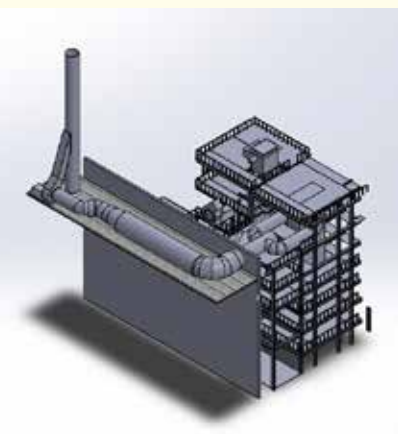
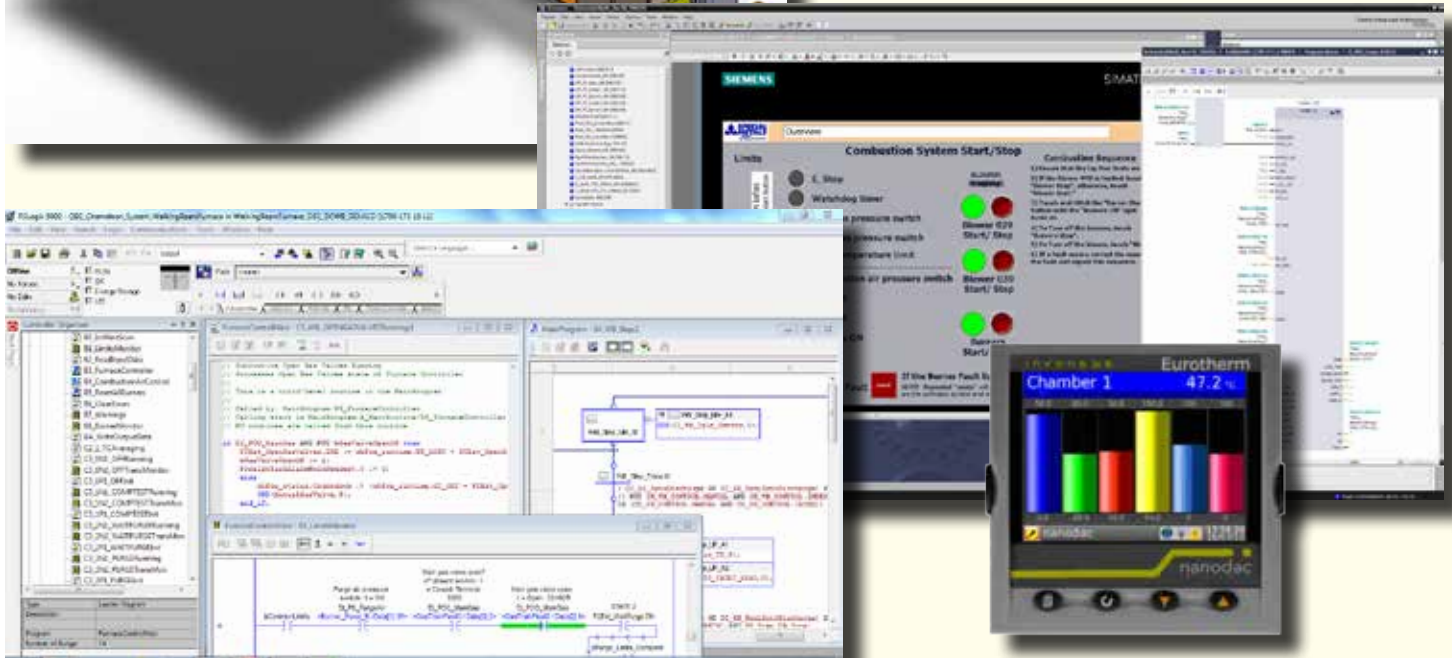
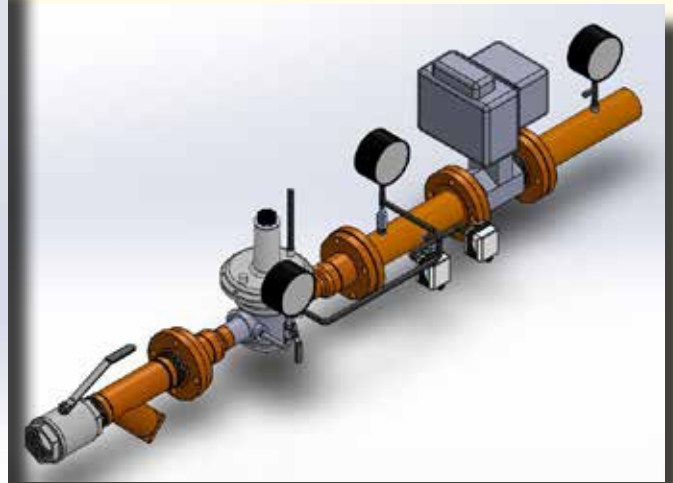
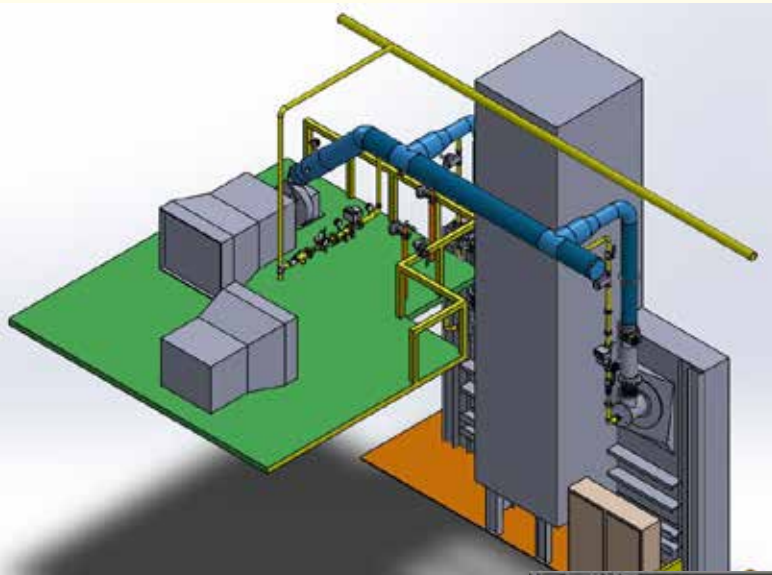


Ignite Possibilities

The Olsträd Engineering Advantage



Theory, design, planning, implementation, execution, commission, service, and training. Olsträd provides turnkey solutions or just the services you need. We have experience working on-site with other contractors, as well as starting and finishing a project as the sole contractor. We work from our office or on-site, or both, as appropriate.

Because we're an engineering company, we can save you money, produce optimum results, provide multi-discipline coordination, and we can explain complex projects and help justify them.

We have built our reputation on our range and degree of engineering expertise, our commitment to quality, flexibility, and customer service.

We Have Extensive Experience In The Following Industries

Metals (ferrous and non-ferrous)
 Automotive
 Ceramics
 Textiles
 Wood
 Paper
 Food Processing
 Steel Reheat
 Refractory

Industrial Automation & Control
 Aluminum
 Copper
 Steel
 Heat Treating
 Brick
 White-ware
 Thermal Oxidizer & Incineration
 Forging/Casting

Bernoulli's Equation, if P1 and P2 lie on

$$P + 1/2 \cdot \rho \cdot V^2 + \rho \cdot G \cdot h = \text{Constant, Units are}$$

Applied Here at a constant head, at two points
 $(V_{\text{pitot}}^2 - V_{\text{static}}^2) + \rho \cdot G \cdot (h - h) = \text{Constant}$

Rearranging and multiplying Rho by 1/2

$$P_{\text{pitot}} - P_{\text{static}} = 1/2 \rho V^2$$

$$V_{\text{static}} = 0, \text{ so } V = \sqrt{2(P_{\text{pitot}} - P_{\text{static}}) / \rho}$$

mass flow rate through each section was calculated. A sample calculation for the zone 3 blower is included below:

$$3155 \frac{\text{Nm}^3}{\text{hour}} = 111,417.88 \text{ SCFH}$$

The volume expansion ratio for 122 °F is 1.115

$$111,417.88 \cdot 1.115 = 124,231 \text{ ACFH}$$

$$\rho_2 = 0.0686 \text{ lb/ft}^3$$

$$\dot{m}_2 = \rho_2 \cdot \text{ACFH} = 8,522 \frac{\text{lb}}{\text{hour}}$$

Location	
1	
2	
3	
4	
5	
6	
7	Exh

Final Results		
Energy Requirements (BTU/hr)	Energy Radiated to Strip by Muffle at 1000F (BTU/hr)	Length of Zone
275,608.26	474,212.98	10
56,601.64	230,471.98	5
59,455.50	204,893.72	5
391,665.40	909,578.68	20

... unavailable so burner responded to burners at of 1000° C. The spread- was calculated at 7.2% ... were corrected to 3% to conditions of 273.15 K

est Data: March 5, 201...
 how much effluent can th...
 much fuel-->
 eat from this pre-heat
 emp -->

leClerc Emissions Analysis

Dryer Data		Other Data	
EPA Corrected Flow Rate	1605.3 SCFH @ 300	M _{CO}	28.97 g/mol
Metric Flow Rate	34967.800 SCFH @ 300	EPA Temperature	0 C
Operating hours	423.558 hr/yr	Ideal Gas Constant R	0.08205 m ³ ·atm/mol·K
	5280 hr/yr	Molar Volume	22.41 m ³ /mol
Burner Manufacturer NO _x Data		Measured CO Stack Data	
M _{NOx}	48 mg/m ³	M _{CO}	28
PPMV	320	PPMV	45
Percent O ₂	5 %	Percent O ₂	7.2 %
T	273.15 K	T	385.094 K

Equations
 EPA correction of mg/m³ = ppmv * [(molecular weight (M)/molar volume)]
 ppmv = [(mg/m³) * (M)] / M

NO_x Calculations
 1) First the NO_x ppmv was calculated based on a temperature of 1000C (273.15K) and 3% O₂.
 2) It was then corrected to 3% O₂.
 3) Next the mg/m³ value was corrected to 273.15 K and 301.325 kPa as required by the EPA.
 4) The g/hour was calculated and converted to pounds per hour.
 5) Finally pounds per year based on 5280 running hours per year.

1	PPMV NO _x at 3% O ₂	272.509
2	PPMV NO _x at 5% O ₂	307.224
3	EPA corrected mg/m ³	630.625

698 Preheat Temp F
 768F at 24.5 Hz

Expect Excellence

