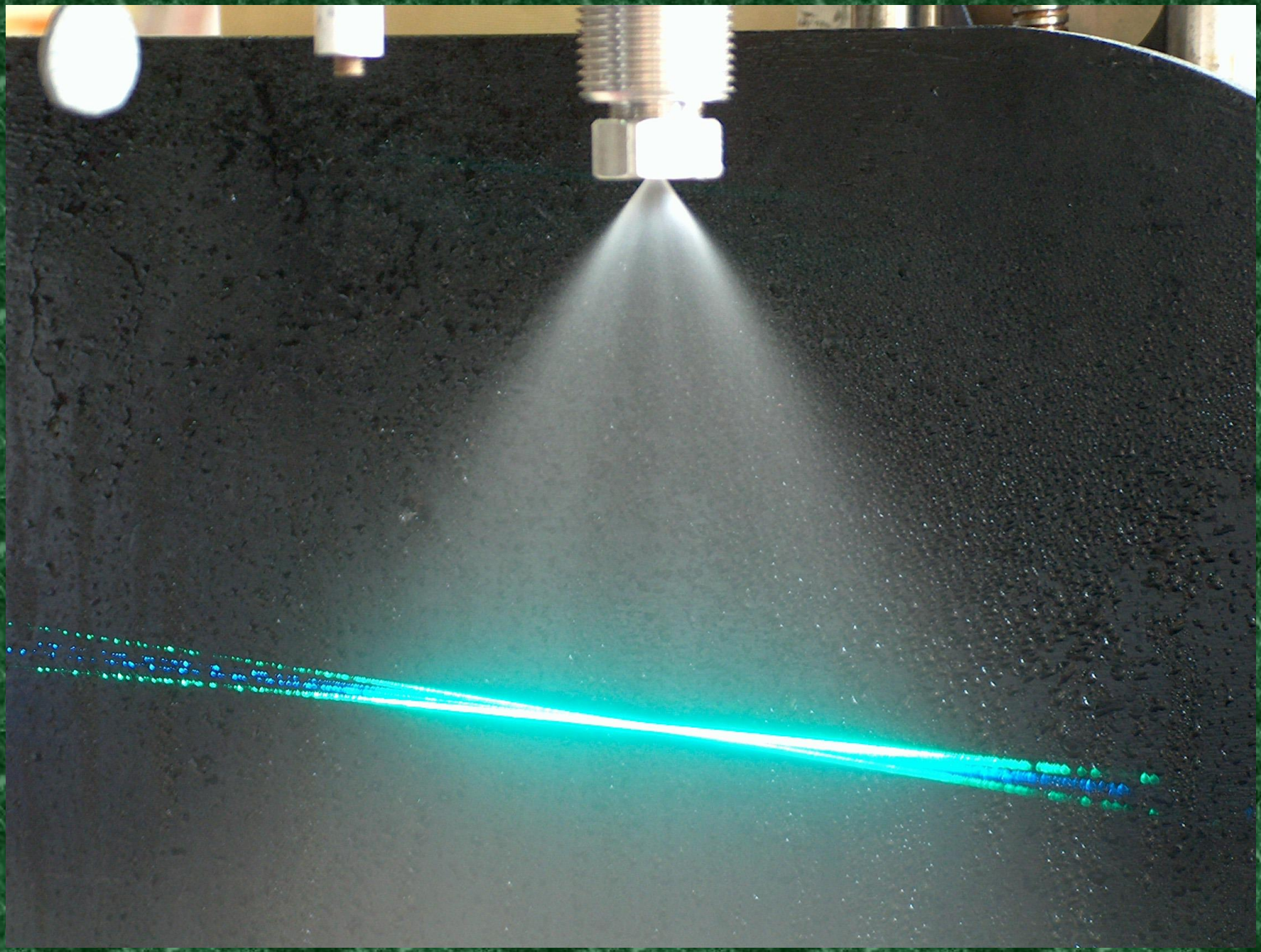
סיור במעבדה (הפסקת צהריים)

יערך במתקן לאפיון תרסיסים
Phase Doppler Anemometry (PDA),

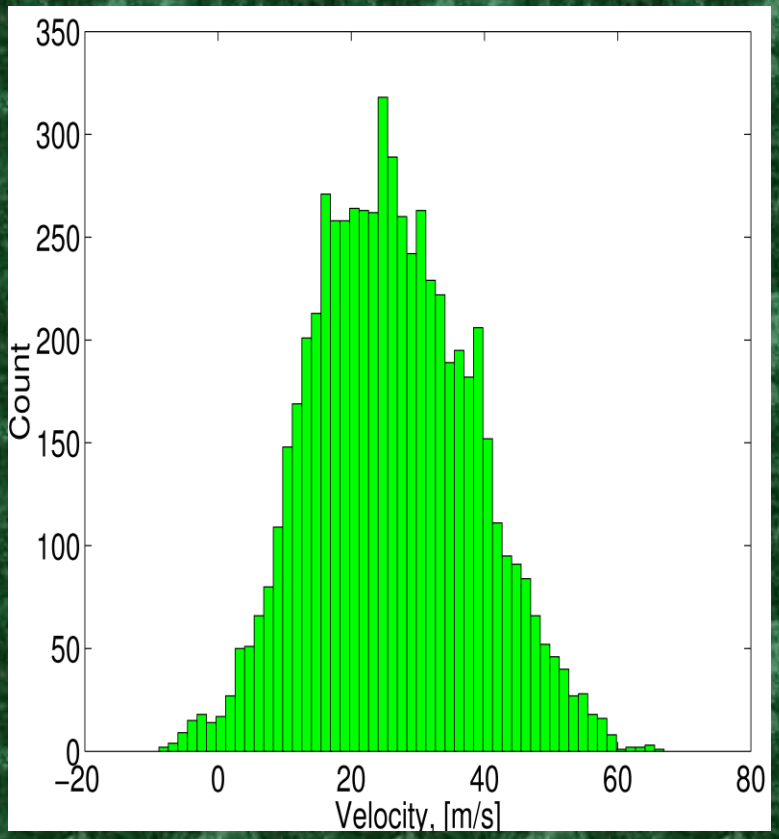
למדידת פילוג מרחבי של:

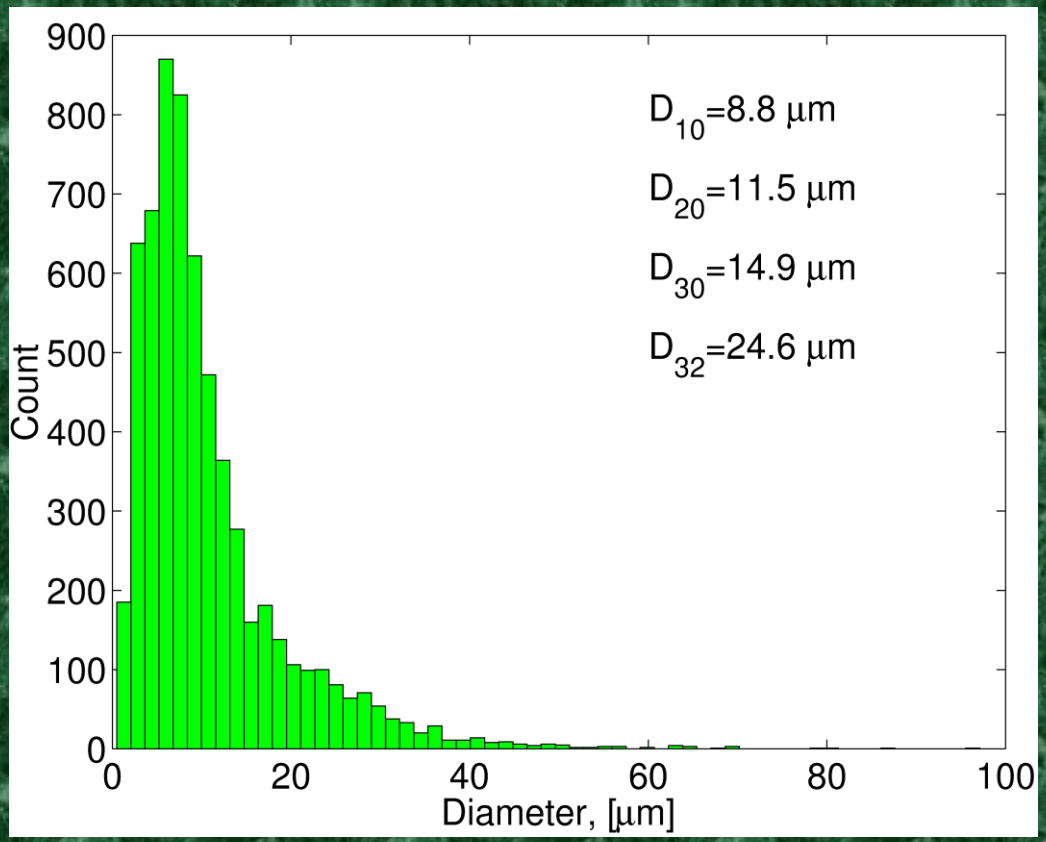
- גודל הטיפות,
- מהירותן (ערך וכיוון)
- ספיקה נפחית

Phase Doppler Anemometry (two channels)

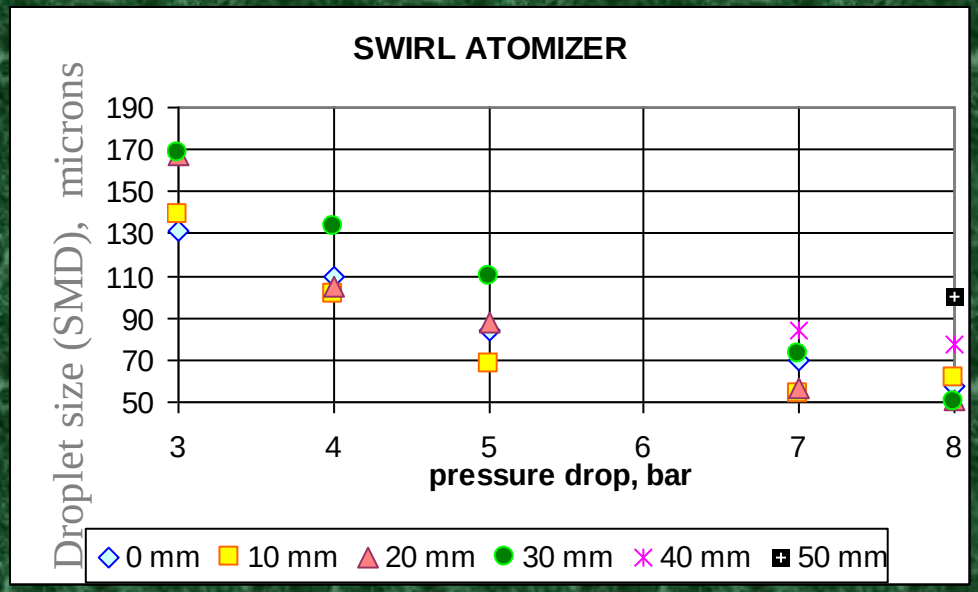


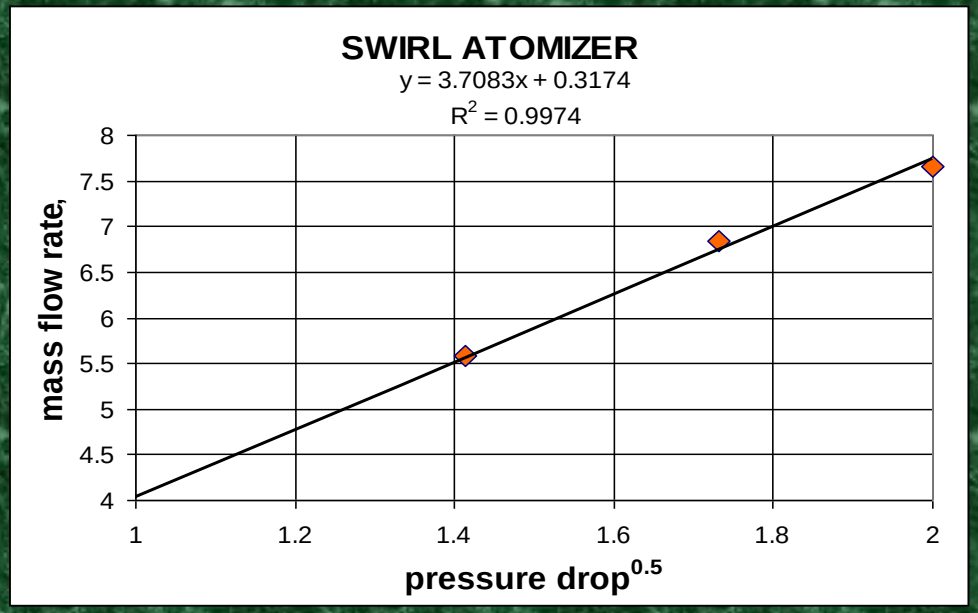
Optical Diagnostics in Spray Combustion Systems

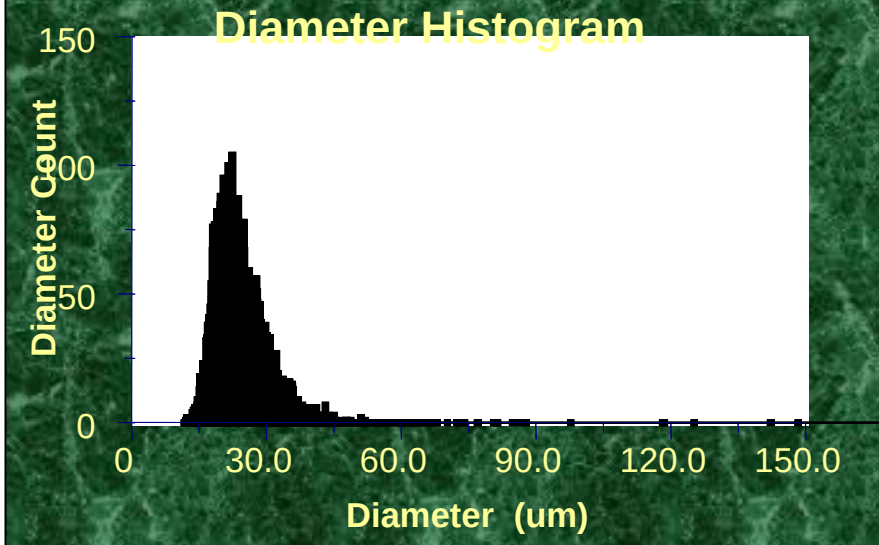




Typical size (a) and velocity (b) distribution of fuel droplets in an oscillating jet. Frequency = 41 Hz. Atomization air pressure: Mean pressure = 7.1 kPa, Peak to Peak Pressure = 25 kPa.


SWIRL ATOMIZER
Droplet size (SMD), microns
190
170
150
130
110
90
70
50
3
4
5
6
7
8
pressure drop, bar
0 mm
10 mm
20 mm
30 mm
40 mm
50 mm


SWIRL ATOMIZER
y = 3.7083x + 0.3174
R2 = 0.9974
mass flow rate,
8
7.5
7
6.5
6
5.5
5
4.5
4
1
1.2
1.4
1.6
1.8
2
pressure drop0.5


Diameter Histogram
Diameter Count
150
100
50
0
0
30.0
60.0
90.0
120.0
150.0
Diameter (um)