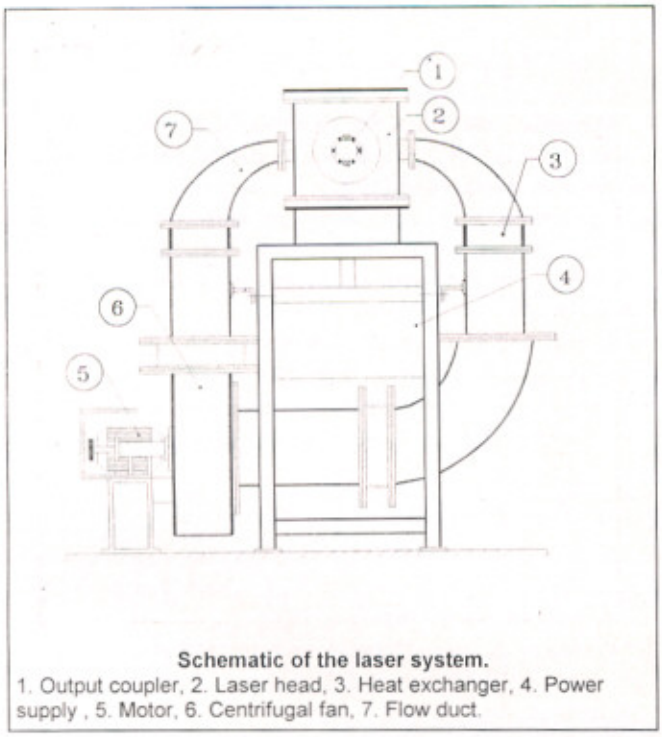
Specifications of high repetition rate TEA CO_2 laser	
Laser power	500 watts (average)
Laser rep. rate	500 Hz
Laser active volume	2.0 x 2.0 x 50.0 cms
Gas mixture	$CO_2 : N_2 : He = 1:1.5:6$
Gas pressure	1000 mbar
Operating voltage	33 kV
Gas flow velocity	40 m/s
Laser beam size	1.8 x 1.6 cms
Laser beam mode	Multimode

coupler, separated by a distance of 1.2 m. The centrifugal blower recirculates laser gas through discharge zone and then through heat exchangers at a high speed so as to avoid the thermal bottleneck at high repetition rates. Blower runs at 3000 rpm and provides about 40 m/s flow velocity through discharge zone. Laser has been operated at high repetition rates up to 500 Hz at atmospheric pressure in an optimum gas mixture of $CO_2 : N_2 : He = 1 : 1.5 : 6$. With 13 J per pulse input energy the maximum average laser output power obtained was about 500 watts. The maximum repetition rate and output power are limited by the onset of discharge instability which causes non-uniform streamer discharge. One of the important reasons for onset of discharge instability and limitation on pulse repetition frequency is the shock waves generated by the electrical discharge. This can be improved by either increasing the gas flow velocity or damping the shock wave using some suitable acoustic absorber inside laser chamber and flow duct. Further improvements in the laser are being carried out. At present, the laser is operated on P(20) line of 10.6 micron band. This will be made line tunable on different P and R lines of 9.6 and 10.6 micron bands by incorporating a reflective grating in optical resonator. Technical specifications and laser operating characteristics are summarized in the table below.



Schematic of the laser system.
1. Output coupler, 2. Laser head, 3. Heat exchanger, 4. Power supply , 5. Motor, 6. Centrifugal fan, 7. Flow duct.

High rep rate TEA CO_2 laser developed at CAT

This laser is being planned for use in isotope separation of carbon-13 which has a wide range of applications as a trace element in medicine, chemistry, biochemistry and environmental sciences. Other applications which will be tried out with this laser are hole drilling, surface glazing, marking and cutting of highly reflecting materials along with a CW CO_2 laser.

A K Nath

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OTHER ACTIVITIES / NEWS

नगर राजभाषा समिति : डॉ. भवालकर अध्यक्ष

नगर राजभाषा कार्यान्वयन समिति, इन्दौर की वर्ष 1997 की छः माही बैठक दिनाँक 5-12-1997 को डॉ. दि.दे. भावलकर, निदेशक, प्र.प्रौ. केन्द्र की अध्यक्षता में संपन्न हुई। इस बैठक में श्री जी.आर. वाधवा, उपनिदेशक (कार्यान्वयन), मध्य क्षेत्र, भोपाल सहित बड़ी संख्या में सदस्य-कार्यालयों के प्रमुखों ने भाग लिया। बैठक में सदस्य-कार्यालयों के कामकाज में हिन्दी प्रयोग की स्थिति की समीक्षा करते हुए अध्यक्ष ने इस बात पर बल दिया कि "न केवल हिन्दी का प्रयोग बढ़ाया जाना आवश्यक है वरन् यह भी आवश्यक है कि सही वर्तनी और सटीक शब्दों का प्रयोग सुनिश्चित हो।" समिति के सचिव श्री सुनील सरवाही ने सदस्य-कार्यालयों से प्राप्त सूचनाओं को विचारार्थ प्रस्तुत किया। राजभाषा विभाग, गृह मंत्रालय द्वारा इन्दौर नगर की राजभाषा कार्यान्वयन समिति की अध्यक्षता का भार अब (जून, 1997 में) प्रगत प्रौद्योगिकी केन्द्र, इन्दौर के निदेशक डॉ. दि.दे.भावलकर को सौंपा गया है। नगर समिति में केन्द्र सरकार के कार्यालयों, निगम एवं उपक्रमों सहित लगभग 75 से अधिक सदस्य-कार्यालय हैं।