AUTOGENERATED-347
CPOB

SUMMARY OF RESEARCH ACTIVITIES AT THE

CANADIAN COMBUSTION RESEARCH LABORATORY (CCRL)

ENERGY RESEARCH LABORATORIES

BELLS CORNERS COMPLEX

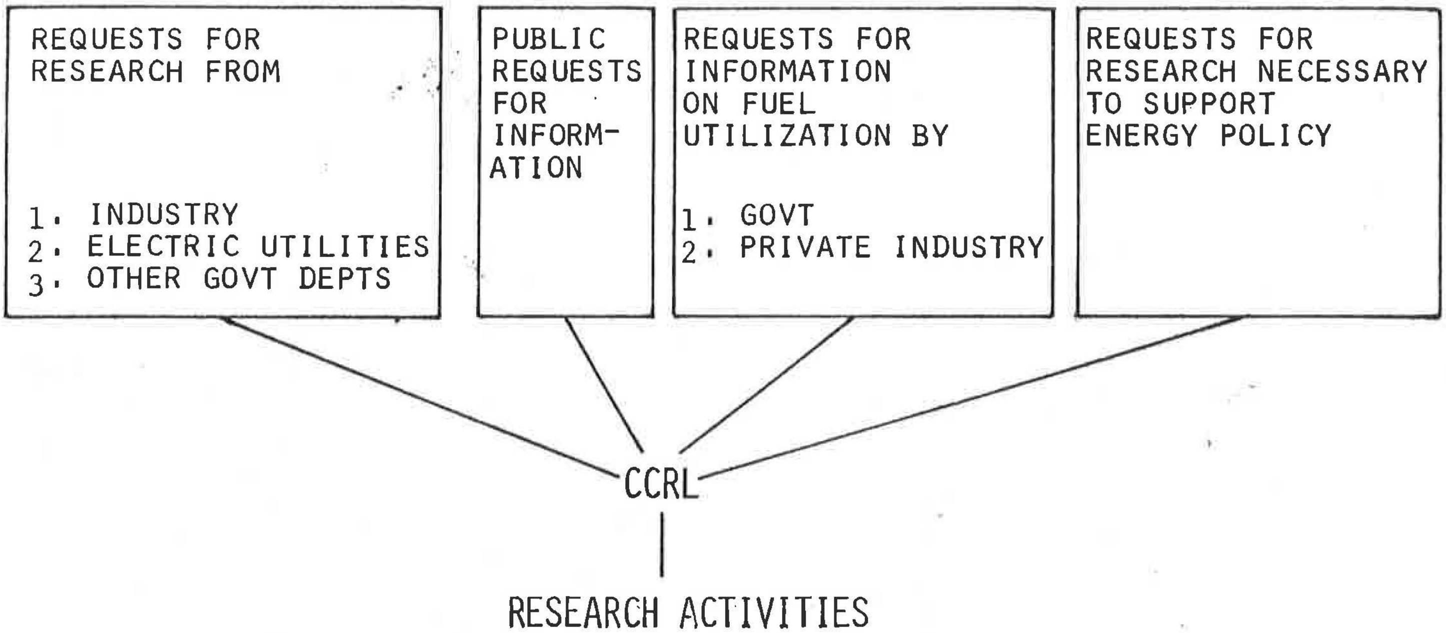
Compiled for

VISIT BY MEMBERS OF PARLIAMENT

JUNE 25, 1980

CPUB

AUTOGENERATED-377
CPUB



CONVENTIONAL COAL COMBUSTION

- SUBSTITUTE COAL FOR OIL IN ELECTRICITY GENERATION
- COMBUSTION CHARACTERISTICS OF NEW COALS
- CONTROL OF AIR POLLUTION FROM LARGE COMBUSTION SYSTEMS
- POLLUTANT DISPERSION IN THE ATMOSPHERE

CONSERVATION AND RENEWABLE ENERGY

- CONSERVATION OF FUEL IN HOME HEATING SYSTEMS
- AUTOMOBILE FUEL EFFICIENCY UNDER CANADIAN CONDITIONS
- PERFORMANCE OF WOOD STOVES AND FURNACES

EMERGING ENERGY TECHNOLOGY

- FLUIDIZED BED COMBUSTION TECHNOLOGY FOR LOW-GRADE FUELS

CANMET LIBRARY
3 2329 00060624 9
CPUB

CONVENTIONAL COMBUSTION RESEARCH

Current conventional combustion activities at the Canadian Combustion Research Laboratory (CCRL) reflect the increasingly important contribution that coal is expected to make in meeting our future energy requirements and in reducing our dependence on foreign oil. Canadian thermal coal production, which increased from about 10 million t in 1974 to about 18 million t in 1978, will likely reach 50 to 60 million t by 1990. This escalating demand for coal will, however, be heavily dependent on the ability of conventional and emerging combustion systems to cope with disruptive conflicts caused by variations in fuel quality, on requirements for better equipment availability and on the implementation of progressively more stringent environmental constraints.

EMR is optimistic that these problems can be resolved and has embarked on a systematic sequence of R & D and D initiatives to stimulate the utilization and competitiveness of thermal coal in both domestic and export markets. Technology support for these initiatives is provided by CCRL, through a number of complementary in-house projects and external contracts, considered to have short- to intermediate-term benefits to industry and society.

Many of these in-house projects, particularly those on pulverized coal are jointly funded by industry with active participation of industry in the research program.

External contracts and shared-cost projects are an important adjunct to the CCRL in-house effort on coal combustion because research data can be more effectively transferred to industry and because the commercialization of improved and novel combustion systems can be accelerated significantly.

The objectives of the CCRL conventional combustion group are as follows:

1. To develop new or improved techniques for efficiently utilizing pulverized coal and renewable fuels as a substitute for oil in industrial processes.
2. To define and optimize the combustion performance of low-grade coals from new mines or waste materials in pulverized-fired combustion systems.

3. To promote the development, and where feasible, the implementation of coal-oil mixtures (COM) as a partial substitute for oil in existing oil-fired equipment.

4. To conserve the use of fuel oil through operational and design modifications to industrial combustion systems.

5. To keep abreast of domestic and foreign combustion R & D and where appropriate, to participate in joint R & D and D projects relevant to Canadian needs.

In order to meet these objectives we have two pieces of research equipment that compliment each other. The pilot-scale research boiler was commissioned in 1963 and enables us to study combustion of fuels such as oil, coal and gas under utility boiler conditions. The research-tunnel furnace commissioned in 1969 simulates kiln or reheating furnace applications by having a refractory lining which influences flame stability. In addition the tunnel furnace has a longitudinal access slot for flame probes, enabling detailed flame studies to be made.

Pilot-scale Research Boiler

The pilot-scale research boiler, has been heavily utilized by the power utility industry, boiler manufacturers and coal producers since its installation at CCRL. The furnace chamber operates at pressures of up to 25 cm WC and at the design firing rate of 100 kg of bituminous coal or 200 kg of lignite per hour, the boiler generates 730 kg steam per hour at 6.8 atmospheres. In addition to normal ancillary equipment such as a coal bunker, forced draft fan and an air preheater, the facility incorporates a pulverizer with an infinitely variable classifier, a coal dryer capable of reducing fuel moisture from 50% to 1%, a simulated superheater for fouling and corrosion evaluations and an experimental, 3-stage precipitator for studies of fly ash abatement.

This pilot-scale boiler, which can be controlled to closely duplicate full-scale combustion conditions, is an extremely valuable research tool because experimental procedures can be easily and rapidly modified to suit special requirements. Another advantage of pilot-scale burns is that definitive trends can be obtained from relatively small coal samples at reasonable cost.

During the past few years, emphasis has been placed on expanding the resource base for Canadian thermal coal by evaluating the grinding, combustion, slagging, fouling and emission characteristics of coals and coal blends that have not previously been burned in large steam generators. The wide scope and potential application of these evaluations is illustrated as follows:

1. Improvements in the burning properties of a high clay content, sub-bituminous coal, which had been water washed to reduce its ash content from 52% to 18%.

2. Reduction of sulphur dioxide emissions by limestone addition to a westerm Canadian lignite.

3. Control of nitrogen oxide emissions from lignites by low excess air combustion and flue gas recirculation.

4. Assessment of flue gas conditioning agents to improve the fly ash collection from low sulphur coals in utility boilers.

5. Coal blending to improve slagging and fouling tendencies in utility boilers.

Flame Research Tunnel Furnace

Most of the work on the characterization of flame properties during the combustion of pulverized coal, is carried out in a 1 m diam x 4.25m long, cylindrical tunnel furnace. This unique furnace, which consists of 28 parallel-connected, heat-absorbing sections, is a very versatile research facility for parameteric studies of: flame aerodynamics burner geometry, flame radiation and convection, pollutant formation in flames, coal reactivity, axial heat flux distribution and optimizing burner performance.

Three recent studies in this furnace have been:

1. Substituting beneficiated anthracite fines for low Btu gas in a rotary drier for coking coal.

2. Utilizing a bituminous coal of unknown combustion properties for No. 6 fuel oil in cement kilns.

3. Optimizing the steam consumption of a No. 6 fuel oil burner on behalf of the Canadian Iron and Steel Industry.

In addition, CCRL is involved in coal-oil mixture contracts which are 50:50 cost shared with industry. These fall into two main categories

1) Demonstration projects and 2) R & D support.

Under demonstration projects we have a utility boiler program, a blast furnace program and a COM preparation program. The utility boiler program has been ongoing at Chatham, New Brunswick in collaboration with New Brunswick Power since 1977. A small 10 MW(e) boiler is being used to evaluate the feasibility of firing COM in utility boilers. The coal-oil mixture preparation process, since 1978, has included coal beneficiation to remove the abrasive coal ash which causes undersirable equipment wear. It is expected this program may lead to a 100 MW(e) demonstration in the maritimes.

The blast furnace demonstration program is to study blast furnace injection of COM to improve yield. A series of COM combustion trials were conducted in a simulated tuyere and the optimum COM determined. It is expected this work will lead to a full scale demonstration on a blast furnace if the economics prove acceptable.

The COM preparation program is to demonstrate the feasibility of preparing acceptable COM for marketing purposes in the maritimes and central Canada. In this program a Nova Scotia group has obtained the Canadian rights to a proprietary US process for manufacturing a stable COM from local coals. The project, which is being jointly funded by the Nova Scotia and federal governments, comprises a laboratory development phase leading to the design and construction of a pilot-plant COM manufacturing facility. In the later phases of the project, experimental combustion and field demonstration trials are proposed in order to show the commercial viability of COM as a fuel.

The R & D support program consists of the following three phases:

1) Rheology
   To study three western coals (lignite, sub-bituminous and bituminous refuse) mixed with No. 2 or No. 6 fuel oil. The determination of their physical properties will enable transfer pipelines to combustion systems and gasification plants to be designed.

2) Combustion
   Pilot-scale combustion trials have been conducted since 1978 as a contribution of work begun at CCRL in 1970. Three COM fuels were burned in a conventional burner and a high intensity burner and the influence of emulsified water in fuel-oil was investigated.

3) Preparation

This program was designed to prepare a COM from raw and beneficiated NS coal. It is being financed under an NSERC program for application in industrial boilers with minimal retrofitting.

A second program involves the orbital grinding of both coal and oil in a novel development known as the Szego mill. The pilot-scale work, scheduled for completion in 1980, is expected to show a significant reduction in the costs of producing superfine COM dispersions and to provide scale-up information for designing a 1-3 t/h prototype mill and a 10-30 t demonstration mill.

To recap- the conventional combustion group is involved in a variety of activities largely aimed at improving the use of coal in Canada. We have scheduled in this fiscal year 10 coals for study and one oil conservation program. This represents $550 K of which industry will contribute $370 K.

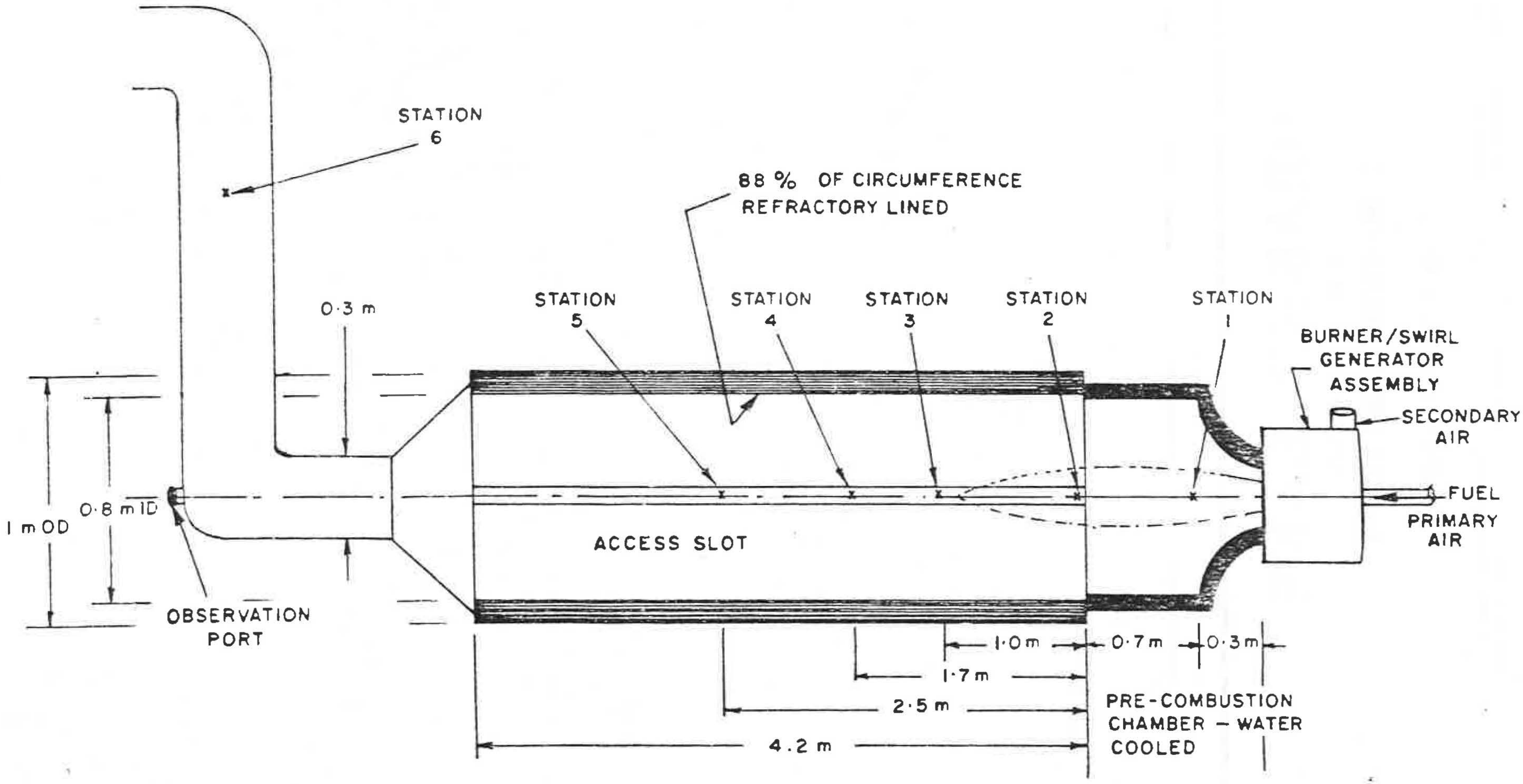


Figure 1. Schematic view of the CCRL Flame Tunnel Furnace.

IMPROVING RESIDENTIAL HEATING EFFICIENCY

SINCE 1971, CCRL HAS BEEN CONDUCTING DETAILED STUDIES ON DOMESTIC HEATING SYSTEMS. INITIALLY TRIALS WERE CONDUCTED IN THE LABORATORY FOR THE OIL HEATING ASSOCIATION OF CANADA, COMPRISING ALL THE MAJOR OIL COMPANIES, TO EXAMINE THE PERFORMANCE OF EXISTING EQUIPMENT, RECOMMEND NEW DESIGNS AND TO MODIFY CODES TO REFLECT CHANGING CONDITIONS. WORK HAS ALSO BEEN CARRIED OUT FOR DIFFERENT MANUFACTURERS, INDIVIDUAL OIL COMPANIES AND USERS.

LABORATORY RESULTS HAVE BEEN COMPLEMENTED BY FIELD TRIALS IN A SERIES OF INSTRUMENTED HOMES IN THE OTTAWA AREA, WHERE THE EFFECTS OF VARIOUS ENERGY CONSERVATION STRATEGIES WERE MEASURED UNDER REAL-LIFE CONDITIONS.

IN PARTICULAR, THE EFFECTS OF THERMOSTAT CUTBACK, REDUCED FIRING RATE, INSTALLATION OF A POSITIVE CHIMNEY DAMPER AND IMPROVEMENTS IN BURNER PERFORMANCE WERE QUANTIFIED. THESE RESULTS SHOWED THAT IMPROVEMENTS IN DOMESTIC HEATING SYSTEM EFFICIENCY OFFERED PROMISE OF LARGE FUEL SAVINGS.

CONSUMER INFORMATION HAS BEEN SUBSTANTIAL, THROUGH THE WRITING OF THE BILLPAYER'S GUIDE TO FURNACE SERVICING.

A RETROFIT PACKAGE FOR EXISTING OIL FURNACES HAS BEEN DEVELOPED, OFFERING FUEL SAVINGS IN THE ORDER OF 20%. IN COOPERATION WITH THE MAJOR OIL COMPANIES AND THE PROVINCES, 7 TWO-DAY SEMINARS WERE CONDUCTED BY CCRL ACROSS CANADA LAST YEAR TO HELP INDUSTRY AND GOVERNMENTS TO SET UP TRAIN NG COURSES FOR SERVICEMEN IN IMPROVING THE EFFICIENCY OF EXISTING DOMESTIC HEATING SYSTEMS, INCLUDING THE RETROFIT PACKAGE. TO COMPLEMENT THESE COURSES CCRL HAS PRODUCED AN EFFICIENCY MANUAL.

ONGOING WORK INCLUDES THE DEVELOPMENT OF A COMPARABLE RETROFIT PACKAGE FOR NATURAL GAS FURNACES, THE DETERMINATION OF THE SUITABILITY AND POTENTIAL FUEL SAVINGS OF ADVANCED GAS FURNACES AND BOILERS FOR CANADA, AND THE DEVELOPMENT OF LOW AND MODULATING FIRING RATE FURNACES TO IMPROVE OVERALL EFFICIENCY.

THE POTENTIAL FUEL SAVINGS FROM ELIMINATION OF THE BAROMETRIC DAMPER AND ITS LARGE AIR REQUIREMENTS ARE ALSO BEING STUDIED, AS IS THE EFFECT OF CONTROLLING CIRCULATING WATER TEMPERATURE TO OUTSIDE TEMPERATURE FOR HOT WATER HEATING SYSTEMS.

OIL FURNACE RETROFIT PACKAGE

- RETENTION HEAD - TO IMPROVE BURNER PERFORMANCE, COUPLED WITH

  REDUCED FIRING RATE - TO BRING THE EXISTING OVERSIZED FURNACES IN TUNE WITH HOME HEAT REQUIREMENTS, AND

- DELAYED ACTION SOLENOID VALVE - TO ELIMINATE MOST OF THE SOOTING AND RESULTANT PERFORMANCE DEGRADATION.

EFFECTIVENESS OF OIL HEATING CONSERVATION STRATEGIES

Technique	% Fuel Saving	Estimated Cost
Improved Burner Performance RETENTION HEAD KIT	10 - 20	$100 - $200
Reduced Firing Rate SMALLER NOZZLE	5 - 10	0 - $1
Reduced Off-Cycle Loss CHIMNEY DAMPER	2 - 9	$300
RETENTION HEAD and SMALLER NOZZLE	15 - 25	$100 - $200

Energy, Mines and Resources Canada   Energie, Mines et Ressources Canada

EFFICIENT RESIDENTIAL OIL-HEATING SYSTEMS

A Manual for Servicemen, Designers and Builders

Report EI 79-8

A.C.S. Hayden
R.W. Braaten

Canadian Combustion Research Laboratory
Canada Centre for Mineral and Energy Technology

WOOD STOVE PERFORMANCE

CCRL IS DEVELOPING A TECHNIQUE TO MEASURE THE PERFORMANCE OF WOOD-FIRED SPACE HEATERS, COMMONLY KNOWN AS WOOD STOVES. THIS TECHNIQUE CAN THEN BE USED BY OTHER AGENCIES SUCH AS CSA OR THE CONSUMER'S ASSOCIATION OF CANADA TO CERTIFY AND/OR COMPARE DIFFERENT APPLIANCES.

AT THE SAME TIME, INSTALLATION AND OPERATING GUIDELINES FOR STOVES HAVE BEEN DEVELOPED, TO INSURE SAFE AND EFFICIENT OPERATION, AND TO MODIFY CSA AND ULC CODES.

DIFFERENT STOVE DESIGNS, FROM THE SIMPLE FREESTANDING FIREPLACE TO THE SOPHISTICATED SIDEDRAFT HAVE BEEN EVALUATED AND DESIGN RECOMMENDATIONS GIVEN TO MANUFACTURERS AND TO CONSUMERS.

AS WELL AS BEING EVALUATED IN THE LAB, STOVES HAVE BEEN INSTALLED IN INSTRUMENTED TEST HOMES IN THE OTTAWA AREA, TO MEASURE THEIR REAL EFFECT ON CONVENTIONAL FUEL CONSUMPTION. IN THIS TRIAL, THE BEST DESIGN, THE SIDEDRAFT, SHOWED A SEASONAL EFFICIENCY HIGHER THAN A CONVENTIONAL OIL OR GAS FURNACE, INDICATING HIGH POTENTIAL AS AN IMPORTANT ENERGY CONSERVATION DEVICE.

CLOSE COOPERATION IS MAINTAINED AT ALL TIMES WITH THE INDUSTRY, PRIMARILY THROUGH THE CANADIAN WOOD ENERGY INSTITUTE, TO PRESENT TEST RESULTS, ENCOURAGE IMPROVED DESIGN AND TO DEVELOP TRAINING PROGRAMS FOR RETAILERS, INSTALLERS AND CONSUMERS.

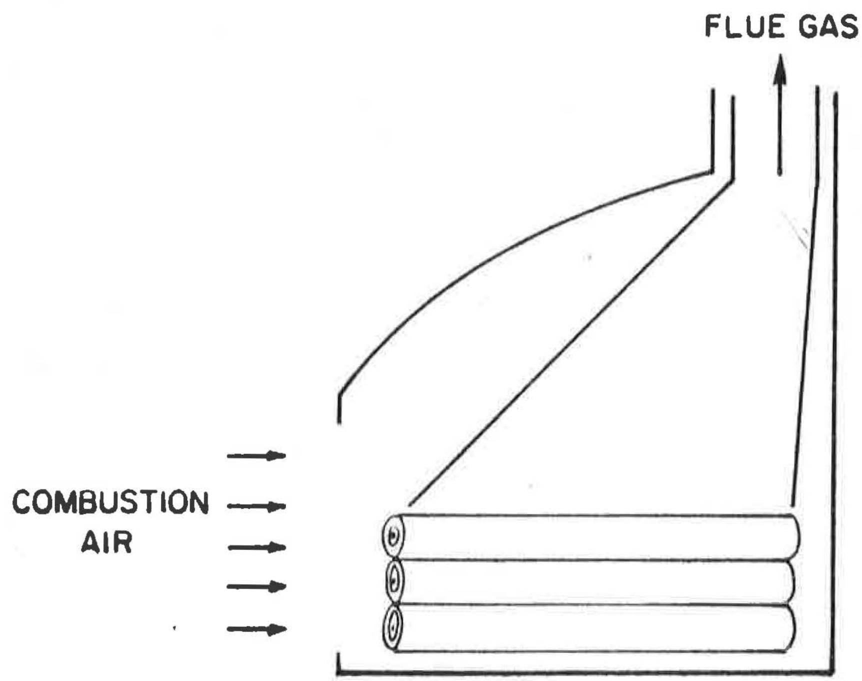


Figure 1. Schematic of freestanding fireplace.

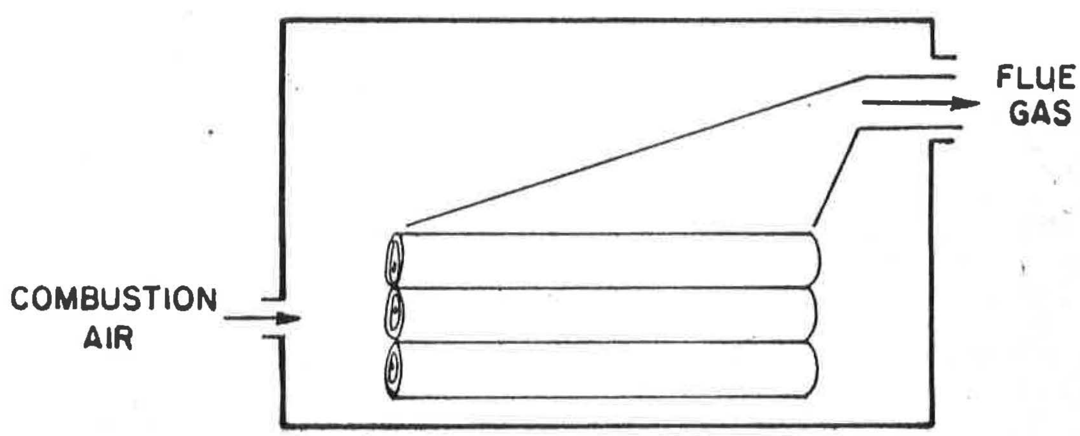


Figure 2. Schematic of airtight updraft (box) stove.

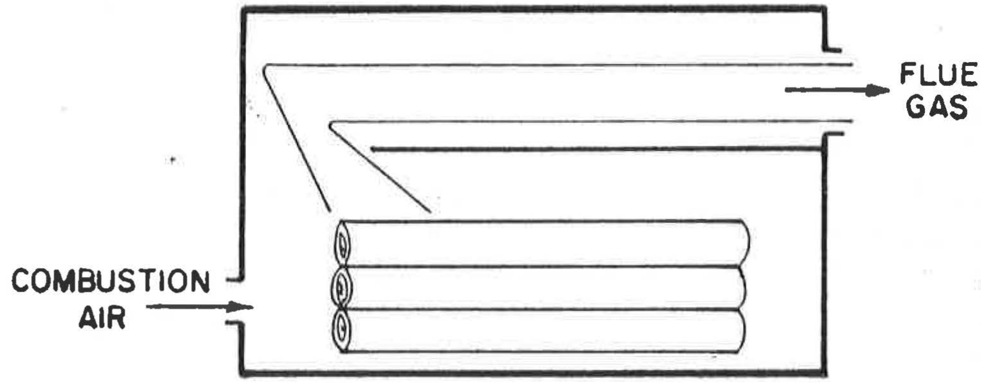


Figure 3. Schematic of airtight horizontal baffle stove.

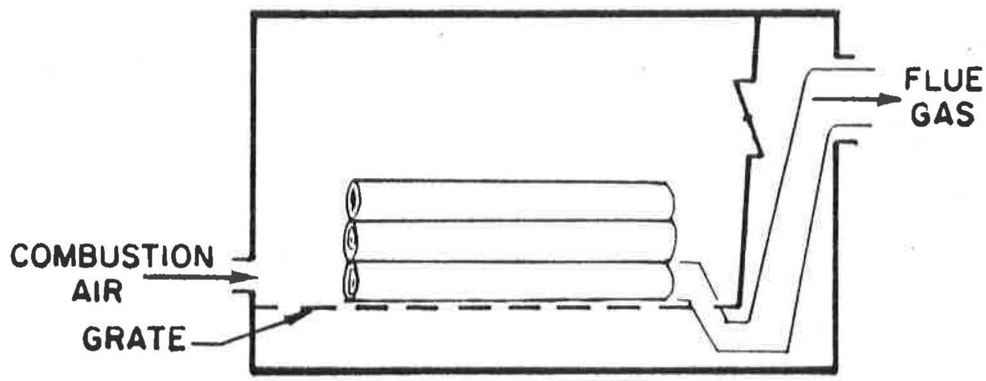


Figure 4. Schematic of airtight downdraft stove.

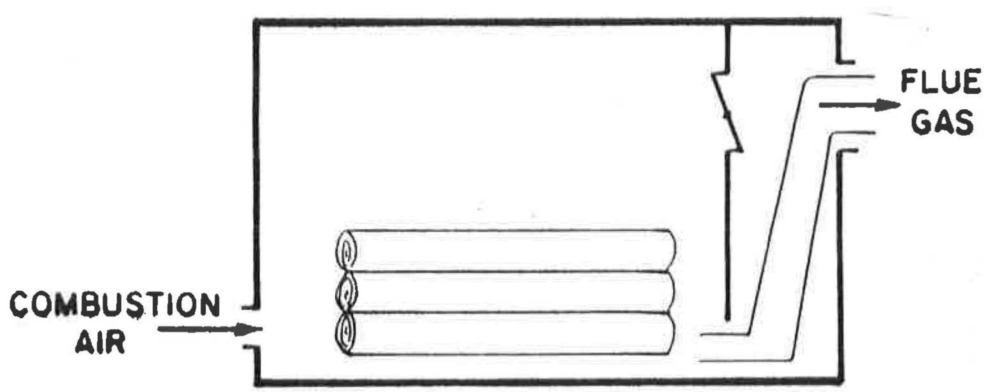


Figure 5. Schematic of airtight sidedraft stove.

SUMMARY - WOODSTOVES

1. Well-Designed Sidedraft Stoves Have Greater Potential For High Efficiency And Low Emissions Than Other Types Of Airtight Stoves Presently Available.
2. Next To The Sidedraft, A Good Horizontal Baffle Stove Appears To Offer The Best Overall Performance.
3. The Available Downdraft Stove Offers Little Overall Performance Advantages Over The Poor Performing Updraft.
4. Fireplaces Are Very Inefficient And Can Have High Emissions Per Unit Heat Output.
5. Performance Of A Specific Stove Model Depends On How The Design Utilizes The Potential Performance Advantages Of Its Type.
6. Well-Designed And Well-Constructed Airtight Or Combi-Fire Wood Stoves Of The Sidedraft Or Horizontal Baffle Type Can Be An Effective Complement To An Existing Heating System, Reducing The Demand For Premium Fuels.

AUTOMOBILE FUEL ECONOMY

STANDARD REPORTING OF AUTOMOBILE FUEL ECONOMY IN NORTH AMERICA IS FOR TESTS DONE ON A CHASSIS DYNAMOMETER BETWEEN 20°C AND 30°C (68°F-86°F).

IN CANADA, TEMPERATURES ARE LOWER THAN THIS OVER MOST OF THE YEAR - SIGNIFICANTLY LOWER.

AMBIENT TEMPERATURE HAS A LARGE EFFECT ON AUTOMOBILE FUEL ECONOMY, PARTICULARLY ON CARS WITH ENGINE TECHNOLOGY NOT OPTIMALLY SUITED TO CANADIAN CONDITIONS.

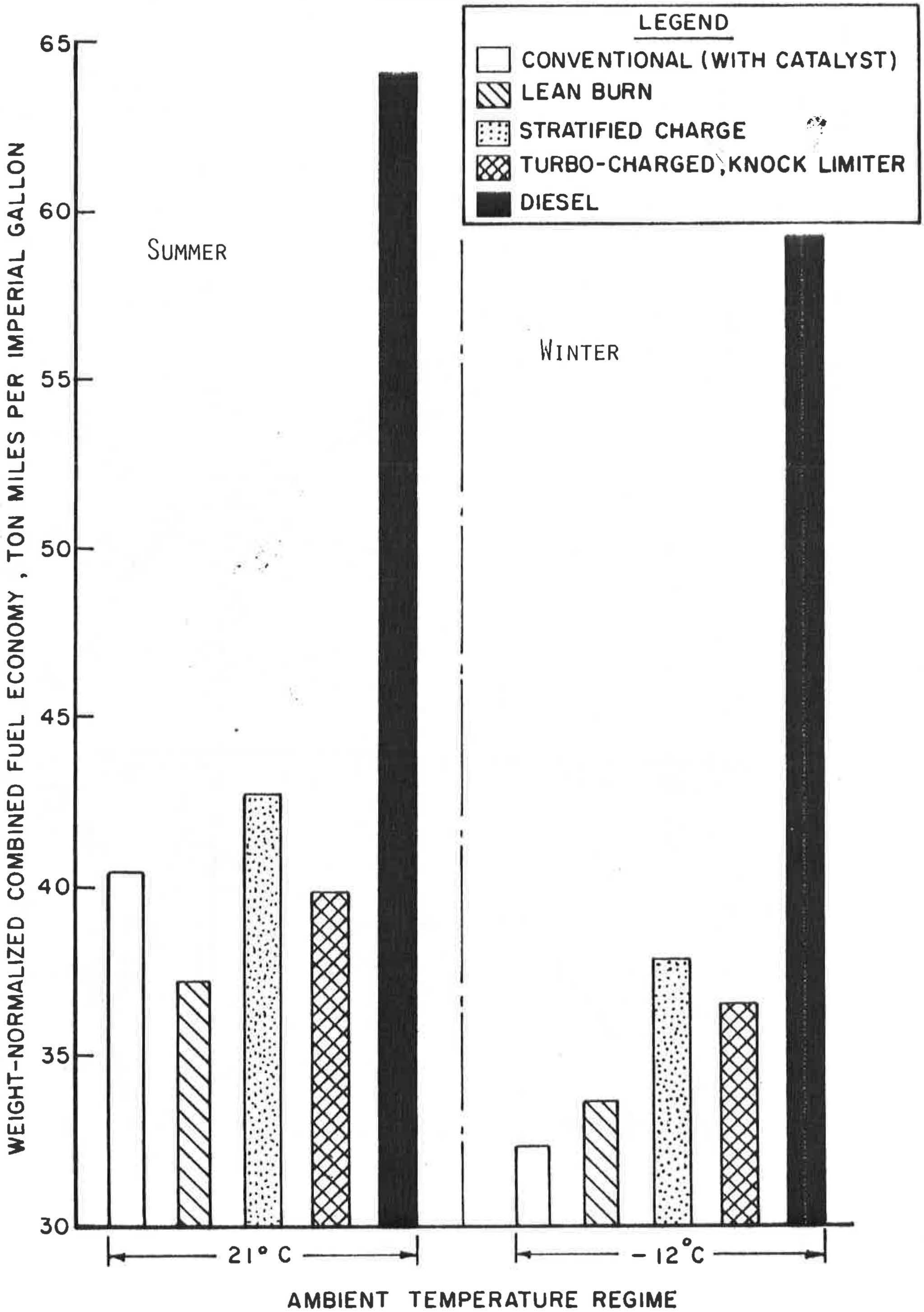
CCRL HAS HAD AN ONGOING PROGRAM TO EVALUATE THE PERFORMANCE OF AUTOMOBILES WITH ADVANCED ENGINE TECHNOLOGY UNDER CANADIAN CLIMATIC CONDITIONS.

UNDER THIS PROGRAM, THE OAKVILLE RESEARCH CENTRE OF SHELL CANADA LIMITED HAS RECEIVED A SERIES OF CONTRACTS TO ACCURATELY MEASURE TEMPERATURE EFFECTS ON FUEL ECONOMY UNDER CLOSELY-CONTROLLED COLD ROOM CONDITIONS, FOR VARIOUS TECHNOLOGIES.

RESULTS FROM THESE TRIALS SHOW THAT DIESEL, STRATIFIED CHARGE, LEAN BURN AND TURBO-CHARGED KNOCK-LIMITED ENGINES SHOW LESS DEGRADATION IN FUEL ECONOMY AND EMISSIONS WITH LOWER TEMPERATURES THAN DO CONVENTIONALLY-CARBURETED CATALYST-EQUIPPED ENGINES.

IN PARTICULAR, THE NEW HIGH SPEED DIESELS OFFER LARGE BENEFITS IN FUEL ECONOMY AND EMISSIONS FOR CANADIAN CONDITIONS.

EFFECT OF ENGINE TECHNOLOGY ON AUTOMOBILE FUEL ECONOMY



SUMMARY - CCRL AUTOMOBILE TRIALS

DIESEL

- Large Fuel Economy Advantage.
- Advantage Increases As Temperature Decreases.
- No Drivability Problems In Cold Weather.
- Meets Canadian Emissions Standards At All Temperatures.

STRATIFIED CHARGE

- Similar But Much Less Dramatic Effects Than The Diesel.

LEAN BURN

- Disadvantage In Summer Fuel Economy Is Reversed As Temperature Decreases.
- For Canada, Compression Ratio Might Be Increased And Leaded Gasoline Used To Give Additional Energy System Saving.

TURBO-CHARGED WITH KNOCK LIMITER

- Offers Equal Or better Fuel Eocnomy And Lower Emissions Than Conventional Counterpart Over Canadian Temperatures.

CONVENTIONAL CARBURETION WITH CATALYST

- This Technology Does Not Seem Particularly Suited To Canadian Conditions, Resulting In The Wide Discrepancy Between Published And Actual In-Use Fuel Economy Figures.

FLUIDIZED BED COMBUSTION

Of the various new energy technologies now emerging, fluidized-bed combustion (FBC) is one of the most promising, both in terms of nearness of commercial application and in terms of long range benefits. CANMET, through CCRL, has an active program aimed at applying FBC technology to Canadian needs as quickly as possible. Pilot-scale R & D is carried out in-house and through contracts. EMR is also funding some full scale demonstration programs.

How FBC Works

In its simplest form a fluidized bed combustor consists of a bed of sand brought to a boiling motion by means of air bubbles blown up through it. When the bed is preheated to a temperature sufficient for ignition, fuel is introduced and burns rapidly because of the excellent mixing. Because the fuel is greatly diluted by the bed material it is easy to control temperatures at 800-900°C well below those experienced in conventional combustion systems (1200°C). This has advantages which will be explained later.

Simple combustors of this type have been used commercially for some years to incinerate materials such as wood waste, sewage sludge and cereal wastes. Heat can be recovered from the combustion gases exhausted from the bed. For fuels such as coal more sophisticated combustors are required and these are now in the demonstration stage.

Advantages of FBC

The major advantage of FBC is its ability to burn low-grade fuels with minimal pollutant emission. Thus, it provides a major means of replacing oil with coal. In addition to the waste materials already mentioned, low grade fuels may be coal, coal preparation wastes, or tar sands coke with combinations of high sulphur content, high ash content, high moisture content and unreactive carbon constituents.

For example, eastern Canadian coals commonly have a high sulphur content. By feeding limestone into the bed with the coal, SO_2 emissions to the atmosphere can be reduced by as much as 90%. In addition, because combustion in an FBC takes place at relatively low temperatures, emissions of NO_x and heavy metals are substantially reduced. SO_2 and NO_x are the major causes of acid rain.

Many western Canadian coals have combinations of high moisture and low reactivity. By coping with these difficult properties, FBC technology can substantially broaden our energy resource base. For example, the western Canadian coal industry presently produces about 7 million tons per year of coal washery rejects which cannot be utilized with conventional technology. However, FBC technology may provide the means whereby these rejects can be used as fuel for electricity generation.

More sophisticated FBC systems operating at high pressure offer the possibility of more efficient coal-to-electricity cycles. They are still under development and may reach the demonstration stage in about ten years.

The CCRL Pilot-Scale R & D Program for FBC

Pilot-scale R & D is the most economical way to minimize the financial risk of implementing a new technology. CCRL has been operating a small FBC for about three years, generating information which will help designers of full-scale equipment. Some of the work has been carried out for industrial coal suppliers on a cost-recovery basis. A somewhat larger and much more versatile apparatus has just been fabricated and is ready for installation.

CANMET is also sponsoring the installation of a similar pilot-scale FBC at Queen's University. It will be used primarily for sulphur neutralization studies. Other studies related to metallurigcal aspects of FBC are presently contracted out to BC Research and a west coast consulting firm.

Thus, CCRL carries out pilot-scale R & D in three ways; in-house, contract work carried out for industry, and contracts let to other agencies.

The EMR Demonstration Program for FBC

For FBC technology to benefit the Canadian energy picture it is essential that Canadian agencies use it and Canadian manufacturers supply it. EMR has decided to accelerate this technology transfer by assuming a substantial portion of the financial risk for a fully-selected series of full-scale demonstration projects. The following five projects are presently under way, some still at the conceptual stage, and might involve expenditures of about $250 million over the next five to ten years. All of these projects are monitored by CANMET.

1. Central Heating Plant Boiler - CFB Summerside

EMR and DND have agreed to co-sponsor the demonstration of FBC boilers to provide heating for CFB Summerside. The main fuel will be a high-sulphur Cape Breton coal, with supplementary firing of wood chips. Two Canadian boiler manufacturers are presently preparing detailed designs and cost proposals under contract. Contract award to one or the other is expected early in 1981, and construction of Canada's first fluidized bed boiler should be completed late in 1982. Total cost of the project is estimated at about $10 millions.

2. Industrial Fluidized-bed Boiler

Substantial quantities of oil could be saved if industries such as chemical plants and paper mills generated their process steam with coal and waste materials. The equipment required is typically ten times the size required for heating boilers such as CFB Summerside, and operates at higher pressures. CANMET is presently inviting proposals from boiler manufacturers and industrial users for a cost-shared demonstration of an FBC boiler to burn coal and wood waste at an industrial site.

3. FBC Utility Boiler

The maritime provinces are heavily dependent on foreign oil for electricity generation. This could be replaced with indigenous high-ash, high-sulphur coal, which FBC technology by its nature can handle better than conventional coal-burning technology. Demonstration of a medium-sized utility boiler, approximately ten times the size of an industrial boiler, is presently under investigation in cooperation with the Nova Scotia Power Corporation. Site studies have been completed and if a decision is made to proceed with the demonstration plant, it could be in place by about 1988.

4, FBC Burning Coal Washery Rejects

The potential for using washery rejects as fuel for power generation has already been described. As a first step, EMR is co-sponsoring with a western coal supplier a design study and cost analysis for an FBC combustor which would burn washery rejects to provide heat for an existing coal dryer. It is hoped that the study will lead to a cost-shared demonstration within the next couple of years.

5. Pressurized FBC for Electricity Generation

Pressurized FBC offers the potential to reduce fuel requirement for electricity generation by 10%. However, a substantial amount of high technology needs to be developed. Since 1975 extensive studies in this area have been co-funded by EMR and BC Hydro, with the latter acting as lead agency. A medium-sized demonstration plant is now under consideration. If a decision is made to proceed, it could be ready for testing in 3 to 5 years.