

# **AEROMOTIVE RESEARCH**

*Aerospace Advantages for*

*Advanced Engine Preparation Techniques*

**Presentation**

**AEROMOTIVE RESEARCH**

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# **AEROMOTIVE RESEARCH**

***Aeromotive Research and Development Group  
through its chemical & mechanical engineering partners is becoming  
one the national leaders in the discovery and application of  
Aerospace Nano -Technology & Products for use within  
premium automotive & commercial performance lubricants***

***This presentation is specifically designed to provide direction for affordable  
21<sup>st</sup> century aerospace performance technology .***



# **AEROMOTIVE RESEARCH**

**Aerospace Nano-Technology to function  
with complete Automotive Advantage  
requires focused attention to every aspect:**

- 1. Cleansing of ALL Metal areas at the Sub-Surface Level**
- 2. Consistent Coolant System Protection: Dyno to Install.**
- 3. 20% improved Heat Transfer & Cooling Performance**
- 4. Mating and protection of components**
- 5. Combustion seal performance & efficiency improved**
- 6. Aerospace nano technology (DLA) received within  
Metal surfaces with proper heat / cold soak cycles**
- 7. Engine leaves shop 100% ready & prepared with nano technologies  
providing performance & life cycle advantages**

# **AEROMOTIVE RESEARCH**

**Aerospace Nano-Technology to function  
with complete Automotive Advantage  
requires focused attention to every aspect:**



## **IMPLEMENTATION:**

**These aspects once in use within the  
build / manufacturing process will not take that  
much more time effort or cost.**

## **BENEFITS:**

**Increased component performance & life cycles.**

**UNIVERSAL APPLICATION: These affordable  
processes and procedures can be used not only  
with the NASCAR programs, but all others as well  
(Off Road, Sprint Car, Midget, Crate Motor etc.)  
Including Standard Industrial and Commercial.**

# AEROMOTIVE RESEARCH



## CYLINDER HEADS & ENGINE BLOCK PROTECTION BEGINS AT THE DYNO ENDS AT THE TRACK:

*Problem (which can be easily overcome) that happens is when the engine is used on the dyno with plain tap water (with minerals) which normally not 7.0 Ph N without protection*

*With cold & hot temperature heat cycles the aluminum & iron pores open up exposing them to the water ( without chemical protection) causing surface contaminations of corrosion and oxidation which are increased during storage ,shipment & install especially in high humidity conditions.*

*Surface contaminations of oxidization once applied is hard to get off and stays within the coolant passages & system.*

*Surface corrosion &oxidization contamination greatly effects heat transfer capability, component consistency performance & cycle service life*



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## **CYLINDER HEADS & ENGINE BLOCK** **PROTECTION & PERFORMANCE SOLUTION:**

***Beginning point of dyno time use exact premix Water  
Kooler coolant system treatment***

***Surface contaminations of corrossions oxidization does not begin  
and stays off coolant passages & system.***

***Passages remain clean will full performance consistency***

***Passages are protected not only during dyno time heat and cold soak  
cycles, but inhibition protection during storage, shipment and  
performance use.***

***THEN at the track & race time -  
premium performance and protection continues.***

***FURTHER: less cleanup required at time of rebuild.***



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## **CYLINDER HEADS & ENGINE BLOCK** **HEAT TRANSFER PERFORMANCE RESULTS:**

Goal is to increase heat transfer performance & consistency  
(historic data - 20% increase)

SynMax Water Cooler Product has premium  
nano-heat transfer technology not used by others.

Increased BTU transfer promotes each head passage,  
chamber & cylinder wall to operate with increased &  
improved consistency

**FURTHER:** *heat transfer improvement also allows the Aerospace Advantages of (DLA nano technology & base oil) performance to work at its complete potential.*



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## **ENGINE OIL FILTER TECHNOLOGY:**

**ELEMINATE ANY CHANCE FOR METAL PARTICLES**  
**OR OTHER CONTAMINATES**  
**TO RE-CIRCULATE BACK INTO THE ENGINE**

*Racing Industry normally uses standard racing filter program*

**YOU MUST MAKE SURE NO MATTER THE FILTER DESIGN SELECTION  
THAT THERE IS 100% FILTERATION WITHOUT ANY RELIEF VALVE ON  
THE BOTTOM OF THE OIL FILTER ELEMENT WHICH ALLOWS  
CONTAMINATES TO RE-CYCLE BACK INTO THE MOTOR.**

**THIS WILL EFFECT THE AEROSPACE ADVATAGES TO OPERATE WITH  
COMPLETE PERFORMANCE.**



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## **ENGINE BREAK-IN COMPONENT MATING PROCESS:**

*The selection of a premium break-in motor oil is paramount to the component mating process and engine performance.*

*There is 3 basic elements for Break-In oil formulation success*

- 1. Base Oil: Quality Group II Petroleum ( no less )*
- 2. Anti-Wear: HIGH ZINC ZDDP 1500 PPM MINIMUM (no moly)*
- 3. Detergency: Low to non-detergent to promote quick and complete component mating*

*NOTE: many companies advertise they have a “break-in” motor oil but FEW have this special formulation combination.*

*USE of a Diesel Truck oil or average non – detergent product will not provide the exact performance package required.*

# **AEROMOTIVE RESEARCH**



## **ENGINE BREAK-IN** **COMPONENT MATING PROCESS:**

*These 3 basic elements for Break-In oil*

1. **Base Oil:** Quality Group II Petroleum
2. **Anti-Wear:** HIGH ZINC ZDDP 1500 PPM  
MINIMUM (no moly)
3. **Detergency:** Low / non-detergent

*Promotes quick and  
complete component mating*

*This formulation success is found with*

*SynMax Break-In Motor Oil.*

## **AEROSPACE SONIC CLEANSING OF PARTS** **AFTER INITIAL CLEANING.**

**( CONSIDERATION )**

**For complete sub- surface level cleaning of all  
metal surfaces and micron size pores  
of the block, heads, and other components**

**This process takes very little time and eliminates even the smallest  
contaminates and micron metal particles not cleansed under normal power  
wash – solvent conditions  
( when not discovered could cause future failure)**

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## **ENGINE COMPONENT MATING PROCESS:**

*Historically, engine dyno break-in motor oil was used for both the break-in and engine tuning set up procedures.*

***BUT:** with today's micro - precision machined components and exotic materials they do not require as much break-in time – which actually can be detrimental to the components.*

**NEW theory is to have enough run in time to:**  
*Mate the cam, lifters and valve train components  
Piston Compression Rings and Cylinder wall*

*As soon as the internal engine data sensors show that  
compression is maximized & completed  
(about 3 - 4 full pulls) STOP - break-in session is OVER.*

*Hot drain oil and change the oil filter.*

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## **ENGINE COMPONENT**

### **DIAMOND LIKE ADDITIVE PROCESS / PROCEDURE:**

***Immediately after the cylinder compression is maximized the DLA procedure needs to begin.***

***GOAL: Use the one hour ( or so ) of dyno tune-up time (including hot & cold cycles of idle, low & High RPM etc. ) for productive processing.***

***Allowing the diamond like additives to come in fully by promoting the expansion and contraction micron metal pores through hot and cold procedures.***

***Even though there will be slight immediate results – greater performance will happen with cycle & soak times of polarization friction, heat and settling in.***

***Hot drain oil and change the oil filter.***



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## **ENGINE COMPONENT** **DIAMOND LIKE ADDITIVE PROCESS / PROCEDURE** **(continued):**

*As the engine builder you know the feel of the motor & have your set procedures on low & high idle, short and long runs, light and full pulls etc.*

*SynMax is a complete competition motor oil taking the most punishing conditions with superior protection.*

*We discovered for you to allow a couple of heat soak cycle times this paramount for the metals to equalize in temperature and for the DLA to work into the metal pores.*

*DLA takes about 4500 seconds or about one or of use with three short soak session to fully come into complete Aerospace Advantage potential. You will discover your own success rhythm procedures.*

# **AEROMOTIVE RESEARCH**

**ENGINE COMPONENT**  
**DIAMOND LIKE ADDITIVE PROCESS / PROCEDURE**  
**(continued):**

**AEROSPACE ADVANTAGE PERFORMANCE GOAL:**

***OUR ultimate goal for the engine builder to make sure the motor goes out the door at 100% efficiency.***

***Because time is short at the track. You do not need and cannot afford the luxury to use the practice / qualify sessions for the motor to come into its own potential.***

***FURTHER: as the motor comes in – this will effect slight changes on track tuning requirements.***

***START at practice, set-up, qualify, race & return END.***

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## **ENGINE COMPONENT**

### **DIAMOND LIKE ADDITIVE PROCESS (continued):**

**AEROSPACE ADVANTAGE PERFORMANCE GOAL:**

***If we can have the motor protected with the lowest  
co- efficiency of friction (DLA), maximized heat transfer performance  
while protecting every micron surface space we can find  
Then we have done our job.***

***Simply because close enough or “if we did that one more thing” does not  
count at this level of competition.***



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## **COMPETITION MOTOR OIL WITH DIAMOND LIKE ADDITIVE SPECIAL RACING FORMULATION**

**SynMax has a special product designed for EACH SPECIFIC RACING APPLICATION.**

**SynMax (5W20, 5W30, 15W40, 15W50) has DLA, PolyX & Group V aerospace base oils etc. not found with other racing oil formulations.**

**Provides the ultimate in stability, durability, consistency, reliability and performance.**

**Contact: SynMax Performance Lubricants through Lefthander Chassis (815) 389.9999**

# **AEROMOTIVE RESEARCH**

## ***Aerospace Advantage Engine Preparation Techniques***

**Presentation END**

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