State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct No. P-2008.0101

Final

Acsys, Inc.

Acsys Production Facility

Post Falls, Idaho

Facility ID No. 055-00075

August 19, 2008

CZ

Carole Zundel

Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BACT	Best Available Control Technology
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
EPS	expandable polystyrene
HAP	Hazardous Air Pollutant
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAP	Toxic Air Pollutant
T/yr	tons per year
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

Acsys utilizes a two step process in the manufacture of building panels. The first step converts polystyrene beads into expanded beads through a steam reactor. The raw polystyrene bead is impregnated with pentane by the supplier. These beads typically contain 5-7% pentanè by weight. The expansion process involves exposing the bead to steam at temperatures of around 215° F. This vaporizes the pentane, causing the beads to foam and expand. About 85% of the available pentane is released in the expansion process.

The next step of the process converts these expanded beads into a solid block around a steel structural component through a molding process. The process brings the expanded polystyrene beads into a mold where they are fused together by temperature and pressure using steam. Nearly all of the remaining 15% of the available pentane is released in the molding process.

1.2 Permitting Action and Facility Permitting History

This permit is the initial PTC for this facility.

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

This is an initial permit for the facility.

2.2 Application Chronology

June 3, 2008	DEQ receives PTC application
June 18, 2008	DEQ receives PTC application update
June 19, 2008	DEQ receives PTC application update
June 19, 2008	DEQ receives request for facility draft permit
June 27, 2008	DEQ issues facility draft permit
August 15, 2008	DEQ receives permit processing fee of $5,000.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Emission Unit /ID No.	Emissions Unit Description	Control Device Description
HB-1	Hurst boiler Manufacturer: Hurst Model: S400-80 Capacity: 80 HP and 3.36 MMBtu/hr Date of construction: 2007	None
PM-1	Panel mold Manufacturer: Kornylak Model: M-18 Capacity: 2,000 lb/day Date of construction: 2000	None
PX-1	PS-50 EPS pre-expander Manufacturer: Fangyuan Plastics Machinery Model: PSJ-50 Capacity: 85 kg/hr, 187 lb/hr Date of construction: 2008	None

3.2 Emissions Inventory

The process can operate about 20 hours per day. Four hours are needed for maintenance. Therefore, actual hours of operation will not be 24 hours per day. For permitting purposes, the emissions will be estimated at 24 hours per day because if the process were to operate at that rate, there would not be any National Ambient Air Quality Standards (NAAQS) limitations required, and the IDAPA 58.01.01.585 and 586 levels would not be exceeded. Therefore, there is no need to limit the emissions below continuous operation or require tracking.

The panel mold's design capacity is 2,000 lb/day. The pre-expander capacity is 85 kg/hr or 187 lb/hr. If the emissions are estimated at 24 hours of operation, then the pre-expander capacity would be 187 lb/hr x 24 hr/day = 4488 lb/day. The bottleneck is the molding process.

The molding process can only operate at 1,500 pounds per day because part of the time, maintenance is required. In order to be permitted to operate without being required to track daily hours of operation or daily throughputs, the emission estimates are based on operating at the design capacity of the unit, which is 2,000 lb/day. If this results in an emissions value that is less than the applicable limits, then no throughput or hours of operation limits need to be set, eliminating the need to track these parameters to ensure compliance with unnecessary limits.

Using 2,000 lb/day, 83 lb/hr average, of EPS beads at 7% pentane by weight results in an emissions rate of 5.8 lb/hr of pentane, average. At an operating rate of 8,760 hours per year, the emission rate would be 25.6 T/yr of pentane. The permit application estimated hourly emissions based on an 8-hour day (all daily emissions occurring in eight hours). It was estimated that 85% of the pentane is emitted in the expander process.

The applicant provided boiler emission estimates that were based on values from Foam Molders' permit. The estimates were reduced by 50% because the Acsys boiler is half the size of the Foam Molders boiler.

These values are compared to the emissions as estimated using AP-42 factors for the Acsys boiler's Btu rating to verify the emission estimates in the application.

Table 3.2 Boiler Emission Estimates Comparison

Data Source	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)	Lead (lb/hr)
Application	0.03	0.00	0.30	0.25	0.02	
AP-42	0.03	0.002	0.33	0.28	0.02	9E-06

Example calculation: NO_x 100 lb/mmscf x 3.36 mmBtu/hr x 1 scf/1,020 Btu = 0.33 lb/hr

Table 3.3 shows the annual emission estimates assuming no limitations on operation.

Table 3.3 UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/quarter
Point Sources Affected by this Permitting Action											
Boiler		0.1		0.0		1.3		1.1		0.09	1E-05
Panel Mold		---		---		---		---		3.8	---
Pre-expander		---		---		---		---		21.8	---
Total, Point Sources		0.1		0.0		1.3		1.1		25.7	1E-05

Table 3.4 UNCONTROLLED TAP AND HAP EMISSIONS SUMMARY

TAPs	HAPs	24-hour Average[a]	Annual Average[a]
		lb/hr	lb/hr
Pentane		5.8	

a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
b. NA = not applicable.

3.3 Ambient Air Quality Impact Analysis

Since the NO_2 fraction of NO_x is at most 75%, then NO_2 emissions are at most 0.99 tons/year. This is below the 1 ton/yr modeling threshold. Also, since the modeling thresholds are designed to assure impacts are below significant contribution levels, if facility wide NO_x emissions are 1.3 ton/yr, then impacts will be well below the NAAQS.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is located in Kootenai County which is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_X, and Ozone. Reference 40 CFR 81.313.

4.2 Permit to Construct (IDAPA 58.01.01.201)

A permit to construct is required because a limit is required on pentane emissions to maintain levels at

or below the IDAPA 58.01.01.585 level and to document equipment and capacities that demonstrate that the source is a minor source for VOC.

4.3 NSPS Applicability (40 CFR 60)

The boiler is rated at 3.36 MMBtu/hr, which is less than the applicability level of 10 MMBtu/hr for Subpart Dc.

4.4 NESHAP Applicability (40 CFR 61)

There are no requirements in this section that apply to this facility.

4.5 MACT Applicability (40 CFR 63)

Because the EPS beads are used but not manufactured at Acsys, Inc., 40 CFR 63 Subpart JJJ does not apply.

4.6 Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

New Permit Condition

Opacity Limit

Emissions from the boiler stack, or any other stack, vent, or functionally equivalent opening associated with the boiler, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625. Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

New Permit Condition

The pentane emissions were estimated based on a maximum content of 7% by weight, and pentane is a toxic air pollutant (TAP) that has been demonstrated, at maximum capacity, to not exceed the increment specified in IDAPA 58.01.01.585.

Pentane Limit

No EPS beads shall be used that contain pentane in excess of 7% by weight.

New Permit Condition

The emission estimates were done based on natural gas usage, which showed compliance with the NAAQS, so a requirement is written in the permit to use only natural gas.

Fuel Use Requirement

The boiler shall be fired on natural gas only.

New Permit Condition

To monitor compliance with the 7% pentane limit, a permit condition was written to demonstrate that all EPS beads used will have pentane content no greater than 7%. The percent documentation should come

from the manufacturer and be a tested value or otherwise demonstrate that the value has been checked or assured.

Pentane Monitoring

The permittee shall maintain receipts of all deliveries of EPS beads made to the facility. The receipts shall state the actual weight percentage of pentane contained within the EPS beads. In addition, the receipts shall state the method(s) used to determine the weight percent of pentane contained within the EPS beads. These records shall be maintained on site for a minimum of five years and be made available to DEQ representatives upon request.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $5,000.00 because its permitted emissions are 28.2 tons per year, which is between 10 and 100 tons per year. Refer to the chronology for fee receipt dates.

Table 5.1 PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	1.3	0	1.3
SO_2	0.0	0	0.0
CO	1.1	0	1.1
PM_{10}	0.1	0	0.1
VOC	25.7	0	25.7
HAPS	0.0	0	0.0
Total:	28.2	0	**28.2**
Fee Due	**$ 5,000.00**		

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from June 17, 2008 to July 1, 2008 in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no request for a public comment period on DEQ's proposed action.

Appendix A – AIRS Information

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Permittee/FacilityName: Acsys, Inc.
Facility Location: 708 S. Clearwater Loop Suite 104, Post Falls
AIRS Number: 055-00075

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	B							U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B							
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).